V 36 cop 8

Learning and Labor.

LIBRARY

OF THE

University of Illinois.

CLASS. BOOK. VOLUME.

720.5 AR 36

Books are not to be taken from the Library.

Accession No.....

THE ARCHITECT.

LIBRARY
UNIVERSITY OF ILLINOIS

A WEEKLY

ILLUSTRATED JOURNAL

OF

ART,

CIVIL ENGINEERING,

AND

BUILDING.

"*Buildi gs, like Builders, have their destiny.*"—T. CARLYLE.

VOL. XXXVI.

JULY TO DECEMBER 1886.

LONDON:

PUBLISHED AT 175 STRAND, W.C.

LIBRARY
UNIVERSITY OF ILLINOIS
URBANA

THE
ARCHITECT
A JOURNAL OF
ART, CIVIL ENGINEERING, AND BUILDING

THE WEEK.

THE Salon closed on Wednesday, and on to-morrow, Saturday, the medals will be distributed. Already the architects and sculptors are busy about emendation of the rules for next year, the painters being satisfied with the existing arrangements. It is considered that a reform is necessary in respect of the award of the Médaille d'Honneur. At present it is necessary for an architect to obtain nine votes before he gains the medal, and, as there are only fourteen members on the jury, it often happens that the requisite number cannot be obtained, and the medal is therefore retained. What the French architects propose is that there should be at least three trials, and if at the first and second the prescribed number is not obtained, then the medal is to be awarded to whoever secures the highest number at the third voting. The proposal is reasonable, for it is unfair to exhibitors to have it stated that no architectural design was deserving of the principal medal. Many eminent architects refrain from exhibiting, as they dislike to have a contest over their works which does not serve them or architecture. The sculptors desire, in the first place, that a rule should be laid down by which it will be rendered impossible for the medal to be awarded several times to the same sculptor. The rule which the architects seek, *i.e.*, that the vote of the majority is to prevail, is in operation in the section of sculpture; but the sculptors wish to have it abolished, so that henceforth no sculptor can gain the Médaille d'Honneur unless he has secured two-thirds of the votes.

A DECREE of Convocation was passed in Oxford on Tuesday, conferring the degree of Master of Arts upon Mr. HUBERT HERKOMER, Slade Professor of Fine Art in the University. Mr. HERKOMER'S name has also been among those proposed to the Emperor of Germany by the Senate of the Berlin Academy of Fine Art for the large gold medal.

THE French newspapers which are published in Egypt have discovered that England is about to take possession of the Boulak Museum, and transfer the whole of the contents to Bloomsbury. According to the legend the late Dr. BIRCH, the Keeper of Egyptian Antiquities, allowed his enthusiasm to get the better of him, and he let the cat out of the bag. M. MASPERO, the conservator, was to be dismissed, his successor was to be pliant, and within six months of the new appointment Dr. BIRCH was to be enjoying the sight of the treasures for which he so often longed. One part of the prediction was falsified owing to the death of the doctor. But it is certain that M. MASPERO has retired, and that we suppose is the sole foundation for the story. His successor is a Frenchman, M. GREBAUT. English diplomatists are, however, supposed to be already undermining him. One proof of our perfidy is forthcoming. The Khedive was persuaded to lend four beautiful Arab lamps to South Kensington, which were to be returned in two years. But they are still retained, and the excuse offered is that they are too precious to be sent on so long a journey. A people who will act in this way are supposed to be capable of anything. If we are to believe our neighbours, the museum at Boulak is a work that is eminently French, and owes its creation to the inspiration of the French Government. Moreover, M. MASPERO was always supported by French subscriptions. Is the Boulak Museum likely to be offered for sale, and are the French archæologists afraid that the opportunity will not be seized to enlarge the collection in the Louvre?

MR. SIDNEY COLLINS'S report on the Print Room in the British Museum records many important acquisitions during the year. Among them are an album of twenty-four pencil drawings of the marbles from the Temple of Phigaleia (presented by the Dilettanti Society); a view of Kirkstall Abbey, by JAMES GANDON, jun.; a water-colour of the interior of Bruges Cathedral, by JOSEPH NASH; a water-colour of the columns of the Temple of Jupiter in the Roman Forum, by CHARLES VACHER; a view of the leaning tower of Bologna, by R. P. BONINGTON; a view of Kenilworth, by THOMAS BAKER; and two sheets of designs in Indian ink for the monument of COLLINS, the poet, by JOHN FLAXMAN. DOYLE'S "Journal kept by Dick Doyle during the year 1840," THACKERAY'S "Bandit's Revenge," with illustrations in pen and ink, and an album containing ninety-six sketches and studies for pictures by FUSELI, have been also obtained. The acquisitions of the year amounted in all to 4,223.

THE Royal Holloway College at Egham, which was opened by Her Majesty the QUEEN on Wednesday, is the nearest approach to a realisation of Lord TENNYSON'S vision in "The Princess." In external appearance the colleges of Girton, Newnham, Somerville, and Lady Margaret are all very modest compared with Mr. CROSSLAND'S grandiose structure. The design, it will be remembered, was selected in competition. The late Professor HOLLOWAY obtained the advice of Mr. THOMAS HENRY WYATT, but he resolved to adopt no design which was not pleasing in his own eyes. His self-will is to be traced in many other things, and it is not impossible that the college will hereafter suffer on that account. He was disposed to consider himself as an imperial autocrat, but men of that class are not best fitted to be educational reformers. One of the features of the college is the picture gallery, on which nearly 100,000*l.* was spent

---

THERE are two open spaces at the outer limit of the metropolis which it is desirable to secure for the people's benefit. One is Clissold Park, near Stoke Newington. It will be said that as Finsbury Park is in the neighbourhood there is no need to expend the money that is necessary to purchase so expensive a property. But Finsbury Park is not sufficiently extensive for the needs of North London, and it should be remembered that if the present opportunity is allowed to escape another equally eligible is not likely to present itself. The second space is Ravenscourt Park, Hammersmith. That part of London is without a public park, and the objections which are supposed to apply in the case of Clissold Park will not hold. It appears the land is to be obtained on reasonable terms, and if the taxpayers could be polled a majority would be likely to be found in favour of its acquirement.

THE VENTILATION OF THE HOUSE OF COMMONS.

THE Blue-book containing the evidence which was given before the Select Committee on the Ventilation of the House of Commons is exactly the kind of document which gives satisfaction to the Intelligence Department in Berlin. The officers of the German staff, in providing for all possible contingencies, have to consider the possibility of an invasion of England—of course, it is simply in theory—and a good deal of value is attached to anything which throws a light upon our administrative power. When it is made evident that, owing to the peculiar organisation of our official system, it appears to be an impossibility to keep offensive smells out of the House of Commons (nobody seems to pay any attention to the other House), it is not unreasonable to assume that in case of invasion the system would also become inefficient, that one department would decline co-operation with another, and that, in fact, official logic would demonstrate in the clearest way, even if the Uhlans were at Clapham, that there was no invasion, and the inhabitants would be assured that they might sleep without apprehension of danger.

It would probably be hard to find a better illustration of the official way of doing business than has been presented in the Houses of Parliament. According to the established theory there cannot be too many departments. Instead of considering the ventilation and heating of the building as part of the architect's work, they were set up as if they were independent. Mr. GOLDSWORTHY GURNEY did not trouble himself about Dr. REID'S arrangements, and both officials ignored the trouble which they gave to the architect. Subsequently it was supposed that much was gained when the connection between the successor of Sir CHARLES BARRY and the House was severed by Mr. AYRTON. The old works and the new were to be controlled by the Office of Works, and it was anticipated that there was to be an end to all the grievances of which members complained, and which were attributed to the existence of a "family architect," to use Mr. BERNAL OSBORNE'S elegant phrase. But it was forgotten that Government Offices in England have a fashion of throwing impediments in the way of one another, and of treating zeal as if it were an impertinence. It is no exaggeration to say that in consequence of the official spirit—perhaps we ought to say the mutual animosity of officials—the control of the Houses of Parliament at the present time is not what it ought to be.

Take first the relation between the superintendents and the Treasury. Eight years ago the Office of Works, owing to an outcry about the state of the soil pipes and traps, made an application for 5,000*l.*, which was to be expended on drainage works for the House. The application "had to stand aside for more pressing matters." It was not renewed. It will appear strange that there was so much indifference shown by the Office of Works, but its dignity was, we suppose, offended by the refusal. At the time at least two-thirds of the water-closets were not in a sanitary condition. A civil architect would in such a case keep dunning the Treasury; but then of course he would have a personal interest in the grant.

If a civil architect had charge of the place, no allowance would be made if he did not accomplish new works in as short a time as if he had a clear field before him. It is evident that the Office of Works, with all its authority, has to work under restrictions at the Houses of Parliament. "The House adjourns the first, second, or third week in August," says the Clerk of Works, "and in November the House of Peers assembles again on appeals. Then we have to suspend the work in the neighbourhood; they will not permit either the knocking or the smell. Then the residents come back very soon; some of them are only away a few weeks. That again stops us, so that the time for doing this work is very limited indeed." Another difficulty arises from the fear of interfering with the privileges of the Serjeant-at-Arms and the Lord Chancellor, who have the appropriation of the rooms in their hands. Hence we read of the existence of dustbins within the building of an exceedingly objectionable character, of rooms being used as bedrooms which have neither ventilation or light, of a laundry which is "quite improper." Sir HENRY ROSCOE, the chairman of the Committee, relates how he found "it had been the practice of the contractor to place the whole of the dust and solid refuse of all kinds—vegetable, animal, and mineral—at the bottom of the staircase, where there was not the slightest ventilation, and which was in direct communication with the building." The revelations of the arrangements of the Palace of the Legislature are so strange, that it seems a mockery to have the Lords and Commons passing laws about sanitation which are inoperative in their own House.

The evil which is at the bottom is the strength of the departmental spirit. One department has got hold of the drainage, another has the heating and lighting, a third secured the kitchen and cooking arrangements, while a fourth carried off the cleaning, although in a somewhat incomplete form, since the washing of dirty linen was exempted. The Parliamentary Committee who investigated the condition of the House had not the courage to meddle with so many administrations, but they had a fear that the 13,000*l.* which they recommend should be expended on the House was not likely to be so well laid out under the existing system. It is therefore recommended as absolutely essential that "The designing and superintendence of the works in question should be entrusted to an independent expert of the highest professional standing, under whose personal direction the alterations suggested should be carried into effect." No slight is thrown on the officers of the Board of Works by the recommendation. In other words, the Committee desire that the state of things which existed before Mr. AYRTON'S *coup d'état* should be restored, only instead of an architect having a hereditary interest in the building, some sanitary engineer is to be appointed who will naturally value the commission by the amount of the expenditure.

According to the unanimous opinion of the Committee, "The health of the Members of Parliament and of the officers who reside within the precincts of the palace at Westminster is seriously imperilled by the defective drainage and sanitary arrangements which now exist in the building." This condition is no new discovery. It is evident, from the application for money which was made in 1878, that there was some fear of impending evil at the time. Noxious smells have pervaded the House. Dr. PERCY declared before the Committee of 1884 that he was perfectly certain they did not arise within the House. The conclusion was drawn that the smells must originate outside, and the potteries at Lambeth were first suspected. It was found on inquiry, however, that there was not the slightest evidence for supposing that Messrs. DOULTON'S great factories emitted noxious vapours. Then Sir LYON PLAYFAIR, who was a member of one Committee, suddenly discovered that the odour of Westminster corresponded with one which occasionally was wafted over his house in Onslow Gardens. He traced it to the brickfields at Shepherd's Bush. The Chief Inspector of Alkali Works, by a diplomatic feat of which he appears to be proud, ascertained that the smells arose from the burning of rubbish at one of the Millbank wharfs. But unfortunately he was without experience of the Parliamentary smell, although he believed he could make it out distinctly. Of one thing the chief inspector was quite confident, it could not arise from sewer gas.

Some doubt about the sewers of the House arose, however, and Major TULLOCH was asked to inspect them. He described the main sewer as being in very good order, except the lower part, which he likened to an elongated cesspool. That part, according to the Major, was abominably filthy. The sewer had been made far too large (it is 10 feet high); but if there were ventilators carried to the roofs, he believed there would be no nuisance from it.

The last Committee on the subject was a very strong one, for among the members was Mr. L. H. ISAACS, the architect, Sir HENRY ROSCOE, the chemist, and Dr. FARQUHARSON; Mr. TATTON EGERTON and Mr. RICHARD POWER were also intent upon the inquiry. Mr. ISAACS took nothing on hearsay. He not only went through the disagreeable task of examining the sewer, but he insisted on the entrance flap being closed while there, in order, as he said, that being hermetically sealed in, he would have an opportunity of ascertaining the normal state of the sewer. Having tried the side drains with a candle Mr. ISAACS found an upcast in about two-thirds of them, and it was so

strong on the inlet from the kitchen that the candle was nearly drawn from his hand. That sewer gas existed he was positive, and he was also satisfied that the penstock which is imagined to oppose the entrance of sewer gas from the low-level drain of the Metropolitan Board of Works was ineffective. "My opinion," said Mr. Isaacs, "is that the sewer gas which is drawn up and passed through the furnace in the Clock Tower is not the sewer gas we generate, but is extracted from the low-level sewer." Afterwards Mr. Isaacs made an inspection of the sewer at night while the House was sitting, when he found that the proportion of uptake was decidedly greater. The brickwork of the sewer was in good condition, but the side drains were introduced in the most erratic manner; some were in the crown of the arch, and in such cases there would be splashing which, as will afterwards be seen, has an important influence in spreading germs.

Mr. Isaacs was able to speak from experience, and he had no doubt about the sewer gas. Afterwards Dr. Percy was examined, and he said it was impossible, with the system of ventilation which was in use, for any kind of gas to enter the House from the metropolitan sewer. "I have been here for twenty-one years," said Dr. Percy, "and I think I have as keen a scent for sewer gas as any man living, for I have been searching for it all my life pretty well, by night and by day, and I have never once perceived the odour of sewer gas in the House or near the House." One of the members of the Committee was not satisfied with the statement, for he asked Dr. Percy what other explanation than sewer gas could be given for those wash-basins, which were reeking with horrible smells. The answer offered was, that the smells arose from the immense quantities of high-pressure steam which are now sent into the drain from the boilers used in connection with the electric lighting. Whether the explosion that occurred on Monday could be explained in that way remains to be seen.

The discussion as to whether the malodours were or were not sewer gas might last for an interminable time if no evidence could be given except the sense of smell of the witnesses. Fortunately a new mode of investigation has been introduced by Dr. Carnelley, a young man of great ability, who is professor of chemistry in Dundee. His process of analysing the air in closed spaces is so interesting that we give a description in the professor's words :—

First of all, we determine the amount of carbonic acid by the ordinary process. Then we determine the quantity of oxidisable substances in the air by means of very dilute Condy's fluid, with which a known quantity of air is shaken up, and by the bleaching of the fluid we can form a conclusion as to the amount of oxidisable substances present. That tests chiefly the presence of organic matter, which may be due in part to the combustion of coal, for instance, as you find it in the outside air, and therefore it would be necessary, in order to determine the analysis of air in a given place, to make experiments upon the outside air in order to know what the normal condition of the atmosphere was. Then knowing the composition of the outside air, and the composition of the air in the sewer, one knows from the difference between them the extra quantity of organic matter present in the air of the sewer. That second process gives you the total oxidisable substances in the air. The third process is the collection of samples of air in such a way as to allow any germs the air may contain to settle on gelatine, and thus render it possible to count the number of living micro-organisms present. These take a fortnight to grow, and then you can see for yourself and count the number of these things actually present.

The conclusions which were drawn by Professor Carnelley in his laboratory at Dundee are very remarkable, and suggest that he has discovered a method which will substitute precision for guess work. After giving tabulated statements of his observations he writes :—

A comparison of the results at Westminster with those we have obtained in a considerable number and variety of sewers in Dundee, shows that before the alterations the sewer air at Westminster was in a worse condition than the average of that in Dundee, notwithstanding that the sewers here are usually much smaller, and far filthier looking, and receive a much more miscellaneous sewage.

The ventilation at Westminster, on the whole, was not nearly so good as in Dundee. The alterations, however, have now rendered the condition of the air in the Westminster sewer very much better than that of the sewer air in Dundee.

We believe that by far the greater number of the germs found in the sewer came from the outside air, passing in with the ventilation, and that comparatively few came from the sewer itself; for, with few exceptions, they were apparently of the same kind as those found in the outside air. The exceptions referred to were some large colonies of bacteria, which very rapidly liquefied gelatine. They were found in the sewer air from near the Clock Tower. These we obtained both before and after the alterations. They most probably came from the sewer itself, as we have not found any like them in the hundreds of samples of air we have collected outside, or in schools, or in houses. We have, however, obtained some of them in the Dundee sewers.

At Westminster almost all the drains enter the sewer by pipes placed high up in the walls of the sewer, and hence cause a great deal of splashing. This is very objectionable, for it undoubtedly tends to largely increase the number of germs in sewer air. The germs thus imparted to the air are those which are most probably injurious to health.

We have made duplicate experiments, both in Dundee and at Westminster, in which the air was collected within a few yards of such a drain, with and without splashing, and have always found the number of germs much increased in the former case.

We believe that the presence of bacteria occurring in sewer air, other than those coming in with the ventilation from the outside, to be chiefly, if not entirely, due to this cause.

The increase in the number of germs in sewer air caused by splashing varied from 3 to 34-fold in different observations.

The investigation by Professor Carnelley confirmed the recommendation of Sir Robert Rawlinson and other experts, that the drainage of the House should be cut off from the low-level drain. The system proposed for adoption by the Committee is that known as Shone's, which will make it necessary to reconstruct the main sewer. In connection, other works will have to be carried out.

The Committee are not satisfied with reporting on the drainage. They consider that the vaunted means for ventilation in use are obsolete, and they suggest that, instead of the heated upcast shafts in the Clock Tower and the Victoria Tower, mechanical appliances for pumping in air should be introduced. An opportunity may therefore be given to inventors; but how far facilities will be allowed them for experiments is another question. Meanwhile the thanks of Parliament are owing to the Committee, and especially to Mr. Isaacs, for the skilful and energetic way in which the inquiry was conducted. In our experience we cannot recall a case in which so many important results were ascertained during a few sittings.

LITHOGRAPHY IN FRANCE.

[By a Correspondent.]

An English visitor to one of the Salon exhibitions can hardly fail to observe the large number of lithographs. Our Royal Academy has never recognised lithography as a branch of fine art, but in France it has a position corresponding with engraving and etching. It has *artistes hors concours*, jurors of selection, and medallists, like painting or architecture. With us lithographers are supposed to form a sort of mechanical trade. In France, in Belgium, and in Germany we find many painters of reputation who work on stone, and interpret their own and other painters' work by means of the crayon. A very high standard has therefore been reached, and lithographs are criticised with as much severity as paintings. An art which was practised by Delacroix, Decamps, Millet, and Meissonier could hardly be wanting in opportunities to display chiaro-oscuro, modelling, and composition. Indeed, it is mainly by the absence of colour that lithography is distinguished from painting.

It is difficult to praise one form of art without appearing to undervalue some other, and it may be supposed that we have a latent wish to oppose lithography to etching. We believe that each of them has a field of its own which can be held without rivalry. For some classes of work etching should have the preference, and as much can be said of lithography. Each has its special advantages and its shortcomings. But we have no hesitation in saying that etching offers more opportunities for concealing defective draughtsmanship than lithography. With vigorous light and shade one is not over-critical about contours, for a

plate having careless figures may be accepted as an effort to record a fleeting inspiration. Indeed some masters seem to be anxious to suggest that their work was hasty. This was one of REMBRANDT'S characteristics, and hence, as Mr. RUSKIN says, "a wash of sepia, rightly managed, will do more in ten minutes than REMBRANDT himself could do in ten days of the most ingenious scratching, or blurt out by the most happy mixtures of art and accident. The value of REMBRANDT'S etchings is always in the inverse ratio of the labour bestowed on them after his first thoughts have been decisively expressed." Many etchers would uphold REMBRANDT'S practice against Mr. RUSKIN, and maintain that the great charm of work of the kind is its apparent spontaneousness, and the more it seems to be impromptu the better. We need not discuss the question now, but it can hardly be denied that etching, which is produced according to the Rembrandtish spirit, is only adapted for original work. It does not serve for copies, and hence when a master like M. WALTNER undertakes a plate after a picture everything is avoided that might be suggestive of hurry. His surprising skill in light and shade is not used to cloak weak outlines.

If an artist draws badly he cannot conceal the fact when he tries to work on stone. His defects are revealed to every one. We have a notable instance of this in the H. B. caricatures, which have already become historic documents. DOYLE was a much better draughtsman than CRUIKSHANK, but one worked on stone and the other on copper, and the etchings appear to have been produced by the superior hand. When CRUIKSHANK'S plates are printed from stone, the original relief is lost, and with it much of the spirit which we ascribe to the artist. JOHN LEECH, who was possessed of more genius than DOYLE or CRUIKSHANK, produced capital lithographs in his young days. The reason was, that LEECH being a painter rather than a caricaturist, the innate skill in the light and shade which sparkles in so many of his landscape backgrounds was one of the qualities most needed by any one who draws on stone.

Lithography presents so many difficulties that it is not surprising that sundry artists have been afraid to meddle with it, and consoled themselves by undervaluing the art. Almost as much precision of hand is needed as in fresco painting. It is necessary to treat a drawing as if it were a painting, and never to forget the totality of effect in working up a part. The art has attractions for artists whose characters are almost opposite. It is adapted for men like DECAMPS and many French caricaturists who can dash off subjects with ease. They were enabled by it to have copies circulated within an hour after the drawing was made. Lithography is no less adapted for artists, who, in their patient pursuit of effects, resemble scientific inquirers. Examples of this species of lithography can be seen in the well-known series of plates from the pictures in the Dresden Gallery. If compared with the fine engravings which were produced towards the close of the last century, it will be evident that for reproductions of pictures no process surpasses lithography. We may even comprise photography among them, for what are considered the best photographs are largely operated on by draughtsmen in order to suggest relative "values," while many photographs are taken from lithographs instead of from the original pictures.

A few lithographs have been lately produced in Paris at the Librairie de l'Art, which will suggest the perfection which the art has reached. One is a sketch of *Wrestlers in a Booth*, by M. GEORGES BELLENGER, which was exhibited this year in the Salon. It is the artist's own design, and is produced in what may be called the painter's style of lithography. There is no apparent sign of elaboration, although care is evident throughout. It is well arranged, so as to form a contrast of character as well as of light and shade.

M. CAMILLE VERGNES is an artist who appears to be competent to undertake almost any kind of plate. One of his which is before us is a copy of the famous portrait of his master, LEON COGNIET, after M. BONNAT, who was also a pupil in the same atelier. The picture is now in the Luxembourg Gallery, and has been repeatedly copied, photographed, and engraved. In this case the head seems to be similar in size to the original, and the earnest expression of the old painter is rendered with a vigour that is surprising. M. BONNAT may well approve of the copy. It is in work of this kind that lithography seems unsurpassable. The face is expressed without any exaggeration of the contrast offered by the light and dark parts, and the coat and cap melt imperceptibly into the dark background. Taken as a whole it is the best interpretation we have seen of a portrait that has already become famous. In the *Esope* and *Ménippe*, after VELASQUEZ, M. VERGNES has to render a very different style of art to the foregoing. The faces are less strongly lighted, and the flesh tints have to be expressed by a sort of cross hatching, which is carried into the coats and even into the background. It is by this mode of handling that unity is imparted to the two large plates.

The *Hagar and Ishmael* in the Luxembourg Gallery is, like most of M. CAZIN'S pictures, most difficult to translate. The painter is one of the artists who have abjured the old rules about figures and background. With him the landscape becomes a necessary complement of the figures, and must be judged as inseparable from them. Take his *Hagar and Ishmael*, for example. He represents the mother as a *fille-mère*, standing weeping on a sandy heath; her hands cover her face. ISHMAEL, half-clad in goat's skin, and in appearance resembling a young Baptist, is before her, with his arms around her waist. There is no vast expanse of landscape, but we feel it is all as dreary as the part we see, and is bounded by a burning sky. It would be no easy task to copy M. CAZIN'S work in oils, but the difficulty is increased when there is only black chalk. It is necessary to think of effect in a plate, for the public may not take the same view as the admirers of M. CAZIN. But to give emphasis to the figures would be contrary to the artist's idea. It is also necessary to treat everything with a peculiar tenderness if the copy is to be suggestive of the original. If M. BAHUET consulted many lithographers he would be advised to give up his attempt, for there is no picture in the Luxembourg that is less fitted for a lithograph. However, he has tried, and has scored a success. The whole of the plate has the delicacy of a fine pencil drawing, and the scene acquires an inexpressible charm. As a specimen of lithography it is as great a departure from the ordinary style of work as the picture is in painting. It is not possible to possess the latter, but the print deserves to find a place in many houses.

Lithographs like those we have described are of a kind of which specimens can be rarely seen in England. The art, as we remarked above, has not been fostered in England, as it has been abroad. What is the consequence? Let the answer be given in the words of THACKERAY. "The state of art," he wrote, "amongst the people in France and Germany, where lithography is more practised, is infinitely higher than in England, and the appreciation more correct. As draughtsmen the French and German painters are incomparably superior to our own." It is not difficult to explain the reason for the superiority of foreign work. By the dissemination of lithographs which are examples of good draughtsmanship the public taste is improved, and moreover, young artists gain opportunities to exercise their skill. Hence THACKERAY made a strong appeal to the Academicians, who, at the time he wrote, were the representatives of English art, beseeching them to turn lithographers, in order that their countrymen might gain. The plates which we have before us are of a higher class than could possibly be produced in England, even with the aid of the Royal Academy. They have a permanent value as works of art, and the publishers merit a reward for their enterprise.

NETHER HALL.

A FIELD meeting of the Hertfordshire Natural History Society was held lately at Broxbourne, under the leadership of Mr. R. T. Andrews, of Hertford. On arrival at Nether Hall a paper was read by Mr. Andrews. The building is one mile and a half south of the Rye House, and half a mile from the junction of the rivers Lea and Stort, which formed the north-west boundary of the ancient royal forest of Epping. The ancient mansion was pulled down in 1773, and only the gateway left standing, because of the expense of destroying it. The hall is a good specimen of Tudor architecture, constructed of beautiful brickwork, and having a semi-hexagonal tower on either side of the entrance. It has been carefully preserved, especially of late years. It consisted of two floors,

upon each of which was a room 27 feet by 23½ feet, lighted by large windows; the ceiling of the first storey was sustained on oak arches, resting upon three blank shields and a truss composed of a radiant rose and at the back upon four trusses, the first and third of which represented griffins, and the second and fourth a bear and ragged staff; the western shield was supported by two horses (colts), the second by a spread eagle supported by a lion and unicorn, the third rested on a lioness and a bull ducally crowned; near the chimney was a colt's head in an ornament of the carving. The storey was wainscotted to the height of about 8 feet, and above the wainscot on the plaster were various figures representing personages of sacred, profane, and fabulous history. On the summit of the gateway are remains of two curiously twisted chimneys, like the one at the Rye House, and beneath the windows above the entrance was a machicolation and a trefoil ornament with shields and fleur-de-lis. A spiral staircase led to the summit of the tower and twisted chimney-shaft. The whole building was surrounded by a moat, and the moat was encompassed by a wall. The manor of Nether Hall was holden of Waltham Abbey, and in 1401 was conveyed by Thomas Organ to Nicholas Callerer and others. In the reign of Edward IV. the estate had become the property and residence of the Colte family. Thomas Colte was employed by that king on some service abroad; he died in 1476. John Colte took an active part in aiding King Henry VIII. in the dissolution of the monasteries. The last recorded possessor in the family was George, son of Henry Colt, knight, in 1635. From here Sir Thomas More married his wife, Jane Colt. The remains of several of the family are deposited in the chancel of Roydon Church, and commemorated by several handsome brasses. Brasses to Thomas Colte, "Edwardi regis consul Honorificus," 1471, and Joan, his wife; to John Colte and his wives Mary and Elizabeth; to Elizabeth, wife of John Stanley, gent., 1589, with five children, and the figure of a civilian, 1580. The estate now belongs to Mr. J. A. Houblon, of Hallingbury, Essex, and is occupied by Mr. Joseph Parish.

ARCHÆOLOGY IN SHROPSHIRE.

THE ninth annual meeting of the Midland Union of Natural History Societies was held last week in Shrewsbury. Although from the title it might be supposed that the members cared only to take part in geological or botanical excursions, still archæology forms a part of the programme, and on the second day there was a visit to Uriconium or Wroxeter. On arriving at the ruins of the Roman settlement, the Rev. Mr. Auden, who acted as cicerone of the party, said:—

Very little is known of the history of Uriconium. It is thought to have been founded in the time of the campaigns of Ostorios, about A.D. 50. It is mentioned by Ptolemy as being situate in the country of the Cornavii, and is alluded to in the second and twelfth Iter of Antoninus, and by Richard of Cirencester in his first, second, and thirteenth Iter. Tradition tells that it was destroyed by the Saxons in the fourth century. The excavations show that it was burnt to the ground, possibly after a struggle with the enemy, as a number of skulls were found near the fortifications on the river-side of the city. The ruins served for centuries as a quarry for the neighbourhood, but no excavations seem to have been made there till comparatively modern times. Mediæval legends attributed the ruined cities of an older time to demons, and few cared to disturb the earth, or to be near them after nightfall. In 1701 a hypocaust was discovered, and in 1734 a fine tesselated pavement; in 1747 some moulds for forging Roman coins, and in 1752 three Roman gravestones. In 1788 and 1798 several discoveries were made of coins, urns, &c., and the organised excavations of a few years back have brought many interesting objects to light. The coins found range in date from about A.D. 52 to A.D. 382. This may furnish a clue to the date of destruction of the city, as it was in A.D. 385 that the Roman garrison were finally withdrawn from Britain. Several great roads went out from Uriconium: one generally known as the Watling Street passed over the Severn and through Bravinium (Brandon Camp, near Leintwardine), towards Caer Leon; another passed due west through Berrington, and on by Lea Cross, Edge, and Stony Stretton, to its junction with the road from Rutunium to Caer Flôs; another went northwards through Newport to Chester; and another branched from the Watling Street at Pitchford, and passes by the Devil's Causeway to Rushbury.

During the walk around the remains of the unburied city several questions were asked, says a correspondent of the *Shrewsbury Chronicle*, and some were not answered. The purposes of the parallel walls so close together on the left of the entrance could not be explained, and the cicerone stated, to the surprise of some of the party, that the remaining portion of the wall above ground was not really a part of the wall of the city, the position of the latter underground being plain by the appearance of the green crops over it in dry seasons.

In the parish church of Wroxeter many interesting objects attracted notice, notably the tombs of the Newport family, a recently uncovered bit of fresco painting in the chancel, and communication between the chancel and the now demolished lepers' confessional. This aperture was said to be almost invariably found on the north side of the table; here it is on the south side of the east wall. Mr. Auden also called attention to a Latin inscription of a punning character, to the effect that Richard Newport, knight, had sailed to a new port, being received into the haven of heaven above. On the tomb adjacent was an inscription bearing the date of the death of the knight and a record of the death of his wife, but to the latter there were blank spaces for the day of the month and year which had never been filled in. The tomb was apparently erected by the wife, who left the blank space for the date of her own death. On a brass was an inscription recording the death of Lavaet Corfield and her spouse, both at the age of eighty-six.

The Rev. T. Auden read the following:—Wroxeter Church was originally a Saxon collegiate foundation. Domesday mentions the manor as possessing a church and four priests. The Fitz-Alans, the Norman lords of the manor, who had a house at Wroxeter, richly endowed the living, and probably were the first builders of the present church. William Fitz-Alan I., on July 25, 1155, gave the advowson of St. Andrew's, Wroxeter, to the abbey he had founded at Haughmond. This gift was, however, disregarded by six generations of Fitz-Alans, and not till the year 1331 did the abbey really obtain possession. In 1291 the church of Wroxeter was estimated as worth 23*l.* 6*s.* 8*d.* per annum. There were then three rectors thereof; the portion of the first was 20 marks, of the second 10, and of the third 5. In 1341 there were still three portioners, but in 1347 Richard de Brugge, Abbot of Haughmond, with the consent of Bishop Northburgh, virtually dissolved the Collegiate Church. In a deed dated October 3, 1347, the abbot stated the endowment of the vicarage. "He gives to the vicar that *manse* in the *vill* of Wroxeter in which the parish priest had been wont to dwell, two other messuages, and all the arable land which Sir Robert le Notinge had in demesne as pertaining to that portion in the church he held when living." He is also to have all tithes of wool, lambs, hay, fisheries, milk, geese, little pigs, bees, goats, eggs, flax, hemp, and apples, and sundry other tithes and rents. He was to serve the church of Wroxeter and the chapel of Eyton by proper ministers as they had been served from ancient time. There was a chantry of St. Mary in Wroxeter Church, probably founded in the thirteenth century, when the Fitz-Alans held the advowson, as deeds of Haughmond Abbey say that nothing was known of the giver. Eyton-on-Severn was the country seat of the Abbot of Shrewsbury till the Dissolution, when it was purchased from the King by Sir Thomas Bromley (Lord Chief Justice), from whom it passed to the Newports, through the marriage of Sir Thomas's only child to Sir Richard Newport, who made it his chief residence, and it was here that his grandson, Lord Herbert of Chirbury, was born.

On arriving at Buildwas Abbey, the Rev. T. Auden said the abbey of St. Mary and St. Chad at Buildwas was originally a Savigniac foundation, like Furness and several other abbeys. Their rule was a reformed and more austere branch of the Benedictines. In 1148 the parent abbey of Savigny, near Coutances, with its thirty-three dependent ministers, were given over to St. Bernard, abbot of Citeaux, and the grey Savigniac monks took the white habit of the Cistercian. The abbey of Buildwas was founded on August 8, 1135, by Roger de Clinton, the crusader, Bishop of Chester. Basingwerk Abbey, in Flintshire, St. Mary's, Dublin, St. Mary's, Port St. Mary, co. Wexford, and Istrad Marcell, near Welshpool, were all connected with Buildwas. The church, a fine specimen of Transitional work, is the most striking object of the ruins; then, passing by the sacristy, we come to the chapter-house, with its groined roof and four slender pillars of twelfth century date. The slype, or passage to the cemetery, divides the chapter-house from the hall of the monastery, of which few remains now exist. The modern house is incorporated with the abbot's lodging and a small chapel apparently once connected with the hall. The style throughout is that of the twelfth century, with but few later additions. In 1406 the Welsh burnt the church, but it is clear that the injury was confined to the destruction of the roofs. Buildwas Abbey was never of very great size, and at the Dissolution contained only twelve monks. Questions as to the cause of the rough stonework of the pillars of the abbey for some distance up on the inner side elicited no explanation of a satisfactory character; but the groined roof of the chapter-house drew forth unanimous expressions of admiration, and also an antique floor and ceiling in the house adjacent.

At Wenlock the abbey was the first place visited, and Mr. Gaskell kindly gave the party free access over the whole of the ruins as well as the residence adjacent, both of which were, of course, greatly admired. Mr. Auden gave the company the benefit of the following information:—St. Milburgha, to whom the Priory of Wenlock was dedicated, was a Saxon princess and abbess, who is said to have died here on February 28, 722.

Her abbey was destroyed by the Danes in 874, and William of Malmesbury speaks of it as deserted till Roger de Montgomery filled it with Cluniac monks ; but it seems more probable that it was rebuilt in Saxon times, though on a small scale compared with the magnificent edifice of which we see the ruins. The Cluniac rule was a branch of the Benedictine, from which it differed mainly in ceremonials. The dress was a black woollen frock, a white woollen tunic, and black scapular. Wenlock was, like all Cluniac houses in England, hampered by being a priory dependent on a foreign abbey, that of La Charité sur Loire, being charged with a yearly rent to the mother church of 100*s.* In 1333, however, it was regarded as tenth in the list of important English churches, but in 1337, when Edward III. confiscated the goods of the Lombards, Cistercians, and Cluniacs to provide money for coming war, it was made to pay 200*s.* as an alien cell. In 1395 it was naturalised on the payment of 600 marks to the Crown ; and on October 7, 1494, its bond to La Charité was finally dissolved by a Papal Bull. At the Dissolution the building was considered so fine that an effort was made to save it for a cathedral church for Shropshire, but the scheme fell through. The church was 332 feet long, and the side walls 60 feet high, the transepts being 144 feet from north to south. The south side of the west front remains to give some slight idea of its former beauty. It seems to have been mainly of the early fourteenth-century date, with traces of older work. Passing through the procession door from the church into the cloister garth, under the arches of the "Tresaunt," we come to the chapter-house, a very fine specimen of Transitional Norman work. Adjoining the chapter-house is the infirmary, and on the south side the cloister garth the remains of the refectory. Near to this is St. Milburg's Well, which has only lately been discovered. The quaint sculptures are worthy of note. Adjoining the infirmary, which forms now part of the modern dwelling-house, is the Prior's Lodging, a most interesting example of the domestic arrangements of the latter part of the fifteenth century. A building now used as an outhouse was possibly the guest-house of the Priory, and the square tower-like building near to the school was the almonry, where, on every Friday, forty shillings-worth of bread was distributed to the poor, and ten shillings in bread and beer every Sunday. At the Dissolution fourteen monks were pensioned from Wenlock, though in the twelfth century there were forty in the monastery. The revenues at the Dissolution amounted to 449*l.*, from which the Prior received a pension of 80*l.* a year. Three of the bells were sold to Wolverhampton Church, where they still remain. The abbey was granted in 1540 to Augustine de Augustine, Cardinal Wolsey's physician, who sold it to Thomas Lawley, and since then it has passed through various hands to its present owner. Prene Priory, St. Helen's, in the Isle of Wight, St. James's, Dudley, and Paisley were all dependencies of Wenlock.

The church was next visited, and then the magisterial and council chambers.

TESSERÆ.

Gothic Sculpture.

R. Westmacott, R.A.

If the human form is the object of imitation, it requires but little argument to show that the aim of the true artist should be to choose such conditions as will most correctly display the form, or, at any rate, that there should not be a studied effort to put it into distorted and impossible action. Portions or parts of the figure, for instance, should not be made to perform functions for which they are unfitted, and of which they are incapable in nature, nor should the most perfect work of creation be represented truncated or in pieces, and so fulfilling with the most complacent expression ignoble and even repulsive and degrading offices. Yet in true Gothic all this occurs, and is imitated as characteristic of the style. Figures represented as kneeling, standing, or sitting are squeezed into the hollow mouldings of arched doorways, in tiers, one over the other, though in the apex of the arch the upper figures may, by this arrangement, be nearly if not quite horizontal. Again, the most distorted attitudes are given to others to make them fit into angles or spandrels. Figures also, in parts or entire, are made to project suddenly at right angles from the walls, to support roof timbers, or to act as brackets, while their draperies clinging close show no natural movement, but, instead of hanging or floating, are fixed horizontally in folds parallel to the figure. In like manner heads of angels, saints, kings, bishops, and even females are made to bear weights, as brackets under columns, or as ornamental terminations to dripstones over windows or doorways for draining off the rain-water. Now in Gothic the anomalies of the grotesques, and even the indecency that is seen in gargoyles or draining pipes on roofs, and in stall seats and other parts of ecclesiastical buildings, are distinctly intentional. They are not like the crude attempts of the archaic sculptors in consequence of entire ignorance or of primitive rudeness of art, for they occasionally are found associated with a very advanced feeling for a certain kind of beauty, both of form and expression. In the head of dripstone terminations, and occasionally in drapery, there is evidence of unquestionable power in these respects, sufficient at any rate to show that the strange, grotesque employment of these sculptured forms was a part of the system of the old true Gothic design, and belonged to it, herein contrasting unfavourably, and to itself fatally, with the perfect sculpture which decorated architecture of the ancients—that of the Parthenon at Athens, for instance, of which we possess the original examples.

John Yenn, R.A.

James Elmes.

In the early part of the reign of George III. Sir William Chambers enjoyed the royal favour and almost the whole of the architectural employment of the day. Fond of ease, he indulged in his professional reveries in his office at the Board of Works. Not being a regularly bred architect, or even builder, he educated no pupils—that is to say, as the word is now understood ; he therefore formed no school, and left little more than his Somerset House, his Royal Exchange, Dublin, a few edifices of lesser notoriety, his Chinese buildings at Kew, and his treatise on "Civil Architecture" to perpetuate his fame ; but his name will always hold a distinguished place in the list of British architects. His only followers or pupils were bred in the office of the Board of Works, in which he held the situation of Surveyor-General. Of the first of these, namely, John Yenn, notwithstanding the honourable addition of R.A. to his name, the only known work is that part of the Treasury which faces St. James's Park, and grins horribly upon Holland's pretty edifice of Melbourne House and Kent's picturesque composition of the Horse Guards—and this is his only voucher to the honourable title of Royal Academician in the newly-established Royal Academy of Painting, Sculpture, and Architecture. This extraordinary event the architect commemorated by presenting his brother academicians with a geometrical elevation of his designs, shaded with Indian ink and tinted with gamboge in the manner of the day, and framed and glazed, with his autograph (John Yenn, R.A., architect). Of his right to this title Dr. Johnson bears witness in his Dictionary, wherein he says the "architect" is a noun substantive, and means a contriver of anything ; *ergo*, John Yenn is an architect, for he contrived the north front of the Treasury. His original (?) design for that contrivance is still in the collection of works presented by the Royal Academicians to the Academy.

Failures in Foundations.

E. Nash.

A very large proportion of failures may be traced to imperfect foundations, and too much care and sagacity cannot be exercised by the architect in arranging his underworks, keeping in view the principle that uniformity of bottom is of far more importance than anything else. We may imagine that he may build upon woolsacks if the whole be of that nature, and it is possible to build well upon a uniform bed of peat by carefully spreading the weight over the whole surface. Many structures have been so built, and, as respects London, most of the houses in the neighbourhood of Finsbury Square and Circus stand on a somewhat peaty bed, and the site of the beautiful mansion erected in 1816, for the London Literary Institution, had a bed of that sort. If the whole of that building had been founded upon the undisturbed surface of the peat, instead of cutting through it for the main external walls only, as was done, there would probably have been few, or perhaps none, of those irregular settlements which were occasioned by some subsidence of the internal walls, from the drying up of the peat a long time after the building had been erected, and which rendered underpinning needful. I do not mean to say that soft bottoms are to be coveted, but, on the contrary, I should like every architect to revel in the luxury of a hard one, such as chalk, which is about the best soil that can be had, very much on account of the homogeneity of its nature. When adding to old buildings it is often necessary to allow parts of old foundations to remain, and although it is bad in practice and has been sometimes attended with bad results, it cannot always be avoided.

Pedestals.

F. P. Cockerell.

The necessity for reducing the bulk of the pedestals of equestrian statues seems to have been universally felt. This has been done, in most cases, by breaking the pedestal in its length, and making the ends semicircular on plan, by this means preserving such a length as shall be in accordance with the impression of motion inseparable from a horse. In the crowded streets of modern cities a statue placed upon a pedestal of a low proportion would be lost unless the statue itself were of colossal size. This difficulty has been admirably met in several of the compositions of Rauch, in which the pedestal itself, being small, is raised upon a plinth, which is, in some cases, again subdivided or elevated upon a stylobate of

steps. Thus the barrenness of the long, unbroken line so constantly adopted in our own statues is avoided. The moulded capping and base and other enrichments have a rich and full proportion in reference to the die of the pedestal, without the exaggeration of actual size which becomes necessary in the large pedestal so commonly in use. Thus, the outline of the pedestal, rich in itself without crudely salient features, combines harmoniously with the statue, and within engages the eye, so that the plinth or podium below, being of the most simple and severe form, may be raised or lowered without materially affecting the composition of the principal object. We must suppose that it is this difficulty of the unavoidable prominence of the capping in large pedestals which has obfuscated the genius of some of our own sculptors, and driven them to the disastrous expedient of dispensing with all moulding in their pedestals, and placing their statues upon the chopping-blocks that offend our eyes in too many of our public places. It is not so easy to find a reason for the prodigious bulk of some of them, which are large enough to admit of a house being built upon them over the statue's head. I have not been able to discover the authority for the rapid diminution of the block sometimes adopted, which gives to the pedestal the character of a truncated pyramid; neither is the advantage of it at once patent. Much might be said upon the subject of London pedestals, but such has been the neglect of this accessory of monumental art that there would be but little room for favourable criticism. Our sculptors can scarcely be aware how much of the undiscriminating, though deserved, abuse levelled at many recent public monuments is due to the entire absence of proportion and design in the pedestals.

Mediæval Architects in France.

J. DALLAWAY.

Architecture is said to have been introduced into France by Charlemagne in the ninth century, and, if the churches erected by him are still perfect, with astonishing success. A school of architecture was then established in France, and it is asserted that they are not indebted to foreigners for the magnificent works which abound in that country. Rumalde, the architect of Louis le Débonnaire, the son and successor of Charlemagne, built the Cathedral of Rheims in 875. Ason built that of Séez, in Normandy, in 1050. Hilduard, a Benedictine monk, in 1170 planned the church of St. Peter at Chartres. Hugh Libergier, who died in 1263, was the architect of the celebrated church of St. Nicaise at Rheims. His contemporary, Stephen de Luzarche, began the Cathedral of Amiens, which was completed by Robert de Lusarche in 1222. The Abbot Suggerius had previously finished the church of St. Denis in 1140, which was considered as a model of perfection. The Nôtre Dame at Paris was built in the reign of Robert the Pious, but probably not the edifice now seen. The churches of Verdun, Laon, Liseux, and St. Remi at Rheims, are all of the thirteenth century. The architect Montreau attended Louis IX. into the Holy Land, and upon his return to France designed several churches, in which he introduced the ornaments and the style of those he had seen at Jerusalem. The Sainte Chapelle at Paris and the Abbey of Poissey are monuments of his skill. Associated with him was Joscelin de Courvault. At Rouen are two superb specimens of Gothic architecture: the cathedral, which is 408 feet long (that of Paris being only 396), and the width with the aisles 78. The nave is 334 by 34, and 100 feet high, and the central louvre, or open tower, is 240 feet high from the pavement. Of the abbey church of St. Ouen, the total length is 416, and the breadth of the transept 234 feet. In the fourteenth century, likewise, the grand cathedrals of Bourges and of Troyes in Champagne were finished. One of the lofty spires of the Cathedral at Chartres was erected in 1514 by John Texier. The finest cathedrals in France were built by the English during their possession of the northern provinces.

Stained Glass.

G. SHAW.

The coloured sheet glass used in making painted windows is made in two ways, each however being but a modification of the method of making spread glass—that is to say, by dividing and spreading a hollow cylinder. Sometimes the colouring matter pervades the whole of the glass of which the hollow cylinder is made; sometimes only a thin film is spread on one side of the cylinder; and occasionally the same or different colours are spread on the opposite sides of the glass: the former is called "pot-metal," the latter "flashed." The object in spreading the colour only superficially is to enable the workman, by removing the superficial colouring, to have a colourless surface on which he may paint, in enamel colour, another tint. When the same colour is on both sides, he may by removing one have a lighter tint of the same colour, or a colourless glass by removing both. When the sides are differently coloured, he may obtain the effect of the compound colour, of either singly, or have a colourless glass. Sometimes a window is constructed of pieces of coloured sheet glass, cut into the forms proper to each colour, and joined together by the plumber, such lines or shadows as are necessary to complete the simple design so executed having previously been drawn or stippled on the surface of the glass with an opaque black, fusible, enamel paint, which, by the application of heat, has been fused on the sheet of glass. Sometimes a piece of colourless glass is taken, and a design produced upon it by semi-transparent enamel colours being made into paints and applied with a brush, the after-process of "firing" effecting the partial fusion of the enamel paint and attaching it to the glass, the process of painting and "firing" sometimes being often repeated when the design is complex or the colours introduced numerous. It is commonly by a combination of these methods (that is to say, the insertion of pieces of coloured sheet glass painted upon with enamel colours) that painted windows are produced. It should be borne in mind that excepting the amber colour produced by peroxide of iron, when heated in contact with glass, and one or two others little used, no transparent colour can (practically) be "stained" upon the surface of colourless glass; all other colours, not produced in the manufacture of the glass itself, are applied by painting, the pigment being a coloured enamel more fusible than the glass itself, and further, that all such enamels have more or less opacity. In deciding what kind of designs should be produced in glass to be used for windows, the means at our disposal, not less than the purpose to which the design, when produced, is to be applied, require careful consideration. The transparent colours produced in glass are of the utmost purity and brilliancy; the range of colours, however, is limited, and gradation in the same piece impossible. The junction of the several pieces can only be effected by means which leave a black line of separation between them.

François Mansart.

F. MILIZIA.

This architect was never satisfied with his own designs, not even when praised by those who superintended, whence he often did the same thing many times over, ever seeking to add some improvement. The celebrated Colbert having requested him to make a design for the façade of the Louvre, Mansart opened his portfolio and showed him a number of sketches for it. The Minister was satisfied with them, and desired them to choose one and put it in a proper state to be presented to the king, at the same time requesting him not to alter it. Mansart refused to accede to this condition, not liking to be deprived of the liberty of changing it when a better idea occurred to him, and this was the cause of Bernini being sent for to Paris.

Gobelins Tapestry.

J. H. POLLEN.

The most renowned of modern tapestry, as is well known, is made at the State factories called the Gobelins, in the Rue Mouffetard, in Paris. This factory was established in the seventeenth century. A dyer, of the name of Gilles or Giles Gobeleen, a Fleming, established a dyer's shop there as early as the reign of Francis I. Two brothers, of the name of Cannaye, were makers of tapestry there at a later period. In the following century we hear of one Gouck, a Dutch weaver, and of a workman of his, of great skill, Jean Leoudson, who was the first to use the *haute lisse*. In 1667 Louis XIV., at the instigation of his powerful Minister, Colbert, established a State manufactory under the title of "Manufacture Royale des Meubles de la Couronne," in this building of the Gobeleens. Le Brun, the painter, was made first director. The designs of the tapestries made in the earlier years of this institution were from his pencil, and many have been engraved. At first the Gobelins factories were allowed to execute private orders. At present nothing is made there but at the expense of the State. The establishment is borne on the civil list, and the tapestries are either used for the State palaces or given as State presents. The work is finished with the completeness of painting, and is exceedingly slow of execution. A workman can scarcely execute in a year more than a square mètre, or a trifle more than a square yard. A piece may be seen in the Kensington Museum. The Gobelins tapestry is worked in the *haute lisse*—that is to say, the loom is upright, the warp threads are perpendicular. The weaver stands behind it, and has the exact picture or cartoon to work from. Each thread is passed through and pressed down so as to cover the warp completely, and is then brought through to the back. The older method was to use a *basse lisse*, a flat or horizontal loom with the painting under it, but the workman was unable to see with equal certainty what he was doing. The Gobelins tapestry is the most costly that is made, amounting in some instances to as much as 4,000 frs. (160*l.*) the square mètre. The dyes of the worsted are of extraordinary richness, and are very permanent. Old pieces of Gobelins of great merit may be seen in various houses in this country. In Paris, where old Gobelins tapestry sells at high prices, they have methods of manipulating the faded threads, and restoring their brilliancy, provided that the colours remain intact on the back, which is generally the case. In the early Flemish tapestries silk and gold threads were used, but the Gobelins confine the loom to the use of pure dyed wool fibre.

NOTES AND COMMENTS.

The great triumphal arch in the Champs Elysées has been surmounted for nearly three years with a plaster group of *Victory*, or the *Republic*, standing in a chariot drawn by several horses. It is the work of M. Falguière, the sculptor, who constructed the model in order that every one might realise his proposals for completing the arch. The group did not win approval when it was seen, but it was allowed to remain. The weather has operated on the plaster and it has become discoloured, while parts have fallen away. At length M. Falguière was requested to remove the figures, but he declined, and it is said he is not quite satisfied with his treatment. If the group were left standing much longer it would excite ridicule, for the spectator would see more of the framing than of the external coating. But how the difficulty was to be surmounted was not evident. To remove the ruin would be an interference with private property. The Government have at length decided to undertake all legal risks, and instructions have been given to M. Poulin, the architect, to clear the top of the arch and to restore it to its former condition. The history of the upper part is curious. Chalgrin, who might be called the original architect, proposed to surmount the arch with a figure of *Victory* in a car drawn by six horses. But Huyot, who was one of his successors, wished to substitute thirty statues on pedestals, with an open balustrade between them. It was Blouet who completed the structure, and apparently he did not approve of the sky-line being broken by sculpture in any way.

It is reported that M. F. Siemens has perfected the process for casting glass as if it were a metal, and that in a short time an experiment will be made with the material to ascertain how far it will serve for railway sleepers. In addition to its toughness and endurance, the glass cannot be affected by the atmosphere like other materials. The process is said to resemble the one in use for producing cast iron, but, instead of sand, finely-pulverised porcelain is used for the moulds. The material is obtained by depositing molten glass on plates of metal, and causing the mass to cool quickly. The quality will depend on the character of the metal employed for the plates. When iron plates are used the glass produced is about three times as strong as ordinary glass, but with copper, which cools quickly, the standard of strength rises to eight times. Cast glass will not be more expensive than cast iron, and in course of time it is likely to be the cheaper of the two. The new material can retain the transparency of common glass, and, while adapted for mirrors or windows, it can be utilised in many ways instead of iron and steel. M. Siemens believes it will cause a revolution in trade.

The English Consul at Nice reports that, owing to the success of the artistic pottery of Vallauris, two additional manufactories have been established at Nice and Mentone. The products of the latter are vases, with flowers in very high relief. Nice has gained repute for the mixed sober tints of the glaze, while M. Boutet has also just introduced a new and remarkably rich red. M. Clement Massier, the maker of Golfe Jouan and Vallauris, has also devised several new tints, and his exportation now reaches a total of 16,000*l.* a year. The ordinary domestic pottery of Vallauris is estimated at an annual value of no less than 2,000,000 frs., or 80,000*l.* It is supplied to various parts of France, and exported to Italy, and *viâ* Marseilles to Algeria, Greece, Spain, and Egypt. M. Magnat, the owner of the Mentone factory, which was visited by Her Majesty, produces about 30,000 frs. worth of his goods per annum, one-half of which is exported to foreign countries. Another example of Italian enterprise is found in the new glass works at Palermo. Under present arrangements from 800 to 900 square mètres of window glass per diem can be formed, but in the course of time there will be much more, including thick glass for building purposes. About 100 hands are employed. The sand is brought from Mazzara, on the south side of the island, and the salt, which is one-third cheaper than it is on the Continent, is also to be procured in Sicily. The greater part of the inferior glass hitherto imported came from Italy, the best glass being imported from France.

The annual meeting of the Association of Municipal and Sanitary Engineers and Surveyors will be held in Hanley on Thursday, Friday, and Saturday in next week. Some amendments in the rules will be proposed, and a new rule for the creation of a class of graduates. Papers will be read on "Rural Roads," "Sewage Operations in Nottingham," "Street Watering," "Public Supply of Electricity in Towns as an Illuminant," "The Economic Production of Coal Gas," and "The Refuse Destroyer at Nelson." Some of the sanitary and other works in the district will be visited.

The committee who have charge of the erection of the colossal statue of *Liberty* on Bedloe Island, New York Harbour, propose to have the inauguration on September 3, which is the anniversary of the signing of the Treaty of Versailles, by which the United States were recognised. But M. Bartholdi, the sculptor, desires the postponement of the ceremony for five or six weeks, in order that the masonry of the pedestal might be set before the weight of the figure came upon it. There is another reason for the delay. The preliminary expenses of the pedestal had to be borne by subscription. About 100,000 dollars were obtained, but the expenses will amount to five times that sum. President Cleveland has sent a message to Congress asking for a vote, which is not to be granted. Unless the newspapers can induce the public to subscribe a further sum to cover the expenses, there is a risk that the statue may be seized. That would be a strange and sad ending for a work which owes its existence mainly to a sculptor's enthusiasm.

The heavy rains which have fallen in Paris during several weeks, being absorbed by the foundations, have caused damage to buildings in progress, and much more was apprehended. For a time it was imagined that a part of the hill of Montmartre was likely to descend, and traffic was stopped in a few of the neighbouring streets. In cases of the kind wild notions are sure to spread, and it has been said that the impending danger was caused by the great church of the Sacré Cœur. M. Joffrin adopted this view, and, being an influential representative, found no difficulty in persuading the Conseil Municipal of Paris to institute an inquiry. The foundations of the building rest on piles which go down to the old quarry, and it may be assumed that if the ground was not stable, signs of a settlement must have been apparent in the masonry. But so much absorbent stuff is visible, it is not irrational to suppose that there will be danger until the ground around the building is covered with an impervious coating.

The Rev. John Scott, a brother of the late Sir Gilbert Scott, died of heart disease, in his seventy-seventh year, on the 17th ult. Mr. Scott, who had become a member of the College of Surgeons in 1832, graduated from Caius as thirty-sixth wrangler in 1846, and was ordained in the same year. He was curate of Long Eaton, Derbyshire, till 1847, perpetual curate of St. Paul's, Cambridge, till 1862, and rector of Tydd St. Giles's till 1867, when he was collated to the vicarage of Wisbech. He was appointed hon. canon of Ely in 1870, and rural dean of Wisbech in 1878.

The Free Public Library at the Patent Office, 25 Southampton Buildings, Chancery Lane, W.C., will henceforth be open to the public daily from 10 A.M. to 10 P.M., instead of, as heretofore, from 10 A.M. to 4 P.M. This library, in addition to the specifications, indexes, and other publications of the Patent Office, contains a large collection of the leading British and foreign scientific journals, transactions of learned societies, and text-books in the various departments of science and art.

The Board of Management of Montrose Lunatic Asylum lately obtained plans from several architects for the erection of a detached infirmary. These were submitted for report to Messrs. H. Saxon Snell & Son, who selected as the best those signed respectively "Lucidus Ordo," "Space," and "Good Samaritan." Ultimately it was determined to request the authors of "Good Samaritan" and "Space" to send in revised designs, and, in the result, the latter design, by Mr. Sydney Mitchell, of Edinburgh, has been selected for execution.





G. Romney. pinx.

Ch. Waltner. sc.

MRS FITZHERBERT.

(Collection of Mr. William T. Blodgett.)

An Etching from "L'Art."

Printed by Sprague & Co. 22 Martins Lane Cannon St. EC

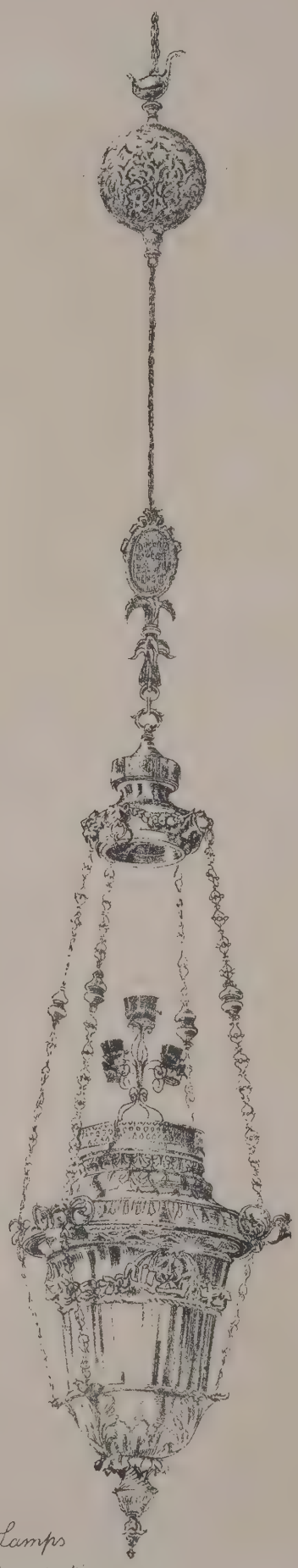


Pains Hill: Surrey:
View from North-West

Billiard Room
Housekeepers Room
Dressing Rm
Lavatory
Lavatory
Bed Room
Business Room.
Principal Entrance.



Principal Staircase	attics.	attics.	R. Norman Shaw. Archt
from Entrance & Inner Hall	Inner Hall.	Bed Room	7e Argyll St. Regent St. W.
	Butlers Pantry. Plate &c	Library.	December. 1881.



Lamps
S. Mark's Venice -
Sept 14th 1884 -





NORMAN DOORWAY CLYMPING CHURCH. SUSSEX.

(BEFORE RESTORATION)

Drawn By P.M. JOHNSTON

ILLUSTRATIONS.

MRS. FITZHERBERT.

THIS plate is taken from Rowney's picture, and is offered as a specimen of the etchings by which *L'Art* is embellished.

ARCHITECTURAL ILLUSTRATION SOCIETY.

1. PAINS HILL, SURREY.

2. NORMAN DOORWAY, CLYMPING CHURCH, SUSSEX.

3. LAMPS FROM ST. MARK'S, VENICE.

IT has long been felt by many members of the profession that some improvement in the illustration of architecture might be effected if architects themselves could have some control over the published illustrations. To this end a Society, which has taken for its name the "Architectural Illustration Society," has been formed. The arrangement of the sheet and style of the reproduction will be left entirely in their hands, and each sheet will be published with the Society's name attached to it. We have much pleasure in calling attention to the first three plates of the Architectural Illustration Society, which we publish to-day. Others will follow in due course. The honorary secretary of the Society is Mr. Mervyn Macartney, 52 Berkeley Square, W.

HOUGHTON HALL.

THE announcement of the sale of the Houghton estates by Messrs. Debenham, Tewson, Farmer & Bridgewater, must excite general interest, owing to historic associations, for they belonged to Sir Robert Walpole, the statesman who did so much to protect English liberty during a difficult period. Houghton, says a writer in the *Times*, was made by Sir Robert Walpole, who drew from secret service money without stint, and practically kept the keys to the strong boxes of the Treasury. There are no vouchers to tell what he spent, but he seems to have given *carte blanche* to architects, landscape gardeners, and house decorators. For once, when it was a question of the old family seat, Walpole was the most munificent patron of the arts. The cost of Houghton must have been something simply incalculable; for Sir Robert was far too free-handed and pre-occupied to stand on trifles with the artists and contractors he employed. He reminds us of the great king going to work at Marly or Versailles, grappling with impossibilities or difficulties, and giving *carte blanche* to the people he employed. The Squire of Houghton, then the master of England, sent down to his out-of-the-world Norfolk hall a host of skilled artisans with their overseers. The money to pay the wages is said to have been shipped in barrels and discharged periodically at the port of Lynn. He threw himself into the work with an insight and earnestness all his own; the master mind and the master's eye are conspicuous everywhere, from the broad general designs to matters of the minutest detail. He not only built his palace, but he laid out the park and woods, and designed the gardens with their formal embellishments. He swept away the old hall that had been his birthplace; he shifted the village to a site beyond his lodge gates; he restored the church where all the Walpoles lie buried. He called painters and sculptors into consultation to carve the cornices and elaborately chased chimneypieces and to decorate the panels and ceilings with classical and mythological designs. The taste of the architecture of the magnificent structure may be matter of doubt, and many have been the sarcastical criticisms passed upon it. But he showed his sound good sense in placing himself in the hands of designers of established reputation; and there can be no question as to the grace and harmonious beauty of the decorations. If the exterior of the building is oddly composite in style, everything within is a marvel of the unities. Then the interior was further enriched by a rare collection of paintings, though unfortunately most of the masterpieces were sold by the Minister's extravagant grandson.

The first impressions agreeably surprise one. Certainly the architecture is eccentric and almost grotesquely incongruous, but the general effect of the grey freestone is striking. The body of the building is an imposing square, with four quaint cupolas or domes flanking the roof at each of the corners. The front façade, with its lofty columns and bas-reliefs, is surmounted in the centre by a statue of Demosthenes—a flattery of the architect—supported on either side by figures of Justice and Britannia. Low semicircular colonnades, sweeping right and left, connect the mansion with its outlying wings, one containing the long and lofty picture gallery with its ante-room, and the other the servants' offices. The entrances originally were on the grand floor, the ascent to both the eastern and western fronts being by twin flights of broad steps with massive balustrades. These steps had a strange history. They were staked and lost at play by the grandson of Sir Robert. The shrewd winner was the owner of Claremont Hall, near Thetford, and he was sharp enough to stipulate that the stakes should be handed over at the loser's cost.

The present entrances are on the ground floor and are unpretentious enough. As the demolition of their steps never entered into the calculations of the designers, their best effects have been spoiled. Now we pass straight into what goes by the name of the arcade—a wide and low-browed crypt of white-washed stone, supported on ranges of groined arches. From the arcade doors open out upon the different corridors. The house ought to begin with the floor above, and there should be a really striking effect, looking up the central staircase. It mounts by easy quadrangular ascents to the roof of the mansion, and is lighted from a lofty cupola with richly-gilded mouldings. All the sides of the staircase are frescoed. But now there is no point from which you can embrace it in one comprehensive *coup d'œil*; for the basement is encumbered by a massive baldachino in stone, surmounted by a bronze figure of the Gladiator. It is by what was originally intended to be a back staircase that we make our way to the suite of State apartments. Nothing has been changed since Walpole built the house. The place is absolutely identified with one remarkable man. From the subterranean cellarage to the leaden coverings of the roof, there is the same thoroughgoing workmanship with the same disregard of cost. Whole shiploads of mahogany were specially imported from Honduras, and the state apartments and staircases, down to the very stillroom, are fitted with it in the same substantial style. Each door and window-shutter is about four inches thick, and the framework of the windows is of the same material. All that mahogany work, though simple in its design, is superbly gilded. So are the ceilings with their many compartments and the elaborate friezes and cornices. Everywhere are the same embellishments—the oak-leaves and the acorns, scallop-shells, and the badge of the Garter which was given while the mansion was being built, with now and again the initials of the builder. There is but one of the accounts extant connected with the building of Houghton, though all of them are said to have been scrutinised by a sister of Sir Robert's, who acted as his secretary and pay-mistress. It gives the cost of one of the gilded mahogany doors in the great drawing-room as 1,000*l*. There are five similar doors in the same apartment, while there are scores or even hundreds of others in the suite. These doors in the aggregate are but an item even in the wood-fitting, so that single bill may give some faint idea of the sums of money that must have been lavished on the hall.

The most interesting apartments in that interminable suite are Sir Robert's business-room and his dining-room. The business-room is a snug little library, with the folios and quartos still on the mahogany shelves just as he left them. And there is the high-backed elbow chair, which is said to have been his favourite seat, and the great writing-table, with the tiers of drawers underneath, in which he must have locked away many an important State secret. He used to withdraw to that work-room from the mob of his guests, when couriers were coming in and despatches were to be answered. But he was, at least, as much in his element of an afternoon in the dining-room. The dining-room is now styled the marble parlour, because the arched walls with the recesses between and the slabs of the sideboard are all in variegated Siennese marble. The defect in the arrangements was that the kitchens were far away. But heavy eating was subordinated to hard drinking, and the dining-room was appropriately consecrated to Bacchus. Over the fire-place is a fine alto-relievo of a sacrifice to the rosy god, and clustering grapes were sculptured everywhere on the ceilings and cornices, among the twining tendrils and the drooping vine-leaves. The dining-tables, though now taken to pieces, are still there, at which he entertained the foreign ministers who came to Houghton in his train and the troops of parasites who crowded to pay him court. And when the party in his great autumn gatherings overflowed the ample dimensions of the dining parlour the tables were spread in the noble hall next door, where he might have offered hospitality to half the county.

It would be tedious to give the inventories of the contents of the other rooms, which are less closely associated with him. The gems of the picture gallery were sold by his grandson to the Empress of Russia, but the walls are still fairly well covered. There is a good head of the minister over the chimneypiece in his business room, but the most pleasing portrait is that in the dining-room, representing him as a middle-aged man with a bright and benevolent face. Then there are sundry portraits of his two wives—the first of them, a Miss Shorter, daughter of a Lord Mayor of London, was the mother of his children—and of his only daughter, Lady Malpas, through whom the estates passed to the Cholmondeleys. In the great saloon is the set of Ciprianis, of which Horace Walpole wrote so bitterly when his

spendthrift nephew was replacing Guidos and Vandykes with the "daubs" of "that flimsy scene painter." There are still one or two heads by Vandyke, and some clever copies from the great Italian masters. But far the most attractive of the subjects left in the hall is Opie's *Fortune Teller*, with the sweet faces of a charming pair of sisters—the Gurneys of Earlham. Then there is a wealth of tapestry; the finest of the hangings are masterpieces from the Gobelin looms. And all were evidently woven to order, for the Walpole badges and monograms are to be seen everywhere running through the borders. Among the smaller objects of art are valuable articles of *virtu*; and Sir Robert seems to have greatly affected Japanese cabinets, of which some admirable specimens are to be found in a rather promiscuous collection. Standing over catacombs of cellarage, above light loam with a chalk bottom, there surely never was so dry a house. Although fires are never lighted in the library, the pages of the old volumes are unstained by damp, and in the stables hard by, which have never been repaired for 150 years, the first impression of the visitor is that the brickwork must have been newly pointed yesterday.

Houghton Hall was thirteen years in building. It was begun in 1722 and completed in 1735, as is recorded on a tablet let in above one of the doors. The timber Walpole planted was so excellent of the kind that his successors are tempted to fell and sell. His walnuts were cut up for musket-stocks in the Peninsular War, and the oaks commanded the highest price in the dockyards that were turning out the three-deckers for the Nile and Trafalgar. Appropriately enough, both Nelson and Wellington subsequently paid repeated visits to Houghton, and "the Duke" set an evil example to excursionists by scratching his name on one of the pillars of the colonnades. Houghton, by the way, was one of the two seats offered him by the nation, when he wisely made choice of Strathfieldsaye as the less expensive to keep up.

THE BRITISH MUSEUM.

THE following report on general progress at the British Museum has been presented to the House of Commons by the Trustees:—

In the autumn of the past year the Department of Prints and Drawings was moved into the new White wing, on the south-east side of the building, and, in placing the cases in their new position, the opportunity was taken for rearranging the collections in schools and classes convenient for reference. One of the upper galleries of the White Building will be occupied as a working room for students and artists, in place of a room on the mezzanine floor at present in use for the purpose, but found not to afford suitable accommodation. The full amount of furniture required for the exhibition gallery has not yet been delivered, but a selection of drawings and engravings will be placed on view within a few months from the present time.

Owing to gain of space resulting from the removal of the natural history collections, the keeper of the department of Greek and Roman antiquities has been able to place on view a large number of fictile vases, bronzes, terra-cotta figures, fresco paintings, and other smaller antiquities which it had previously been impossible to exhibit. He has also been enabled to make such a classified arrangement of the whole collection of objects as greatly adds to their value for purposes of study and illustration; the more important being placed in conspicuous positions and in favourable light. A further very considerable assistance for studying the collection of vases is being provided by an index to the subjects depicted on them, which is now at press. What is still urgently wanted for the department is suitable exhibition space for the sepulchral monuments and other antiquities stored in rooms in the basement, and not accessible to the public nor in light suitable for inspection by students. Proposals for additional buildings to bring these antiquities into view have been submitted to Her Majesty's Government, and are under consideration.

The completion of the arrangement of the ethnographical collection has been delayed by the necessity of revising that of the Oriental porcelain and securing the specimens in their cases, and also of placing the Hindoo and Buddhistic antiquities, the exhibition room for which intercepts an approach to the ethnographical gallery. Some sections have still to receive additions, and the labelling of the specimens remains to be carried out; but the rooms are now opened to public visitors, and will be found peculiarly attractive. The collections of Oriental porcelain and of Buddhistic antiquities in the adjacent room are also now on view.

In aid of the endeavour made at the International Exhibition of Inventions to illustrate the history of music, a selection of manuscripts showing the progress of musical notation from the tenth century onwards, with examples of choral service books, finely written and illuminated, part song books, lute music, &c, and with autographs of great composers of various countries, has been exhibited in the department of manuscripts, and a series of printed books of music has been placed on view in the King's library, descriptive guides being furnished for the exhibits.

Notwithstanding the accommodation given by the additional tables placed in the reading-room in the past year, the room is still frequently overcrowded, and at times visitors have to wait for a vacant seat. The average of daily attendance during the last five years has very much increased. In the twenty years from 1856 to 1875, the number of readers each year remained nearly stationary, at about 100,000, it being 105,310 at the close of the term. In the next ten years the number has risen gradually to 159,340, and at an accelerated rate during the last four years, previous to which the number stood at 134,273. The increase is greatly owing to the use of the electric light on dark days in winter, and the extension of hours to 8 P.M.; but it is also apparent during the ordinary hours. At all times of the day the room is much more filled than it was ten years ago, and the crowding is generally inconvenient in the afternoon. It becomes a question of difficulty how the continuous flow of demands for admission is to be met. The opening of free libraries might relieve the pressure, but, as yet, the parishes of London have not shown themselves generally willing to establish them; and, even if free libraries were accessible, the progress of education and other causes would probably always sustain the desire for admission to the Museum reading-room. It may, therefore, soon become the duty of the trustees to recommend to Her Majesty's Government measures for increasing the reading-room accommodation. It would not be practicable to enlarge the present room, but it might be thought advisable to open an additional room for readers in general literature, not engaged in special research, such as is provided in Paris by the Salle Publique in contradistinction to the Salle de Travail. In the meantime partial relief has been obtained by making use of a large room on the ground floor of the White Building for readers consulting newspapers and parliamentary papers, the greater part of these collections having been placed in the room itself and adjoining rooms.

With the view to assist readers in their studies, a press-marked index catalogue of all works of interest acquired for the library during the last five years, has been prepared by the superintendent of the reading-room, Mr. Fortescue. It is through the press and will soon be ready for use.

The departments of Oriental and of Greek and Roman antiquities have suffered from the loss of their keepers, officers of distinguished attainments and great experience, who had presided over them for many years. The death of Dr. Samuel Birch created a vacancy in the establishment which the neglect of the study of Egyptology in this country would have made it difficult to fill, had it not been that Mr. Le Page Renouf was found willing to transfer his services from another public department to the Museum. Mr. Renouf's knowledge of hieroglyphics, and of the hieratic and demotic characters, will enable him to continue the work of description of the Egyptian papyri commenced by Dr. Birch. During the long period of Dr. Birch's service as an officer of the Department of Antiquities, and as keeper of the Oriental Section, it was his good fortune to see an enormous extension of the collection by the addition of the Assyrian marbles and antiquities brought to light by Sir Henry Layard, and increased by subsequent excavations, and by the acquisition of a very large number of highly important inscribed cylinders and tablets from ancient Nineveh, and from Babylon and its neighbourhood.

As Keeper of the Department of Greek and Roman Antiquities for many years, Mr. Newton was prompt in availing himself of opportunities of making important additions to these collections, as in the purchase of the Castellani gems and jewellery, of sculptures from the Farnese Palace, of the Blacas collection of sculpture, vases, &c., as well as of individual works of the highest interest. He had also the satisfaction of finally arranging in a room built for the purpose the remains of the mausoleum, excavated by himself on the site of Halicarnassus, and of bringing into systematic arrangement the general collection both of sculpture and smaller objects

The increasing number of private lectures on several branches of antiquities shows a growing disposition to give studious attention to the collections. Miss J. E. Harrison has given thirty-five lectures on Greek Art; Mr. W. St. Chad Boscawen has delivered thirteen lectures to very full classes on the Assyrian and Babylonian antiquities; Mr. J. F. Hodgetts has lectured on Mediæval antiquities, and other lectures have been given on Greek sculptures and Egyptian antiquities. The whole number of lectures during the year amounts to 88. The practice of giving demonstrations from the objects exhibited to small classes is also on the increase, and suggests the hope that this most attractive form of teaching may before long be systematically established.

When the studies of archæology and ethnography become more generally accepted as proper to a higher education, the difficulty of finding a suitable lecture-room will have to be met.

At present rooms temporarily unoccupied have been used for the purpose, but this means of accommodation cannot be relied on for continuance, and none of the rooms devoted to the exhibition of the collections can be at all conveniently converted into lecture-rooms.

Entire sets of the Museum publications or selections have been presented to free libraries and to several other public institutions in the United Kingdom.

Sets of electrotypes of selected Greek and Roman coins have been presented to the Borough Museum of Sunderland, the Art Galleries of Wolverhampton and Oldham, the Bolton Museum, and the Free Library and Museum of Brighton.

Photographic reproductions of Italian prints have also been presented to art galleries and libraries in the United Kingdom.

A selection of 250 duplicate engravings and a set of the electrotypes of Greek and Roman coins have been lent to the Aberdeen Art Gallery and Museum for temporary exhibition.

THE HELLENIC SOCIETY.

THE annual meeting of the Hellenic Society was held last week at 22 Albemarle Street, Professor C. T. Newton, vice-president, in the chair. The hon. secretary (Mr. George Macmillan) read the report of the Council. After some reference to the contents of the last volume of the "Journal of Hellenic Studies," the report stated that 100*l.* had been granted towards the excavations on the site of Naukratis, with very good results, of which an account would be given by Mr. E. A. Gardner, who had superintended the work. Fifty pounds had been granted to Mr. Theodore Bent for excavations in Samos, which had not, however, owing to the conditions imposed by local authorities, led to much result. Reference was made to the proposed school at Athens, for which the house had now been built, and members of the society were invited to help to make up the required endowment by annual subscriptions. It was further stated that the sole use of a room at 22 Albemarle Street had now been secured for the library of the society. The balance-sheet showed a balance in hand of 621*l.* 13*s.* 10*d.*, over and above life subscriptions to the amount of 714*l.* invested in Consols. Forty new members had been elected in the past year. Eleven members had been lost by death or resignation. The total number of members was now 624, and of libraries subscribing to the journal seventy-two. The adoption of the report was moved by Principal Donaldson, who paid an eloquent tribute to the work hitherto done by the society, and expressed the hope that its number of members might be largely increased. The motion was seconded by Mr. A. S. Murray and carried.

On a ballot being taken the following officers were elected :—President—the Right Rev. the Lord Bishop of Durham ; vice-presidents—the Lord Justice Bowen, the Dean of St. Paul's, Mr. Sidney Colvin, Principal Geddes, Dr. J. K. Ingram, Professor R. C. Jebb, the Provost of Oriel, the Earl of Morley, Professor C. T. Newton, Professor A. H. Sayce, Mr. E. M. Thompson, the Master of Trinity, the Rev. H. Tozer, and Professor R. Y. Tyrrell. The following were elected to fill vacancies on the council :—Mr. Arthur Evans, Mr. L. R. Farnell, Mr. Ernest Gardner, Professor J. H. Middleton, and Mr. A. S. Murray ; while Professor Percy Gardner, Dr. Hubert Holden, Dr. Hort, Mr. H. F. Pelham, Mr. W. C. Perry, and Mr. J. R. Thursfield were re-elected.

In the usual address from the chair, Professor Newton reviewed the chief archæological discoveries of the past year, which, though not many, were pregnant. He first named the remarkable discovery of archaic statues on the Acropolis at Athens. Of these photographs were submitted to the meeting by Dr. Waldstein. Excavation had also taken place at Eleusis and in Bœotia, where a temple of Apollo had been found, and in it certain bronzes similar in character to the famous Apollo of Kanachos. In Crete had been found a grotto which was supposed to be identical with the traditionary birthplace of Zeus. In the island of Lemnos had been found a very remarkable inscription, in Greek character, but quite unintelligible. It might possibly represent the Pelasgian language, akin to the Etruscan. The inscription was published in the *Bulletin de Correspondance Hellénique*. During the last year the Germans, always very thorough in their excavations, had made arrangements for a final exhaustive examination of the site of Pergamon. The first instalment of the official record of their previous discoveries there had now been published in Berlin. Meanwhile other workers had appeared in the archæological field—our kinsmen from America. Special mention was due to the extraordinary industry of Dr. Sterrett in Asia Minor. He had collected countless inscriptions and had identified the site of Lystra, which had been visited by Paul and Barnabas. Dr. Sterrett's work might fitly be compared to that of Professor W. M. Ramsay, who had quite recently started on a fresh expedition into Asia Minor. Though the record of discoveries at Rome did not strictly come within the province of the Hellenic Society, the bronze figures lately found in the Via Nazionale deserved mention, as one of the figures, a seated athlete, almost certainly belonged to the school of Lysippus, between 330 and 300 B.C. At Smyrna the Evangelical School, which had done so much good work in the past, had in the past year resumed the publication of inscriptions. At Constantinople a patriotic Greek gentleman had given a large sum for the examination of manuscripts in the monasteries of the Levant, and some remarkable manuscripts—*e.g.*, letters of Julian and of Libanius—had already been discovered. A catalogue was being printed by the Syllogos Philologikos of Constantinople. The papyri found at Fayum in Egypt had now been carefully arranged at Vienna, and a short report had been published. They included a manuscript of the Gospel of Matthew and part of that of Mark, which was thought to be the earliest in existence ; a manuscript of Plato's Gorgias, also regarded as the earliest ; fragments of Hesiod, of the Argonautica and of the Odyssey ; and documents belonging to the Alexandrian and Arab periods which would need years of study. In conclusion, the chairman alluded to the thoroughness and beauty of illustration in the archæological publications not only of Germany and of France, but even of so poor a country as Greece, where the Ἐφημερὶς ἀρχαιολογικὴ was a most creditable production. In England such works were few in comparison with the wealth of the country, and it was much to be wished that private aid were more readily forthcoming in such undertakings. Mr. Ernest Gardner gave a short outline of the year's work at Naukratis, explaining that a full report was impossible until the mass of material had been carefully sorted and examined. Besides the great Hellenion and the temple of the Milesian Apollo found last year by Mr. Flinders Petrie, the temenos of the Samian Hera, the temple of Aphrodite, and the temple of the Dioscuri had now been discovered. The cemetery too had been cleared, but contained no graves that could be assigned to an earlier period than the fourth or fifth centuries B.C. The temples were remarkable for their simplicity, almost rudeness, of structure and material, and thus for their testimony to the characteristic readiness of the Greeks to adapt their work to local conditions. The material in this case was mud-brick. But the most important find of the year was a thick stratum of miscellaneous fragments of pottery and sculpture, which lay at about the level of the floor of the earliest temple of Aphrodite. Three specimens of pottery, a bowl, a plate, and an askos, which had been pieced together, were exhibited, and Mr. Gardner hoped that many more might result from further examination. The specimens shown were of a very fine and delicate ware, of Rhodian character, though possibly made on the spot. The statuettes, which Mr. Gardner described in some detail, were still more important for the light they seemed to throw, by their partially Egyptian character, upon the development of Greek sculpture. Mr. A. H. Smith, who had been at Naukratis, bore testimony to the thorough and skilful way in which the work had been carried out.

After some remarks from the chairman, the honorary secretary read a short paper by Mr. Theodore Bent upon his recent visit to Samos. This will appear in the forthcoming number of the "Journal of Hellenic Studies."

ARCHÆOLOGICAL ASSOCIATION OF IRELAND.

A GENERAL meeting of the Royal Historical and Archæological Association of Ireland was held in Dublin on Friday last. The secretary explained the financial condition of the society. They had 200*l.* balance on the current account, 12*l.* lodged in a special account, 10*l.* lodged in a Dublin bank, and 400*l.* in Three per cent. Consols.

A discussion arose as to the arrears into which the society had fallen with regard to the publication of the Journal and annual volumes, the last of which had been published in 1877.

The Secretary read a letter from Colonel Wood-Martin agreeing to undertake, at the request of the society, the honorary editorship of the Journal for a period of six months until a suitable gentleman was found.

Mr. Garstin proposed a vote of thanks to Colonel Wood-Martin for assenting to the request of the committee to act for some time as honorary editor of the society's publication. It was proposed that he be authorised to engage the assistance of Mr. Wakeman, and, if he deem it desirable, to use as materials for the Journal the matter already prepared for the annual volume.

The resolution was passed unanimously

On the motion of Mr. Cochrane, seconded by Dr. Joly, it was resolved that the committee be authorised to communicate with the local secretaries of Down and Armagh, for the purpose of holding the next quarterly meeting for Ulster, in July, at Newry, or other places selected by them.

The Secretary read a copy of a memorial to the Right Hon.

W. E. Gladstone, on behalf of the widow of the Rev. James Graves, who was the founder of the Archæological Association in 1849, and who up to his recent decease had acted as its hon. secretary. The memorial, after giving a short account of the work of the society since its foundation, concluded by appealing to the right hon. gentleman to make Mrs. Graves an allowance from the civil list.

The members present expressed on behalf of the society their approval of the memorial.

The proceedings terminated.

MANCHESTER ARCHITECTURAL ASSOCIATION.

On Saturday last seventeen of the members of the Manchester Association responded to the invitation of the president, Mr. L. Booth, F.R.I.B.A., for an afternoon's practice in sketching in the grounds of his residence, Crumpsall Green. Two hours (three to five) were allowed for sketching, two prizes of 2*l.* 2*s.* and 1*l.* 1*s.* respectively having been offered by Mr. Booth for the best and second best sketches. Competitors were allowed to finish their work either in water-colour, pencil, or ink, and Mr. A. Darbyshire, F.R.I.B.A., was the judge. His decision is, no doubt, awaited with some interest. After sketching, the gentlemen present enjoyed the hospitality of Mr. and Mrs. Booth, and the remembrance of the kindly welcome they received, and the happy combination of work and play (bowls, tennis, &c., were afterwards indulged in), will probably contribute to render the afternoon and evening one of the most pleasant memories of what has, in many respects, been a very successful session.

VICTORIA HOSPITAL FOR CHILDREN, CHELSEA.

The New Out-patients' Department and Nurses' Home of this building was opened on Wednesday by the Prince and Princess of Wales. A specially-designed golden key, made by Messrs. Chubb & Sons, was presented by the architect, Mr. H. Saxon Snell, to their Royal Highnesses. The heart-shape of the bow of this key is suggestive of Charity, while the group of Charity herself with children round her, surrounded by rays against enamel, completes the idea. The princely coronet which surmounts the bow has below it a shield giving the combined arms of the Prince and Princess of Wales, beside which on either side are the Prince's plumes with motto, the Danish raven's wings underneath on the right also referring to the Princess. The Æsculapian emblem of restoration to health—the serpent drinking from a patera—appears to the right of the group, emblematic of Charity; whilst on the opposite side are the heart and the joined hands suggestive of benevolence and aid. The juncture between the bow and the stem of the key is enriched by a coronet. Between this and the main fluted stem appears the device of the Princess Louise on the lozenge-shaped shield usual for a lady. On the obverse are the arms of the Princess, and on the reverse the family charge of "Lorne," both in enamel. The reverse of the bow of the key has a heart-shaped shield enwreathed by palms, and bearing the following inscription:—"Presented to Their Royal Highnesses the Prince and Princess of Wales on the occasion of opening the New Wing of the Victoria Hospital for Children, 30th June, 1886."

The hospital was established in the year 1866 for the treatment as in-patients of boys between the ages of two and twelve years of age, and of girls between the ages of two and sixteen; also as out-patients all children under sixteen years. It is also a training-school of nurses for children.

Accommodation is provided for sixty in-patients in the old building occupying the original site, and which has been judicially altered to the purposes of a hospital. It is, however, contemplated as soon as funds will permit to add an additional wing constructed upon more modern principles. Hitherto the only accommodation for out-patients has been the basement of the old building.

The accommodation for the nursing staff was also very inconvenient, as part of it had to be located in premises on the opposite side of the Queen's Road.

The architects of the new building are Messrs. H. Saxon Snell & Son. The ground floor is devoted to the purposes of an out-patients' department, consisting of a waiting-hall 53 feet by 20 feet and 16 feet in height, and ranged down one side of it are the surgeon's and physician's rooms, a dressing-room, and a small ward for the temporary accommodation of those patients who have undergone operations. At one end is a dispensary, with a separate small waiting-room for nurses coming from the main building for medicines. This department is also entered by a gate from Tite Street, and the courtyard giving access to it has a low shed ranged down one side for the protection from the weather of the children's perambulators. The upper part of the building is entirely detached from all communication with the out-patients' department upon the ground floor. It consists of three floors containing twenty-nine bedrooms for the nursing staff and sisters, and in addition a sitting-room and bedroom for a superintendent. Two sitting-rooms are also provided, the one for nurses and the other for lady probationers. The basement of the building contains the porter's apartment and mortuary, post-mortem room, a drug store and cellarage. The cost of the structure will be 7,500*l.*

The builder is Mr. Charles Wall. The heating and gas-fittings were supplied by Messrs. Berry & Sons; the locks and ranges by Messrs. King & Co., of Hull; the sinks and baths by Messrs. Cliff & Sons, and the tiling by Messrs. Simpson & Sons.

Bygones.

"*Antiquity after a time has the grace of novelty.*"—Hazlitt.

THE COMPETITION FOR ST. GEORGE'S HALL, LIVERPOOL.

In the early part of the year 1839 an announcement was made of a competition for the proposed St. George's Hall, Liverpool. Almost simultaneously a committee of the Institute of Architects had prepared a report on competitions, in which it was pointed out that a reform was necessary in the drawing up of instructions and in the mode of judging the designs. Some correspondence which took place between Mr. E. B. Lamb (an architect who is likely to be remembered by his Martyrs' Memorial Church in Clerkenwell) and the committee will suggest how so important a competition was conducted.

The first intimation (says Mr. Lamb) which I had of the proposed erection of St. George's Hall was a plan (with printed resolutions and instructions to architects) from a committee, which was sent to me by post, but without any name to it except that of the printer. The printed plan and instructions are very well as far as they go, except as to the time specified for sending in the designs, which is so very limited that, unless competitors neglect a certain business for an uncertain one, the drawings cannot be prepared with that attention which a building of this extent demands. Immediately after the receipt of the printed instructions, I wrote to the chairman of the committee—for I did not then, nor do I now, know his name—to request he would give me further information on the subject. In this letter I referred him to the report of the Royal Institute of British Architects, and quoted the queries therein named, together with some others I thought necessary. The queries are as follows:—

1. By whom are the designs to be examined and selected?
2. Have any designs been laid before the parties previously to the competition being proposed?
3. Have the parties any architect, or person professing to be an architect, in their employ?
4. Will any means be adopted to ascertain that the designs can be executed for the sums estimated?
5. Will the parties undertake to lay aside all designs which cannot be executed for the sum estimated?
6. Is it the intention of the parties at once to exclude from the competition all designs not in strict conformity with their instructions in every respect?
7. Will the architect whose design is selected be employed to execute the work, provided his character and standing in the profession is such as to render him unexceptionable?

To which letter I received the following reply:—

Liverpool: March 14, 1839.

Sir,—Our answers to the queries of your letter are as follow:—

1. By the committee; a body of gentlemen of the first respectability in Liverpool.
2. No.
3. No.
4. See ninth paragraph of the printed particular.
5. See ditto ditto.
6. It is.
7. Most probably.
8. First part—No. Second part—Yes.
9. Two premiums—250 guineas and 150 guineas. (See advertisement in London papers.)
10. Good; no unusual expenditure.

I am, Sir, your very obedient servant,

E. G. Deane, } Sec.
Thos. Harvey, }

E. B. Lamb, Esq., Architect,
25 Henrietta Street, Brunswick Square, London.

It is evident enough how very unsatisfactory the first answer is. Respectability is certainly an important part of the qualifications of a committee man, but that it implies intuitive knowledge in architecture I think may be doubted. It would be a novel mode of proceeding if a lawyer were applied to to sit in judgment in a surgical case, and it would be equally novel for a surgeon to usurp the powdered wig and gown of an advocate, yet in neither case is it necessary to have a knowledge of the principles of taste as well as practice. Yet in architecture a committee is formed of respectable persons, without any previous acquaintance—the subject, to sit in judgment upon probably 80 or 100 different designs, comprising perhaps nearly 1,400 drawings. If they are not in the first instance bewildered by the confusion of subjects before them, and at once get out of their difficulty by applying to a well-known architect for a design, instances of which have more than once occurred, they perhaps form their opinions from a showy design, without taking into consideration the correctness or incorrectness of the architecture, the practicability of its execution, the convenience of accommodation, or the likelihood of its being erected for the sum specified.

I will now only call attention to the seventh query and answer. The query is sufficiently explicit to expect an unqualified reply, yet we have one, considering the want of candour apparent in the committee, of a very suspicious nature. I do not for a moment doubt the respectability of the committee; but they appear determined that no influence of any kind shall bias them, not even that of an inquiry if they are acquainted, as amateurs, with architecture.

The remaining answers relate merely to unimportant questions. I may just state that the advertisements did not appear in the papers until some days after I had received the printed instructions; at least I did not see them.

After a lapse of some time I found that other business prevented me from time to time giving that consideration to the subject which its importance required, and upon calculating the time it would take to prepare the necessary drawings to my own satisfaction, and without great inconvenience and loss to myself, I determined to write again to the committee for an extension of time, and also to recommend a public exhibition of the designs previously to any decision being formed by the committee. A copy of this letter is subjoined:—

April 9, 1839.

Gentlemen,—I beg to thank you for your reply to my letter of inquiries relative to the St. George's Hall, Liverpool, and I trust you will accept my apology for again troubling you; but I am now about to ask a greater favour, and one that, if granted, will be a boon to the profession, who are about entering this competition, namely, for an extension of time for sending in the designs. And when I point out to you this necessity for doing so, together with the benefit which must be the result to the committee, I hope it will not be considered an idle request.

From the printed particulars furnished to architects by the committee, it is evident that the designs cannot be completed with fewer than from twelve to fifteen drawings, nearly all of which will require to be drawn on double elephant paper (3 feet 4 in. by 2 feet 3 in.), since the requisite subjects will probably be as follows:—Ground plan, one pair plan, two pair plan, at least three or four elevations, three or four sections, and one or two perspective views. This is the smallest number of drawings which will be necessary, in order fully to explain each design. Now the actual time for the mere labour of making such a series would be at least from thirty to forty days; while to prepare an estimate and description would occupy at least five or six days more—so that from five to six whole days would be required for this purpose alone. The most important part of the task, which I have not yet mentioned, is that of preparing the design itself, preparatory to making fair transcripts of the several parts of it, the time requisite for which it is utterly impossible to state, since it must depend entirely upon the study bestowed by each individual in maturing his first ideas. In some cases, therefore, this preparatory labour may be very considerable—in others, exceedingly little: almost the very first ideas that happen to present themselves being adopted and proceeded upon at once, however stale and commonplace they may be in themselves. Consequently, if inadequate time be allowed for duly considering the subject, little more perhaps than could, without inconvenience, be spared for merely making out fair copies of the original sketches, many architects will, on that account alone, be deterred from entering into the competition, feeling that, unless they should happen to succeed entirely to their own satisfaction in the very first instance, they would have no time for reconsidering or correcting any of their sketches—probably be compelled to let pass many imperfections they would afterwards detect. It is hardly to be supposed that any member of the profession who has any practice at all can devote the whole of his time to works where the chances are a hundred to one against his success; therefore, if the committee require designs from men of experience as well as from the juniors, they will at once see the necessity of an extension of time.

I am aware that a single application of this nature will have but little weight; but from the conversations I have had with several members of the profession, I am induced to think that the majority, if not all, would feel benefited by being allowed more time for preparing their designs. Yet if none applied, there would be but little hope of obtaining this boon. I need hardly state that the committee would also be gainers in the like proportion, as a work of such magnitude requires the greatest deliberation, not only on the part of the architect who produces the design, but also on that of the judges who have to determine upon its merits.

I therefore beg to suggest, and I do so with the greatest deference, that immediately upon the receipt of all the drawings by the committee, they should be thrown open to the public for exhibition, for at least one month previously to any decision being formed by the committee. This is a request (and I put it most respectfully) the profession have some right to expect would be acceded to, as they could then look with the greatest confidence to the ultimate decision of the committee, and it would be an evidence to the public of their disinterested motives; it would be also an honourable precedent for all future competitions in the kingdom; and, by the confidence which it would be sure to establish, be the means of calling together a greater number of the profession than any public competition hitherto known. What has lately taken place with regard to the Nelson Monument is an example that ought not to be thrown away; and, indeed, the eyes of the public are now beginning to be so opened by it that, sooner or later, I am convinced, not only a public exhibition of all the designs, but one previous to any premiums being adjudged or selection made will be established as a matter of course in all architectural competitions of any importance. The opportunity now presents itself to you of letting the town of Liverpool be the first to originate so exceedingly salutary a system—one fraught with numerous benefits to all parties concerned, but to none more so than those whose interest it may be presumed it is to obtain a design which shall have stood the test of such public ordeal, and obtained the greater number of suffrages from persons of experience and taste, and uninfluenced by other bias than the desire of obtaining such a structure as shall reflect credit on their townsmen. Among the minor advantages which would in this case attend such exhibition, would be, that it would attract numerous members of the profession, both from the metropolis and from other parts of the kingdom.

May I beg the favour of your laying this letter before the committee as early as possible, and trusting they will give some consideration to the observations which it contains, and waiting their decision,

I am, Gentlemen, &c.

Messrs. Deane and Harvey.

I again wrote the following:—

May 3, 1839.

Gentlemen,—A short time back I wrote to you respecting the public competition for the erection of St. George's Hall, Liverpool, and not having received any reply to that letter, I am again obliged to trouble you with a request that you will be kind enough to state whether the committee have deemed it of sufficient importance to take into consideration the subjects therein contained. I shall feel obliged by your reply within next week, as I am about publishing some observations of public competitions, and wish to name this amongst others in the course of those observations. I feel that it is necessary to apologise for giving you so much trouble, but on a subject of so much interest to the profession, and to the public at large, I am sure you will readily grant me an excuse. I am, Gentlemen, &c.

Messrs. Deane and Harvey.

And, after waiting without any reply, received the following:—

Liverpool: May 4, 1839.

Sir,—In reply to yours of the 3rd, we beg to state that we answered yours of March 9 on the 14th of the same month, and have not received any communication from you since, excepting your letter of yesterday.

If you will refer to our letter to you, dated March 14, we think you will find that we there answered all your inquiries; but if you wish any other information which it is in our power to give, we shall be most happy to afford it you.

We remain, Sir, your very obedient servant,

E. G. Deane,
Thos. Harvey, } Sec.

E. B. Lamb, Esq., Henrietta Street, Brunswick Square.

I insert this letter as a link in the chain, and to show the remarkable circumstance of mine not reaching its destination. The little hopes I had entertained of having my request acceded to were now fled; but as I still felt interested in the subject, I determined to write again, and send a copy of my letter of April 9. The letter accompanying that is as follows:—

May 7, 1839.

Gentlemen,—I received your letter of the 4th inst., and am greatly surprised to find that you have not received mine of April 9. As this appears to be caused by the neglect of the postman, or other person concerned in the delivery of letters, I purpose making inquiries at the General Post Office on the subject, particularly as the letter has not been returned to me—the course usually adopted when letters have not been delivered as directed. I send you a copy of the letter,

And am, Gentlemen, &c.

Messrs. Deane and Harvey.

This letter produced the following reply:—

Liverpool: May 8, 1839.

Sir,—In reply to your letter of yesterday, we beg to inform you that, upon further search, we find your letter of April 9 was duly received and laid before the committee, who came to a resolution, after much deliberation, that it was inexpedient to grant any extension of time. The other subject mentioned in your letter (the public exhibition of plans) is a matter for the future consideration of the committee.

We beg that you will accept our apology for the unintentional neglect of which we were guilty in not answering your letter of April 9, and also for the equally unintentional error which we committed in stating that it had not been received. It reached us by the same post as one upon the same subject from Mr. Donaldson, the Secretary to the Royal Institute of British Architects, and they were both laid before the committee without delay. Their determination was communicated by us to Mr. Donaldson, and we were under the impression that it had been communicated to you also, but it seems we were in error.

We trust you have had no further trouble about it, and remain, Sir, respectfully your most obedient servants,

Edw. G. Deane, } Secs.
Thos. Harvey, }

E. B. Lamb, Esq., 25 Henrietta Street, Brunswick Square.

It is certainly a singular coincidence that a letter which could scarcely be forgotten on an occasion of this nature, should happen to be so misplaced as to prevent its being answered, but I beg most distinctly to state that I perfectly agree with the writers that the neglect is unintentional; at the same time, I may with justice add that this sort of neglect is not an unfrequent occurrence with committees and their officers. Other instances might be named where plans have been laid aside and entirely forgotten by the committee.

I have now laid before you the usual kind of correspondence which takes place between architects and committees, and I think, upon the slightest consideration, it will appear who are the most benefited parties. I do not mean to impugn the Liverpool committee; I merely take them as a sample of the apparent openness and disinterestedness of such bodies. Can persons so constituted reasonably expect architects to enter into a competition when they withhold that evidence of their fair intention, which ought to appear, by not publishing their names to their papers, so that architects should be as able to form an opinion of their being fully qualified for their duties, as it should be evident to them that architects are qualified for theirs. In the present state of competition committees it is of small importance whether the architect wastes his time in bestowing deep study on his design, or merely commits to paper the most commonplace ideas, for the little knowledge of the subject usually shown by the judges is insufficient to discriminate between genius and mediocrity.

A copy of the advertisement having fallen into the hands of Harvey Lonsdale Elmes, he consulted the unfortunate Benjamin Haydon on the subject. "By all means, my dear boy," said the painter, "send a design; they are noble fellows in Liverpool. But let it combine grandeur with simplicity; none of your broken-up and frittered abortions, but something grand." Elmes worked in this spirit, and his design was selected. The following paragraph in a local paper suggests that it was approved because it was supposed to represent a cheap building:—

The successful design is, we believe, by Mr. Elmes, of London It is of very pure Greek architecture, the principal front being a portico of grand proportions, and enriched with bas-reliefs, on the execution of which, however, much depends. Perhaps within the limits of their resources (30,000*l.*) the committee could not have made a more judicious selection, the insuperable objection to many designs, from their extent and elaborate detail much more captivating to the eye, being that the expense of executing them would far exceed the funds at the disposal of the committee.

It is remarkable that after nearly fifty years the bas-reliefs which gave so much value to the design are not in their places. This competition was hardly settled when another took place for the Assize Courts, which were to be constructed at right angles to St. George's Hall. Here, again, Elmes was successful, the second prize going to Mr. Greig, of Liverpool. The decision was not accepted with unanimity, and a correspondent of the *Liverpool Albion* argued that the committee were led away by the beauty of the drawings, which, moreover, were "cooked." In the course of his letter he wrote:—

In Mr. Elmes's perspective drawing we have a very pretty picture, exquisitely drawn, showing the railway terminus on the one hand, and the assize courts on the other, with St. George's Hall occupying a prominent feature in the centre. With this picture it is very obvious the committee have been misled. It is a most successful deception. Now for the proof. The height of St. George's Hall is about 85 feet. The fall of the ground, in the direction of the courts, is 27 feet. The height of the courts at the lowest end is 76 feet. There should, therefore, be shown in the drawings a difference of 36 feet in their relative heights, but as the courts do not come to the extremity of the fall, say 32 feet. This difference, however, is most dexterously evaded, and leaves us to imagine the courts and St. George's Hall will be, to a spectator in the foreground, very nearly of one height. But this is not all. In this height of 76 feet is included a dead wall, rising 15 feet above the parapet of the colonnade. This wall is so much set back from the front that it could not be seen except at a considerable distance from the building. This, in effect, would rob it of 15 feet more, which, added to the 32 feet above, gives us 47 feet, or, in other words, taking as much height from it, within 3 feet, as goes to a five-storey warehouse. Let it be understood this is in relation to St. George's Hall, but in relation to itself this dead wall would practically reduce the height of the building to 62 feet, making the visual difference between the courts and St. George's Hall about 50 feet. The perspective drawing, however, does not in the highest degree convey this difference; but, in execution, this would be necessarily exhibited. Another example. The stylobate at the south-west corner is shown only 6 feet 6 inches high, whereas the real height is about 13 feet. Moreover, windows are shown in the plans which are omitted in the elevation, but had they been shown they would have spoiled the effect of the picture. More examples of this nature might be adduced, but let us come to the interior arrangements, for, after all, these are by far the most important parts to be taken into consideration; but it is very evident Mr. Elmes calculated on the incompetency of the committee to measure his perspective drawing and compare it with his plans. The event shows he was right. This gentleman, in the document attached to his plans, asserts that he has complied with the printed instructions, and that every apartment contains the full number of square yards required by them. His designs, however, show he has exceeded the limits by 36 feet in the length of the building, but this is concealed in the plan, and is only to be detected by carefully examining the section. His courts fall considerably short of the areas required, which were 290 square yards for the crown court, and 320 for the civil court; but the space given by Mr. Elmes is 231 yards for the former and 264½ yards for the latter, making a deficiency of 59 square yards for the one and 55½ for the other, making a total deficiency of 114 square yards out of 610; but there are two lobbies at the end of the courts, situated behind some columns, which, if he mean to include, would leave a deficiency of 74½ square yards. From this it is very clear the prize was not awarded Mr. Elmes for strict adherence to instructions, although he deliberately says he has done so.

It was even said that Elmes's design was copied from one made by Barry for the London Law Courts, at a time when it was proposed to erect them in Lincoln's Inn. In spite of all charges the desire for fair play upheld Elmes. Having succeeded in one competition against seventy-four competitors, and in the second against eighty-five, it was felt that a better man could hardly be found, and when it was resolved to make one building of St. George's Hall and the law courts, he was asked to remodel his designs in order to attain that end. He substituted Corinthian for Ionic and Doric, made other alterations, and insured the unity which every one knows. But Elmes was not destined to see the completion of his work. He fell into delicate health, and was advised to spend a time in one of the West India islands. He was a doomed man when he left England, but his end was hastened by a fall from a carriage. At the time of his death in 1847 he had only reached his thirty-fourth year.

CHURCH BROUGHTON CHURCH.

THE parish church at Church Broughton has been reopened after restoration. The following account is given by Mr. J. R. Naylor, architect, who was engaged in the restoration:—

William the Conqueror, in the year 1080, gave to Henry de Ferrers, among other lordships, that of Tutbury. This nobleman, for the glory of God, founded there a religious house, which he and his wife, Bertha, endowed with, among other gifts, the tithes of the manor of Church Broughton. It is probable that the monks of Tutbury Priory built the first church here, some parts of which still remain. The easternmost respond to north arcade, with its cap and base, and the bases and shafts to three piers on north side of nave, part of a buttress on the south side, and the foundations of the angle buttress at west end, are all of this date and *in situ*. The church had an oblong nave, 34 feet by 18 feet 3 inches, with a north aisle and chancel, both of which had apsidal terminations.

The font belonging to this building, which still remains, is one of the finest examples extant of Norman workmanship: it is circular, 2 feet high, and 2 feet 6 inches across the top. The pattern with which it is ornamented is remarkable, and consists of interlacing triangles and circles symbolical of the Trinity and Eternity (see "The Churches of Derbyshire," by the Rev. J. Chas. Cox). In the centre of the eastern face as now fixed is a cross with Greek head, the whole being in a wonderful state of preservation. The church has at different stages undergone many alterations, each one adding an interesting chapter to its history. The first development was in the early thirteenth century, when a flat east end was built to the north aisle; also a south aisle was built with entrance to church from this side, the original entrance being at the west end.

In the fourteenth century, probably the reign of Edward II., the present chancel was erected with its beautiful tracery windows and canopied buttresses, also priests' door, sedilia and piscina, forming one of the most harmonious and complete examples of this style in the country. I must make special mention in connection with the chancel of the small trefoil glazed opening on the south side; this is in its original position, and is fixed to the face of the chancel wall with no internal reveal at all. During the restoration some

parts of the walling over this opening had to be rebuilt, when an arch was discovered in the thickness of the wall, the outer edge of which had been roughly chopped off (leading to the conclusion that this was continued, and formed the vaulted roof of an anchorite's cell, from which a view of the high altar could be obtained). There is a good deal of interesting study for the archæologist in this corner of the church.

The very beautiful recess on the outside wall, with an ogee arch moulded and cusped, the label to which terminates in a floriated cross, the whole standing on a slab with front of sunk quatrefoil panelling, I consider to be of the same date as the tower. Over this recess, which is generally, and perhaps with truth, called the Founders' Tomb, though never utilised for that purpose, is a three-light Late Decorated window, with transom and traceried head. This is of decidedly domestic character, and was possibly brought here from Tutbury, the window originally in this position being like the others on same side of chancel, and when taken down the head was fitted to jambs of earlier date, and now completes one of the south nave lights.

The building of the tower and spire formed the next stage in the work, and as this took some considerable time the rest of the church was left intact, so that the services could be carried on without interference, and these building works proceeded independently till the whole was completed, including the westernmost arch of north and south arcades. The west wall of original church was then removed, and the junction between old and new parts of the church effected in the somewhat clumsy manner now seen. The new arches on north side and the arcade on the south belong to this date. The present south entrance is interesting, inasmuch as the jambs belong to this date, and were built with the tower, but the arch is the old one removed from the early thirteenth century door in the centre of this aisle.

To follow the church's history still further. In about 1506, in the reign of Henry VII., the original pointed roof of nave (see line on tower) needing extensive repairs was removed, and the present flat one substituted. This opportunity was taken to raise the walls over the arcades, but what clerestory lights were inserted must remain a matter of conjecture. I think not the present ones, as these are not set out in any way to fit with the principals of the roof; in fact, one came about centrally with a window, so having no support at all for its wall bracket.

I do not consider that the chancel roof was altered until 1727, when the present one was put on. The clerestory lights in the nave were also inserted about this time. The old chancel arch was remodelled and lowered, and plaster members both to arch and jambs were formed on the old stones. The bells are dated 1610, 1614, 1810, and occupy a beautiful chamber, vaulted, and with ribs and carved corbels.

In 1846 the church again underwent important repairs and alterations, the north aisle was rebuilt, and all its interest lost. Both aisles had new roofs. The porch was added, old doors and ironwork destroyed, the floors throughout the church were raised about 2 feet, entirely spoiling the proportion of the building. The old oak pews were taken out and modern pews of stained deal introduced. The taking away of the old oak we must regret, as every mark about an old building forms part of the history of the fabric, and, except under very special circumstances, ought in no way to be tampered with. This applies in the strongest possible way to all work of any kind introduced prior to the commencement of this century.

I must here record a special protest against the abominable practice of tooling by unpractised hands the paint and whitewash off church walls. Only a short time ago I found an old mason "set on" to clean one of the most interesting churches in Yorkshire, and I can assure my readers that his ideas and actions, against which I most indignantly protested, and with some effect, were such that all in any way interested in the marks of our forefathers and the history of our land must deplore most earnestly.

Early in 1885 the state of the tower and spire was such as to give great cause for uneasiness to the custodians of the fabric, and at the meeting of the parishioners it was decided that a professional expert should be called to advise on the best course to pursue. The committee engaged the services of Mr. J. R. Naylor, of Derby, diocesan surveyor, who made a careful examination of the tower and spire, when it was found that the ivy which formed such an ornamental feature was the cause of the whole mischief. It had forced its way to such an extent into the joints of the masonry that the spire was actually being displaced by it. It had also forced the parapets of the tower out of the perpendicular—in fact, to such extent that it was found advisable to take down and entirely rebuild them. The lead-work of gutters was also forced out of position, and the water did great injury to the tower walls.

The committee decided to carry out the works proposed in Mr. Naylor's report, and in addition to thoroughly restore and re-point the whole of the tower and spire, carefully removing every particle of the ivy. This has been done, and the whole re-pointed and thoroughly repaired, no old work being in any way removed or tampered with. The vicar (the Rev. W. Auden) then decided to restore the chancel, and take upon himself the responsibility of providing the whole of the funds necessary. This work has included the rebuilding of some part of the east end and resetting the tracery of windows, repair of all decayed and defective masonry, lowering and replacing floors at the original levels; cleaning walls by washing, no tools being used; reseating in oak, new altar and tile floors, the panelling from old chantry screens being used as reredos. The chancel arch and the wall over were cleaned from plaster and whitewash, when it was found that the original arch was much higher than that then existing. It was determined to rebuild on the old lines, using all the old mouldings and stones that were in any degree perfect. This has been effected with great success, the boldness of the original design being strikingly apparent. The committee and other friends, seeing the effect of the work going on, decided to make a special effort to restore the nave in character with its extremities. This has been completed inside and outside. The whole has been cleaned from paint and whitewash, the arcade made safe, mouldings repaired and replaced where wanting, floors lowered, seating throughout in oak, and new floors of wood blocks introduced.

The contractors employed for the work have been Messrs. Walker & Slater, of Derby. The heating was carried out by Mr. Jerram, of Derby. The wrought-iron altar rails by Mr. E. Haslam, and the carving by Mr. E. Bridgeman, of Lichfield. The chancel tiles were supplied and laid by Messrs. Godwin & Sons, of Hereford, and Messrs. Jones & Willis, of Birmingham, supplied the altar cloth and altar desk (the gift of Miss Sampson in memory of her father), while the brass pulpit desk is the work of Messrs. Hart, Son, Peard & Co., of London.

LEGAL.

High Court of Justice.—June 30.

(Before Mr. Baron Huddleston and a Special Jury.)

Kerr *v.* Sandys.

ARCHITECT'S FEES.

This action was brought by Professor Kerr to recover the sum of 1,341*l.* from Lieutenant-Colonel Sandys, for services rendered in preparing plans and making out bills of quantities for reconstructing the mansion house of Graythwaite, in the county of Lancashire, belonging to the defendant. The defendant contended that the charges were excessive, that it was not his immediate intention to carry out the plans, and therefore no bill of quantities was necessary, and should not have been charged for. Shortly before trial the defendant amended his defence by further pleading that the working plans, drawings, and bills of quantities were not properly prepared, and were wholly useless and different from the plans and bills of quantities which the plaintiff agreed to prepare or obtain for the defendant. The defendant paid 750*l.* into Court as sufficient to satisfy the plaintiff's claim.

The plaintiff, called and examined, said:—In 1882 I communicated with defendant with regard to his house on Windermere Lake. The defendant was to pay me what he pleased for a report. I was asked to visit Graythwaite on April 12, 1882. I looked over the old house and considered building a new house, stables, &c. I was authorised to prepare a plan for remodelling the old house and for building a new house. I made my first report on October 27, 1882. Between April and October there were distinct schemes prepared. On February 5, 1883, the defendant called upon me and expressed his satisfaction with my drawings and reports, and thought 20,000*l.* would cover the outlay on house, stables, new approach, and two lodges. He called again, and brought a sketch by Mr. Gregory to amend my plan. This was an entirely new scheme; it was proceeded with by me and my clerks. On August 17, 1883, defendant called upon me; he considered plans and alterations; they are the plans as modified by Mr. Gregory, which were to be finally completed. On November 3, 1883, the defendant called upon me; we went through all plans; defendant was pleased with plans. The defendant said he wanted the plans to be deposited with his banker so that they might be carried out by his successor in the event of his decease. The defendant was to deposit an estimate upon which his successor was to proceed. On February 20, 1884, the defendant called again; I said I should call in a surveyor to assist me in preparing a bill of quantities. I told the defendant that the estimate of 14,680*l.* was a cube estimate only, and unreliable, and that we should make a reliable estimate only by a bill of quantities, which would only be in an abbreviated form, and so cheaper. I employed Mr. Houghton to prepare the quantities. On October 30, 1884, defendant called upon me, and was satisfied with my explanation of the bill of quantities. On January 15, 1885, my final report was sent in dealing with gross estimate of 29,000*l.* The report explained that it came down by deduction to 20,000*l.* I sent in my charges at the same time as the

report. The defendant replied objecting to my charges. The difference in my charges is accounted for by reason of the omission to include excavation. I charged 3 per cent. on estimate, ¾ per cent. for excavations, ¾ per cent. for extra plans, and ½ per cent. for duplicate set desired, making 5 per cent. upon whole estimate. I charged nothing for alterations.

Cross-examined: The bills of quantities were not sufficient to enable builders to compete, but were sufficient for one builder to make an estimate upon. In the claim, ¾ per cent. is for the bill of quantities. The increased amount charged is taking into account the excavation.

Further evidence was called to show that the charges were fair and reasonable; but, upon an intimation from the jury, counsel for the plaintiff elected to take the case no further.

SCHOOL BUILDINGS.

Chelmsford.—A new National school for boys has been opened. The building was designed by Mr. Fred. Chancellor, of Chelmsford, and the contract for the erection was taken by Mr. George Saltmarsh, at 1,422*l.* The building is of red brick, with slated roof and half-timbered gables.

Stockport.—New day and Sunday-schools have lately been opened at Edgeley, Stockport, to accommodate 800 scholars. The building, including boundary wall and entrance gates, will cost about 3,500*l.* The architects were Messrs. Willoughby & Woodhouse, of Manchester and Stockport, whose design was selected in competition.

Redruth.—The new schools at Trewirgie, which are just completed, justify the judgment of the Board in the selection of the design of Messrs. G. B. Nicholls & Son, London and Birmingham. They are a fine example of school planning and building, and great credit is due to the builder, Mr. Arthur Carkeek, of Redruth, for the able manner in which he has carried out the work. The schools have won universal approval, and the Government Inspector, Mr. T. King, has expressed himself highly pleased with them. The group of buildings are unfortunately in such a position as to be almost hidden from view, but it was the only site obtainable by the Board. It was anything but suitable for such a purpose, being so irregular in shape and levels. The schools are planned for the accommodation of 350 boys, 175 girls, and 175 infants, with the necessary classrooms, cloakrooms, and lavatories, arranged in the most complete manner, not only for working, but for being under the inspection of the teachers without any inconvenience. The several rooms are admirably proportioned, and the diffusion of light is perfect. The ventilation is skilfully carried out to admit of a free circulation of fresh air and for the escape of the vitiated air, obviating the effects of cold currents and down draughts. The most noticeable feature in the interior of the buildings is the construction of the roof and ceilings. All the rooms are partly open timbered and the ceilings close boarded, which impart a warmth and cheerfulness which greatly add to the lighting and the acoustic requirements. A dado is fixed round all the walls to the height of the windows, and the floors are paved with wood blocks. The desks, galleries, and fittings are of the most approved description, and the whole of the finishings are of a unique and substantial character. The exterior of the buildings is marked by a boldness of outline developed upon the constructional lines of the building, without any superfluous ornamentation. Mr. W. Whetter was the able clerk of works.

CHURCH BUILDING AND RESTORATION.

Leicester.—The mission church of St. Faith has been opened. The church will seat about 300 persons, and has cost about 1,600*l.* The architect is Mr. H. M. Townsend, of Peterborough, and the builders are Messrs. H. T. & W. Chambers.

Blackburn.—The church of St. Barnabas has lately been opened. Owing to the limited space the architect has been obliged to bring three sides of the church close to the street line. The plan of the church consists of nave, side aisles, transept, organ chamber, choir and clergy vestries, and two porches, giving entrance to the church from Addison Street and Belle Vue Street. A separate entrance to the clergy vestry is provided from Johnston Street. Owing to the great fall in Addison Street a schoolroom has been obtained under the church for the accommodation of upwards of 200 scholars. Under a portion of the schoolroom is a large heating vault and stoves for fuel, &c. The church provides accommodation for 722 persons, two-thirds of the seats being free. The external walls are built with Yorkshire pierpoints in irregular courses and ashlar dressings to doors, windows, &c. The internal walls are plastered and prepared for decoration at some future period. The whole of the roof timbers and benches in nave, side aisles, and transept are made of selected pitch-pine and varnished. The choir benches, pulpit, communion-table, chairs, and rail are made of oak. These fittings, and also the font, which is made of Caen stone, with marble shafts, have been supplied by Messrs. Jones & Willis, of London and Birmingham. The aisles and passages in the nave, side aisles, transept, and floor of the organ chamber are laid with pitch-pine blocks in pattern, and the floors of the chancel and sacrarium are laid with oak blocks in two shades of colour and also in pattern. This work has been executed by Messrs. Geary & Walker, of Manchester. Great care has been taken in ventilation and warming, the latter work being accomplished by means of hot-water pipes on the low-pressure system, provided by Messrs. Mercer Bros., Blackburn. The artificial lighting is by means of iron and brass gas brackets, standards, and coronas, from the works of Messrs. Dutton & Powers, of Manchester. The contract has been carried out by Messrs. Marshall & Dent, builders, of Blackburn, their sub-contractors being Mr. Thomas Arkwright, mason; Mr. Maudsley, slater; Mr. John Shaw, plumber and glazier; Mr. Edward Billington, plasterer; Mr. Pickup, varnisher and painter; Mr. John Dean, tiler; Messrs. Mercer Bros., for railing, gates, and hot-water apparatus; and Messrs. Homan & Rodgers, of Manchester, for fireproof flooring. The carving has been executed by Mr. Gregg, of Darwen. The design was prepared by, and the church has been erected under the superintendence of, Mr. Wm. S. Varley, F.R.I.B.A., architect, Blackburn, at a cost of upwards of 6,000*l.*

Liverpool.—The memorial-stone of the church of St. Benedict, Heyworth Street, Everton, has been laid. The building is being carried out in Crosby bricks, with Ruabon bricks for all mouldings and salient parts, and a sparing use of terra-cotta, supplied by Mr. Edwards, of Ruabon. The church will accommodate 700 people. The contract price is 5,314*l.* The architects are Messrs. Aldridge & Deacon, of Queen Insurance Buildings, Liverpool. Mr. Hugh Yates is the contractor and Mr. T. Hallam the clerk of works.

Mortomley.—The new Catholic church and schools erected by the Duke of Norfolk at Mortomley, near Chapeltown, have been opened. The foundation-stone was laid on July 26, 1885, by the Bishop of Leeds, on a site near Mortomley Hall. The buildings consist of church, school, presbytery, and house, provision being made for future extensions. The architect was Mr. Edward H. Lloyd, of 37 Great James Street, Bedford Row, W.C.

GENERAL.

A School of Art is proposed for Malvern, and a committee has been appointed to report on the scheme.

Mr. F. Litchfield has arranged for exhibition at his house in Hanway Street, W., a valuable loan collection of old English porcelain, containing very rare and beautiful specimens of the Bow, Bristol, Chelsea, Derby, Leeds, Nantgarw, Wedgwood, Worcester, and some other factories of the last century.

The Birmingham Students of Art have issued the fourth number of the *Art Student*, which is highly creditable both in respect of the illustrations and matter.

The Annual Art Exhibition at Southport, which closed on the 19th ult., has proved a financial success. The sale of pictures resulted in a total of 3,517*l.*

The Committee of the Dublin Technical Schools have acquired possession of buildings in Kevin Street for the purpose of establishing schools.

Plans prepared by Mr. A. Loader, architect, of Brighton, for the cemetery to be constructed at New Shoreham, at a cost of 2,000*l.*, have been approved by the Burial Board, and the works will be carried out under Mr. Loader's supervision.

The Painted Windows, in the Scotch Church, Rue Bayard, Paris, which cost about 500*l.*, have been maliciously destroyed. The windows were given by Americans in memory of friends who had died in Paris.

The State Capitol at Albany has already cost 17,500,000 dollars. So large an expenditure was partly caused by the changes in the superintendence of the works.

The Board of Management of the Huddersfield Infirmary have requested Messrs. H. Saxon Snell & Son to prepare designs for the enlargement of the building, and also a report as to the sanitary condition of the premises generally.

The "Ipswich Journal," a long-established paper of the Eastern counties, commenced a daily issue on the 1st inst. (yesterday).

Southampton of the Seventeenth Century was reproduced at a fancy fair held last week in Southampton, in aid of the Vicarage building fund.

The Annual Excursion of the Glasgow Architectural Association has lately been made, when Dunblane and Stirling were visited. At Dunblane the cathedral was sketched and measured in various parts, and the whole building thoroughly inspected, after which the party journeyed to Cambuskenneth and saw the old tower, arriving in Stirling by six o'clock. After tea, the castle, Argyle's lodging, east and west churches, &c., were visited.

The Architect.

THE WEEK.

The meeting which was held by the Hellenic Society, for the purpose of continuing the controversy between Mr. Penrose and Dr. Schliemann, was little more than one of those irregular movements which learned societies excite in order to show that they are alive. It was impossible for anybody who had not visited the explorations at Tiryns to decide whether the masonry which, according to Dr. Schliemann and his coadjutors, was prehistoric and formed part of the palace of a Homeric chief or belonged to a later period. The value of the papers which were read depended on the experience of the writers, and accordingly Mr. Penrose's argument was entitled to most reliance, for he has had more experience in building than his opponents. But until photographs on a large scale are available it will be useless to make assertions on either side. Mr. Penrose says the walls of the building unearthed at Tiryns are built generally of small stones, and the bricks must have been burnt in a kiln. Dr. Schliemann is convinced that the appearance of burning is owing to conflagrations which affected the walls *en masse*. We are as far as ever from being certain as to whether moist clay mortar was used, or whether the stones were piled without a connecting medium. The explorer naturally sets a high value on the plans which are in his last book, and he is proud of the opinion passed on them by the late James Fergusson, who described them as "masterpieces of architectural skill." The value of Mr. Fergusson's opinion on plans will not count for much with anyone who has seen his attempt to restore the Erechtheum. Professor Jebb is not fascinated by masterpieces, and finds the plans do not correspond with the Homeric description. Dr. Schliemann has travelled all the way to Burlington House to support his book, but, in spite of the interest attached to his presence, the controversy would have been as much elucidated if he remained in Greece.

The French Government have purchased this year fifty-four paintings, three drawings, and twenty-four works of sculpture from the Salon. The paintings are of all kinds—figure pieces, portraits, landscapes, flowers, &c. Among the acquisitions are the *Bataillon Carré*, 1815, by M. Protais; *The Submission of Vercingetorix*, by M. H. P. Motte; the fine decorative work, *Lorraine and its Illustrious Children*, by M. Monchablon; the *Pain beni*, by M. Dagnan-Bouveret; the *Portrait of M. Pasteur*, by M. Edelfeldt; *The Confrontation*, a scene from the Franco-German war, by M. Emile Boutigny. It is not stated how much was paid for the several pictures.

M. Goblet, the French Minister of Fine Arts, has asked for a vote of 48,142 frs. to pay for the pictures by the late Alphonse de Neuville, which had been purchased at the sale of the painter's property. Four works were purchased, viz., *Le Parlementaire*, for 20,000 frs.; *Le Bourget*, for 15,000 frs.; *Attaque de Villersexal*, for 10,000 frs.; a drawing, 850 frs. The balance represents the commission in connection with the auction.

The Salon exhibition of this year has been a success for the Society of French Artists. During the fifty-six days on which the galleries were open there were 372,000 visitors, thus exceeding by 30,000 the number for last year. It is estimated that the sum obtained will amount to 330,000 frs., and when all expenses are paid there will be a sum of 240,000 frs. added to the funds of the Society.

The Society of Arts has not entirely relinquished the placing of porcelain tablets on the fronts of houses in London which were occupied by notabilities. Since the last announcement the following have been set up:—On 263 Hampstead Road, George Cruikshank; on 11 Bolton Street, Piccadilly, Madame D'Arblay (Fanny Burney; on Furnival's Inn, Charles Dickens; on Schomberg House (now part of the War Office, Pall Mall), Thomas Gainsborough. There are now twenty-four of the memorial tablets on houses in London, and the Council of the Society will be glad to hear of any more houses of the class where the owners would permit the erection of tablets.

The arrangements for designing the Tower Bridge are not satisfactory to Colonel Haywood, who may be described as the city engineer. Twenty years since he formally proposed the erection of a bridge near the Tower as a means of accommodating the increased traffic. But the remedy which found favour in the eyes of the Corporation was the widening of London Bridge, a scheme which moved some of the Academicians into opposition. When the Bill was before the House of Lords, Colonel Haywood was one of the witnesses against it, and we suppose so much independence will never be condoned. At any rate, when the Corporation were forced to fall back on the Colonel's proposal, he was not asked to take a part in its realisation. Preference was given to the City Architect, who was converted from his opposition to a bridge near the Tower about the same time as the Corporation. It is generally believed that the City authorities are exceptionally generous in their dealings with their high officials, and, in justice, there should be some recognition of Colonel Haywood's services as a pioneer in preparing the way for the new bridge.

The Council of the Union Centrale des Arts Décoratifs have decided to refrain from holding a general exhibition in Paris until 1889. It is supposed that three years hence the new museum will be ready, and it could not be inaugurated in a worthier manner than in connection with an exhibition of ancient and modern industrial art.

A circular has been issued by the Lord Provost of Edinburgh and other gentlemen, soliciting support towards the cost of erecting a medallion of Sir Walter Scott in Westminster Abbey. It will hardly be credited that a sum of 101*l.* 1*s.* has to be paid to the Dean and Chapter for the privilege of placing a medallion against one of the walls. When that is the price for wall space, we cannot understand what the authors of the circular mean by saying that the Dean would heartily receive the memorial, and specially desires to give it a site in Poet's Corner—indeed, an excellent site, considering that less than a hundred guineas is to be paid therefor. There will be no difficulty in raising the money; but what is the advantage of the memorial? Scott's fame will not be enhanced by a medallion in Poet's Corner. So many of the names inscribed there are of men who have passed into oblivion, it is not a desirable place for an author whose books are universally admired.

M. Charles Stier has presented a few interesting works to the Egyptian collection in the Louvre. One is a life-size figure of a hound in black basalt, which is unique. It is supposed to be at least three thousand years old. Another work, no less interesting, is the head of an Egyptian steward in granite. Portraits of the kind are mostly in bas-relief.

The Mont St.-Michel on the Norman coast contains a church and monastery, both of which are most interesting. The lease will expire on August 30, and the French Government decline to renew it to the missionary priests who have occupied the buildings during several years. It is not explained why so arbitrary a course should be adopted. There is no doubt that costly works are needed for the preservation of the buildings against the sea, but it is not evident how occupancy could interfere with them. If it is proposed to make the buildings a mere place of show, they will lose much of their interest when only bare walls are seen. Up to this it was possible to form a good idea of what the place must have been four or five centuries ago, although armed men no longer took part in the services. But if the Government adhere to their resolution, the Mont will be as dreary as the Panthéon since it was converted into a casket for Victor Hugo's coffin. A visit to the hill of St. Geneviève would give the Minister a lesson on the consequences of disestablishment as seen from the standpoint of the picturesque.

THE TRAGEDY OF ART.

[By a Correspondent.]

In tracing the history of a family under the Second Napoleonic Empire, and in following the ramifications of the branches of the genealogical tree which he devised, it was to be expected that sooner or later M. Zola must have something to say about the representatives of the Rougon-Macquarts in art. For art in France is almost as widely related as the army. Accordingly in his last book we have the story of the unfortunate Claude Lantier, the painter. The son of a "ne'er-do-weel," there is no knowing what he might have turned out if he remained in a country town. But he was adopted by an amateur of paintings, who, on dying, left him forty pounds a year, with power to dispose of the capital when he reached manhood. M. Zola is a believer in the doctrine of heredity as it is laid down in a book by Dr. Lucas, and we must suppose that some drops of the virus of the Lantiers circulated in the veins of Claude, and mingled with the good blood he derived from the honest washerwoman who was his mother. He had the qualities which go to the making of a noble as well as a great man. There was nothing mean or selfish about him (unless his devotion to art could be called selfish); he was courageous, self-sacrificing, and inspired by lofty motives. But as Othello exclaims, "Who can control his fate?" In this case we find the individual will, with all its strength, was not able to cope with a disordered condition of the fibres of the brain. The imagination with which he was endowed increased the power of the evil that was hereditary. Chaos seemed to return with its shapes of terror, life became a nightmare, and the ill-fated painter was deprived of his power of volition. The end of the tragedy is suggested at the beginning of the book, when it is said that Claude as a child was feverous with a love of painting. According to the joyous Clive Newcome, "Art ought not to be a fever, but a calm—a temple for placid contemplation." With poor Lantier the fever was life-long, and at length he was consumed in it.

It is sometimes said that M. Zola is indifferent to literary art. In "L'Œuvre" we have an opening that seems borrowed from "Macbeth." The story begins with thunder, lightning, and rain; but, instead of a blasted heath, we see the Quai Bourbon in Paris, which is within a stone's-throw of the Morgue. There, in a garret of one of the old houses, Claude Lantier lived and painted. Like so many tenants of confined domiciles, he was wandering through the streets when the storm burst. He returned quickly, and, as he was about to enter the house, the lightning revealed that a woman was crouched in the angle of the doorway. The only women he knew were models, and from them he was not likely to learn much courtesy. But he was unable to turn this unknown wayfarer (her name was Christine) adrift on such a night, and, with a good deal of *brusquerie*, he offered her the shelter of his studio.

It was not at all a luxurious place; it was dreary, like the ateliers of most artists who have not made a name. M. Zola is not the man to indulge in picturesqueness which does not exist, although by doing so he will satisfy the desires of novel readers. Many a romance has been made attractive with suppositious scenes of artistic life in Paris, and people have persuaded themselves that it was delightful. The life of a young artist in that city, according to Thackeray, was "the easiest, merriest, and dirtiest existence possible." Whether that was true of the year 1840 we do not profess to know; it certainly is inapplicable now. How an artist's life could at any time be easy is not plain—Thackeray's failure was a proof of the contrary—and the days for merriment in art or in anything else seem to have vanished. M. Zola endeavours to be as rigidly accurate as if he wrote for the enlightenment of statisticians, and the life which Claude leads in his garret strikes us as drawn from reality. Everyone who is acquainted with the insides of studios will be able to testify to its accuracy.

Lantier, it appears, was engaged on a large picture which might be described as a modern version of the famous *Idyll* by Giorgione in the Louvre. The principal figure was a nude woman lying on the grass in a wood, which was illuminated by a summer sun. To obtain a contrast of colour a man was introduced—his back being towards the pectator. His schoolfellow, Pierre Sandoz, a young writer (who is plainly a counterfeit presentment of M. Zola himself), posed for the cavalier in velvet. When he came, about noon, he found Claude hard at work. During the whole morning his food had been a few mouthfuls of dry bread and a little chocolate, which he drank out of the saucepan. Claude was in a mood for painting, and neither hunger nor the entreaties of the friends who afterwards dropped in could induce him to leave the easel until it was no longer possible to see. Then, as he was going out, he took a final look at his canvas; the day's work dissatisfied him, and the head and throat of the figure, which cost him so much pain, were ruthlessly scraped out. This fastidiousness, which is never satisfied, was one of the characteristics of Claude—as of all great painters until they sell themselves to Mammon—and it was the cause of the final catastrophe. Yet prudes would say of him that he was pandering to a debased taste and must be a sybarite. There is not much luxury to be found in a garret, where life has to be supported on the dry loaves of Paris, varied by insufficient meals at a restaurateur's, and where the days are spent in alternately painting in and painting out. A Carthusian would be likely to say it needed more self-denial than the *régime* of a convent cell. There are, however, many painters in Paris who have to endure for years privations which a bricklayer's labourer would consider unendurable, and the "easiest, merriest life" of the romancists has a strange sort of signification with them.

It will be asked what becomes of all the money which is received for the pictures? M. Zola gives us a glimpse of how painters of Claude's age and rank are rewarded. Père Malgras, the picture-dealer, who, by a kind of instinct, knew where rising men were to be found, occasionally visited the garret on the Quai Bourbon, and was in the habit of paying ten francs for sketches which appeared remarkable. On the occasion in question it was a landscape which attracted his eye. Claude was not in the best of humours, for he was trying to grapple with the difficulties of his big picture, and he insisted on a larger price. The dealer had to disburse the munificent sum of fifteen francs. The worthy patron of the arts then proposed to bring a real lobster, in order that Claude might paint a piece of still life, and was willing to accept the picture in return for the delicacy. This mode of doing business would be called generous if compared with the practice of some dealers. Young folks are supposed to be able to suffer—artists are always merry—and, as M. Zola says, what would become of good-for-nothing painters if, from time to time, such benefactors as Père Malgras did not convey to them a leg of mutton, a brill, or a lobster enshrined in parsley?

Fortunately art is often the reward of its votaries. Claude Lantier had the consciousness of being one of the apostles of a new creed in painting. He was in revolt against academicism, with all its works and pomps and inanities. If he could muster twenty francs he was able to study the nude without restriction in the studio which had been set up by old Boutin, the model. There, in his eagerness to depict what was before him with the firm hand which is inspired by power, he was accustomed to forget eating and drinking, and in his concentration be indifferent to the opinions on his works and ways which were uttered by young gentlemen who followed the orthodox courses. Then, among friends who were in accord with him, he could prophesy about the days when there would be no conventional laws to put down all attempts to represent figures in the open air in the strongest sunlight; when honest realism would be respected; when railway stations, markets, mairies, and buildings, where men congregate, would have their painted decoration; when, instead of repeating stereotyped things, painters would seek their subjects in narrow lanes as well as in boulevards; when the lives of poor as well as rich would be thought worthy of representation, and the present in all its multitudinous aspects would be painted for the sake of its inherent interest. Having the militant spirit as became the champion of a new cause, he was able to look on Paris as a battle-field where sooner or later he was destined to be victorious. But it was no selfish dream. His friends were also to wear laurel crowns, for each of them in his own line was struggling against the old-world notions. With one, Wagner was worshipped because he did not hesitate to massacre the conventionalisms and ineptitudes which passed for classicism in music.

In describing Claude and his friends, it is evident that M. Zola occasionally revives reminiscences of his own youthful days, when he fought a good fight for the recognition of individuality in art and literature. As he looks back, we can see that he makes light of the inconveniences which arise when one's income is to be calculated on the basis of ten francs per picture sold and delivered. For he feels that youth is by itself a treasure. Lord Chancellor Clarendon could find no more severe mode of punishing the impertinence of the Court beauty than by reminding her that she also was to be old. For the poet and the artist, no less than for kings' favourites, youth is a golden prime. Béranger expresses the pain they suffer afterwards when, thinking of his garret and his twenty years, he said :—

> Dreams of my joyful youth ! I'd freely give,
> Ere my life's close,
> All the dull days I'm destined yet to live
> For one of those !

The truest stroke in M. Daudet's "Sappho" is in the scene where the great sculptor is taunted with being no longer young. His arm is as vigorous as ever, his intellect has grown clearer, his figures show that his genius is like his arm, but he writhes under the sting of the words as if they were a poisoned arrow. And M. Zola, who is anything but a sentimentalist, is compelled for the sake of accuracy in his picture of artist life to introduce the famous painter Bongrand, Member of the Institute, Officer of the Legion of Honour, and what not, whose only enjoyment was when he was allowed to join a party of young fellows. "It is well to be you, at the bottom of the hill," he remarked with sadness ; "one has always good legs and a stout heart when one has to climb. You may laugh at me, but some day you will feel as I do." As he left the little party his eyes were softened, and they heard him say, "Oh, youth, youth !" It is like the wail which runs through Thackeray's later writings, and which obtuse folks ascribe to affectation. When Claude visited the old man in his studio, Bongrand was pleased with a word of commendation of the picture on which he worked. "There are days," he said, "when I begin to doubt if I am competent to draw a nose. I have at once too much and too little of the critical power." He expressed the opinion that a painter ought, out of respect for his reputation, to strangle himself in front of his last *chef d'œuvre.*

But meanwhile the picture which seemed to be attempted in rivalry with Giorgione (like Turner with Claude Lorraine) was far from completion. Claude had sketched the head and neck of the woman he met at the door on the night of the storm, and when introduced in his picture he saw that the rest of the figure was not in keeping. One part or the other must be sacrificed. A difficulty of this kind must always be expected as an accompaniment of realistic attempts. If a painter of the school could envy Raphael, it would be for the liberty possessed by the great painter, who was able to say, "When I have not before me a model that is satisfactory, I then serve myself with a certain ideal of beauty which is in my mind." As the time for reception at the Salon drew nigh, Claude's difficulty became a torture. The more he altered the more the disparity became evident in his eyes. At last, when only three days remained, and he was debating whether the work should not be abandoned, he made a despairing appeal to Christine to offer a supreme sacrifice and pose for the whole figure. Out of pity and pride she consented.

M. Zola is writing of the exhibitions which prospered under Imperialism, and in which everything that was individual or lifelike was proscribed. Claude was treated exactly like Manet, Brigot, and Courbet. His picture was relegated to the Salon des Refuses. There were some artists who could admire so much realism, and Bongrand declared he would give ten years of his life to be able to say that he produced such a work. But the public could not understand the qualities which excited the old painter. The picture was taken to be a sort of pictorial joke, and was considered a very bad attempt in that line. All day long people were laughing in front of it, and the Scripture piece near it with figures that seemed cut out of wood was not more derided. It was in that way Edouard Manet, the founder of the realistic school, was treated some twenty years since. He was hissed and hooted—one of the finest of Parisian gentlemen was taken to be a rough, and, so to speak, was pelted with mud and stones.

It is not surprising that Claude should be tempted to flee from the city which seemed ready to stone its prophet. For a time he tried the experiment of "love in a cottage," and assumed a *rôle* for which he was not adapted. But he could not remain for ever untrue to himself. A visit to the Salon a couple of years afterwards moved his whole being. He thought it was time for a picture to appear which might startle the imbeciles. And Christine, his companion, felt that destiny was too strong for her, that she and he must return to Paris, although it was to meet their doom.

But of what kind was the picture to be which was to scare the Academicians like the handwriting on the wall ? In the first place it was to be large, measuring about twenty-five feet by sixteen. Then, as was natural with a man who had lived near the river, he proposed to himself that it should be a scene on the Seine. For long months he spent his days under the arch of one of the bridges, making studies of the busy scene which was before him. Here plaster was being landed amidst light clouds of white dust, and there cylinders of dry wood for burning. A swimming-bath was available for one side, a lavoir or floating washhouse, with its crowd of busy women, for another. A subject of this kind, so full of life, with the buildings of the oldest part of the city in the distance, and the clear sky of Paris above, was enough to absorb the powers of a giant if he wished to do it justice, and henceforth Claude had no thought for anything else in this world. But there was something still wanting to satisfy a man who knew that the rendering of the nude was alone worthy of a painter's utmost efforts. Every painter, let him be ever so realistic, cannot help thinking that, after all, one thing may be a symbol of something else, and Claude wished to have a better personification of Paris than riverside labourers carrying bags or a row of women beating and rinsing underclothing. Allegorical figures of virtues and vices were effete. He could think of nothing better than a boat in the centre of the picture, to have one girl in a sort of bathing costume at the oars, another seated on the side with her feet dangling in the water, while a third stood in the prow like Venus when she rose from the sea. The meaning of it was occult to all but the artist.

It would have been well for Claude if he realised that everything done by a painter was as typical as his figures. What paints dug out of the earth can ever be made to look like flesh, light, air or water, like leaves or flowers ? Every picture resembles the cloths which were hung in the Elizabethan theatres, inscribed with the words Athens, Rome, or London. With Turner and Titian, as well as with them, we must "piece out the imperfections with our thoughts." The opaque colour has to stand for transparency, a trick of contrast for the sheen of light. Every day when Claude went to the bridge he saw a new beauty in the river scene ; to his eyes it was whimsical in its variations, and when he returned to the shed which he used as a studio there was no reflection of the splendour he had left, and which he still seemed to see. To a man with his conscientiousness the endeavour to realise his ideal became as exhausting and as vain as a search for the philosopher's stone, or the power of perpetual motion. It was worse for mind and body than painting pictures to be sold in the street to gain a little bread. Claude was thus in the same condition as the English Haydon, who, in the midst of physical misery, had to learn that his hand was incompetent to draw the heroic figures which he could describe in words. Barry, in his green baize coat, all smudged with paint, was for a time in a like state, and was supposed by comfortable citizens to be simply deranged, when he was crying out about the Divine head which haunted him, and which he was unworthy to paint. The placid Müller saw the ideal after he had engraved the faultless *Sistine Madonna*, and as the opportunity to realise it was lost, believed he had no more business in life and was bound to seek out death. Claude also heard the voice which, as Shakespeare says, cries, "Come ! to him that instantly must die," and he obeyed it. His easel became his gibbet.

In the old days it was supposed that life was a post which a man was bound to guard, and the instinct of humanity rebelled against suicide. Our time has become

less healthy, and M. Zola, speaking in the person of his prototype Sandoz, seems almost to become an apologist for so short a way of getting rid of a difficulty. Claude, says the novelist, was logical and brave, and announced his impuissance. "Yes," replies Bongrand, "and if we did not care so much for our skins we should all emulate him." And the novelist concludes by saying that since we are no longer able to create we may as well break our heads at once.

It is an odd sort of message to offer for the consolation of the world. Paint or write with all your soul and you go mad after a life of agony, or if you have a strong frame you may flee to the country and fatten geese, like Courajod, to while away time. Adopt a standard which might have been set up by the Father of Lies, and you may look forward to a seat in the Institute and a whole house near the Parc Monceau. It will go hard with the pessimists who contemplate the world from a café on a boulevard of Paris to discover anything more dreary in this life. But there is another interpretation. May we not suppose that M. Zola is becoming wearied of the restrictions he places on his own powers in his attempt to be realistic, that he knows how painters and sculptors of the school are also wearied, and that his tragedy is a lament over the failures of aspirations?

THE VENICE EXHIBITION.

THE preliminary difficulties connected with the arrangements for a National Exhibition of Fine Arts to be held in Venice next year have now been disposed of, and a working committee appointed. This committee, says the *Venice News*, is now engaged in settling the various details of the scheme, and the plans for the temporary building are already in progress. This structure will be erected in the Public Gardens, but the design of the elevations is not yet decided upon. We believe that having regard to the strictly temporary character of the building no distinctively architectural character will be given to it, but a system of decoration adopted which will accord not ill with the surroundings while avoiding any extravagant pretensions. Being a strictly national exhibition, the works of foreign artists will not be admitted except on certain conditions of residence in Italy, the particulars of which have not yet been definitely settled.

THE PROPOSED MANCHESTER EXHIBITION.

THE committee appointed at the recent public meeting met on Tuesday at the Manchester Town Hall. The Mayor presided. The report of a sub-committee was presented by Sir J. C. Lee with regard to the expenditure that would probably be necessary for the exhibition, and also as to the probable receipts. It was estimated that the expenditure would not be more than 100,000*l.*, and that the receipts would at least reach a like sum. The meeting decided that the next step to be taken was to ascertain at once if a guarantee fund of perhaps 100,000*l.* could be raised, and if a sufficient number of influential gentlemen were willing to act as members of a managing committee. The further consideration of Sir J. C. Lee's report was postponed, and a sub-committee was appointed to obtain the information above indicated.

The general object of the exhibition will be, according to the *Manchester Guardian*, in the first place to celebrate the jubilee of Her Majesty's reign. It would be in no sense international, but rather local, the area to be covered being comprised within a radius of fifty miles round Manchester. There would be brought together a collection of objects illustrating the history of art productions during the last fifty years, especially those of the manufacturing districts which this area represents. The history would also be illustrative of mechanical appliances within a like period and within the same area. The difficulty in the way is first as to money and men, and secondly as to time. The committee, as above stated, have not yet been able to present a final report; it is, however, understood that a number of gentlemen of high position and special artistic or manufacturing knowledge have undertaken to act as an executive provided others can be found who are willing to work with them. As to time, it has been shown that both the Edinburgh and Liverpool Exhibitions, and also the Art Treasures Exhibition of 1857, were erected within the length of time now possible in the case of the proposed exhibition. A site at Old Trafford not far distant from that of the famous Art Treasures Exhibition has been pointed out as best adapted for the purpose in view. The advantage of such a site is obvious. The Botanical Gardens are in the immediate vicinity, and there, it may be anticipated, music and relaxation of the most agreeable kind would be found. In deciding as to the character of the proposed exhibition the promoters have in view something more than the mere gratifying of public curiosity; the aim will be to give the exhibition a truly educational character, and at the present time, when so much attention is being directed to technical instruction, it would in that respect be a most desirable undertaking.

An effort is being made to obtain the names of thirty gentlemen who would be willing to act as guarantors, and not only so, but to devote the time and attention requisite to work out the scheme and place its success beyond doubt. We are assured that, so far as the money is concerned, no difficulty is anticipated; the chief difficulty will be to secure men who have the time at their disposal, and will carry the thing forward energetically.

THE EGYPT EXPLORATION FUND.

A SPECIAL general meeting of the supporters of the Egypt Exploration Fund was held on Tuesday in the theatre of the Royal Institution, Albemarle Street. Among those present were Sir William Gregory, Mr. A. S. Murray, Keeper of the Greek and Roman Antiquities in the British Museum, Dr. Hyde Clarke, Mr. Robert Cust, Judge Bayliss, the honorary secretaries to the fund (Mr. Reginald Stuart Poole, Keeper of the Coins in the British Museum, and Miss Amelia B. Edwards), Mr. Talfourd Ely, M.A., Mr. Benjamin Vincent, and Mr. E. M. Thompson, Keeper of the Manuscripts in the British Museum. Mr. C. T. Newton, C.B., occupied the chair.

Mr. Ernest Gardner read an interesting report of the season's work at Naukratis, the earliest Greek city in Egypt, and he also laid on the table the first part of the Society's forthcoming publication on the excavations and researches now in progress at Naukratis. After a brief notice of Mr. Petrie's unearthing of the city, and of the training of overseers and labourers to work with good order and discipline, he pointed out that of five great temples mentioned by the Greek literary authorities, four had now been discovered, two this season and two in Mr. Petrie's previous explorations. This year the cemetery had also been found, but the part that could be excavated contained only the graves of a later period, whereas the best time of Naukratis was the sixth century B.C. These graves contained coffins of tile and of wood, the latter decorated with terra-cotta ornaments, gorgoneia, &c., many of which had been found. The burials were always after the Greek customs, no traces of embalming being found. Articles of use and ornament were also buried with the dead. In the *temenos* or shrine of the Dioscuri the plan of a temple built of unbaked mud brick faced with plaster had been recovered. In front of it were pillars of the same materials. The temple of Aphrodite consisted only of mud-brick walls, enclosing one, or in the earlier temple two chambers. In front of it was a great altar, built of ashes, held together with a mud-brick casing. The yard of the temple was covered with a layer of fragments which had yielded a great number of vases and statuettes more or less perfect. These were all of early period, and many were inscribed in the characters of the sixth century B.C. The *temenos* of the Samian Hera had also been found, but had not been rich in results. Some smaller articles had been found in the town, including a beautiful portrait-head of the period of Berenike II. in blue porcelain. It did not seem advisable to continue the work at once, as no result might ensue, but rather to watch the site till fresh remains were uncovered by the Arabs. Up to the present moment much had been gained. A most valuable series of inscriptions served not only to throw light on the early history of the Greek alphabet, but also to decide the age of many classes of vases and sculptures whose date had previously been a matter of conjecture. By ascertaining the real nature and importance of the colony of Naukratis its position in history was established; it was merely a trading emporium, but owing to the surroundings that prevented its growing in size or prosperity, its art and handicrafts were stimulated by emulation. Its influence on Greece in the sixth century must have been of great importance.

Sir William Gregory, who moved a vote of thanks to Mr. Gardner, thought with the chairman that holding a special meeting to hear an account of their operations at Naukratis was a perfectly wise arrangement. They had that afternoon listened to a most interesting account of the Society's operations in Egypt, and he hoped they would be encouraged thereby to continue their explorations of so enterprising a site.

Mr. R. N. Cust seconded the motion, which was agreed to.

Miss Amelia B. Edwards announced that the special fund already amounted to 700*l.*, and hoped that at their next meeting the proposed 1,000*l.* would be made up.

The proceedings terminated with a cordial vote of thanks to the chairman.

MANCHESTER ARCHITECTURAL ASSOCIATION.

IN the competition for prizes for the best sketches offered by the president, Mr. L. Booth, F.R.I.B.A. (a report of which was published in our last week's issue), the referee, Mr. A. Darbyshire, F.R.I.B.A., has awarded the first prize of two guineas for a water-colour sketch by Mr. F. B. Smith; and the second prize of one guinea to Mr. F. Ward, for his pencil sketch. Mr. Darbyshire in his report speaks very highly of the two successful drawings, and favourably mentions the work of several other competitors. There were six water-colour and seven pencil sketches submitted for competition.

TESSERÆ.

Modern Italian Architecture

W. H. Leeds.

THOUGH we have had many modern architectural works relative to the principal cities of Italy, they have all of them been exclusively retrospective or nearly so, exhibiting only the monuments of former periods of the art, and showing scarcely a single recent example. Admitting that the subjects selected for them are of more intrinsic value as studies than any buildings of recent date, still some of the latter would at least possess the interest of novelty. Architecture is not absolutely defunct in Italy, although it might almost be imagined that it had not produced a single work of any note since the commencement of the present century, so little is the information to be met with relative to any edifices that have been erected there within the last forty or fifty years. It would seem to be an express rule adhered to by all our tourists, architects, and artists who visit that country, not to take any notice of contemporary buildings, on no account to describe or to delineate them, but to bore us for the ten-thousandth time with their ecstasies with the Pantheon and St. Peter's, with Palladio and Michel Angelo. If they can bring home nothing less stale, they would do well neither to take up their pens nor open their mouths. Of Cagnola they of course have never heard, Possagno they have never visited, nor have they ever stumbled upon the Café Pedrocchi at Padua—a palazzo in appearance, and a sufficiently striking specimen of the modern Greco-Italian school—with much elegance to recommend it, though not free from defects. Although it may not be ranked among the public edifices of that city, it is, as a piece of architecture, quite as conspicuous an object as the Reform Club House, which last, perhaps, a tourist through Pall Mall would not have eyes to discover. A work containing examples of the Italian architecture of the present century would be a welcome novelty, and though the buildings themselves may be comparatively few and far between, still ample materials for the purpose are to be collected between Milan and Naples, from the structures by Bianchi and Niccolini, in the last-mentioned city, to Buonsignore's church, the Madre di Iddio, at Turin, and Canova's Doric rifacciamento of the Pantheon at Possagno.

The Dome of St. Paul's.

G. Wightwick.

Thoughtless cavils have been raised on the subject of the double dome (we might as well say the triple dome) of St. Paul's. The dome of the Pantheon at Rome, having nothing but itself to support, is a simple vault of masonry, so low in proportion and so immensely buttressed as to be prepared for an earthquake. The dome of the Florentine cathedral is so highly pointed as to approximate towards the cone, and it is therefore the more fitted to bear the stone lantern at the top. The dome of the baptistery at Pisa is formed of a lofty internal cone, supporting the outer vault or hemispherical covering. The non-appliance of constructive knowledge in the dome of St. Peter's at Rome was felt before it was finished. The lantern was made less than originally intended, but still it proved too heavy for the great vault that could hardly find safety for itself alone, and it has only been preserved to our wonder by hoops of iron—the means taken by Wren to secure the safety of Salisbury spire. Our scientific architect had marked the failure of the Gothic architects in their deficient regard for lateral thrust. He had observed how fearful might be vertical pressure on a domical vault. Whether he was acquainted with the Florentine and Pisan examples we know not; but if not, he had intuitively the knowledge they would have afforded him. He had to place upon the top of his dome a stone lantern, with its ball and cross measuring some 90 feet in height. He therefore adopted the principle of the Pisan Baptistery. He constructed his inner brick cupola of the form and altitude he considered best for internal effect, Over this he built a cone, just free from pressing on his cupola, and he carried it upward till it met the required width for the base of his lantern, finishing his cone with a domed top as at Pisa. This being determined, the attic storey of his tambour arose to press down upon the common springing of cupola and cone, and not to remedy a defect, but "to make assurance doubly sure," he applied his hooping chains of iron. To protect the cone a roof was necessary, as that which covers the vaulting of his nave and aisles, and of the same material, *i.e.* wood and lead, the purpose of protection and endurance being precisely the same in both cases. Apart from what Roman design requires—apart from the majesty of the hemispherical form—is there a man breathing who would cover a circular cell and its cupola vault with anything but a hemispherical roof, as the best for affording the perpendicular weight of leaded timber upon the buttress of the cone, with means for effectively confining from bulging, either in or out, the masonry of that cone? The high Gothic dome of Florence is not admissible in pure Roman design, but a lantern, ponderous as that of Florence, is required. The simple hemispherical dome will not safely support such a lantern. The Pisan mode of construction suggests the mode of security.

Slating in Paris.

G. R. Burnell.

The slates used in Paris are extracted at Angers, in the department of the Marne and Loire. The quarries furnish a slate of a very fine grain, remarkably thin and light, although the specific gravity of the slate is very great. It is 3·000, water being 1·000, or 188 lbs. per foot cube. Four sizes are worked for the Paris market, viz. the *grande carré forte*, $11\frac{5}{6}$ long by $8\frac{1}{4}$ wide and $\frac{1}{6}$ thick ($0^m.298 \times 0^m.217 \times 0^m.003$); 2nd, the *grande carre fine*, of the same dimensions as to length and breadth, but of about half the thickness; 3rd, the *cartelettes*, $8\frac{1}{4}$ long by $6\frac{3}{8}$ wide by $\frac{1}{8}$ thick ($0^m.217 \times 0^m.162 \times 0^m.003$); and 4th, the *cartelette fine*, of about half the thickness. The usual practice in Paris and in the departments of the Lower Seine is to nail the slates with two nails upon battens half an inch thick and from $4\frac{1}{2}$ inches to 7 inches wide, that is to say, either of deals cut in two or of battens. Sometimes these *voliges*, as they are called, are of poplar or sycamore, but they decay very rapidly. The slates lap over one another two-thirds of their length, leaving a *pureau* of one-third, when the inclination of the roof is not above 33°; at 45° the *pureau* is one-half of the slate; at 60° two-thirds. The battens are rarely laid close, for the slates are found to decay more rapidly if there be no circulation of air. The usual space between the battens is about $1\frac{1}{2}$ inch. Hips, ridges, valleys, and gutters are executed as in England, with the trifling exception that step-metal flashings are unknown; the slates are made good to the Pignon walls by merely covering the meeting angle with plaster.

Villard de Honnecourt.

H. B. Garling.

He appears to have been born at Honnecourt on the Scheldt near Cambray, and he writes in the Picard *patois*. There is great reason for believing that he was the architect of the choir of Cambray Cathedral, now unfortunately destroyed. He tells us that he travelled much; he visited Laon, Chartres, Lausanne, and Rheims, the latter place undoubtedly during the progress of the works at the cathedral. We get, therefore, an approximate date, somewhere between 1230 and 1250. He was then sent for into Hungary, where he stopped many days. Now we find that in 1242, Strigonia, then the capital of Hungary, was destroyed in an irruption of the Tartars, and that on their being driven back the next year, Bela, the King of Hungary, commenced rebuilding the city and the cathedral dedicated to the Virgin; and we may presume that Villard de Honnecourt, then a man of great reputation, was sent for to design and execute these works. It is alleged by the editor, M. Lassus, that there are various churches in that neighbourhood which exhibit evidences of French influence. All these dates and circumstances compared, give us some data for fixing the identity of the artist. We find him a man of restless activity of mind, of singular versatility of talent, and of powers of observation at once subtle and comprehensive; eager to gain information from every source, ready in applying it to every purpose. He appears to have resembled (taking the standard of his age) the ideal character sketched by Vitruvius—the man of universal accomplishment, the *facile princeps* in every art—trying his hand at everything, and proving himself master of all. Thoroughly versed in all the practical science of his day, we should suppose that this alone was his forte, from the attention he enjoins to its precepts, did we not find that it simply assists him to the more perfect mastery of higher accomplishments. In mechanics he gives us now a mechanical toy, and now a military engine, machines for cutting timber, hoisting, screwing up, and executing the rougher preliminary operations of building. In architecture, he studies only from the most beautiful subjects and the best models, and educates his powers of hand and eye to the highest vocation of the artist. He gives us sketches of natural objects to be applied to their most appropriate places in design, drawings of mouldings and details, all of exceeding beauty. To geometry he pays the reverence so characteristic of his age, and would fain make us believe that his skill in freehand drawing is simply a more

refined application of its principles. As an artist, he adds the finest feeling in design, in some instances, to the most enviable skill in draughtsmanship; the conception just, appropriate, and spirituelle, expressed by the outline, firm, vigorous, and free.

Conveyance of Sound.

M. C. Meigs.

Experience shows that the human voice, under favourable circumstances, is capable of filling a larger space than was ever probably enclosed within the walls of a single room. Herschel, in his admirable treatise on sound, gives a few instances which are instructive. Lieutenant Foster, on Parry's third Arctic expedition, found that he could converse with a man across the harbour of Port Bowen, a distance of 6,696 feet, or about 1¼ mile. Dr. Young records that at Gibraltar the human voice has been heard at a distance of 10 miles. I have myself, on the shore of Lake Champlain, at evening, heard the echo of the voice returned from the opposite shore, at a distance of nearly two miles, the sound having travelled between three and four miles before it returned to the ear. If sound be prevented from spreading and losing itself in the air, either by a pipe or an extensive flat surface, as a wall or still water, it may be conveyed to a great distance. Biot heard a flute clearly through a tube of cast-iron (the water-pipes of Paris) 3,120 feet long. The lowest whisper was distinctly heard. In fact, the only way not to be heard was not to speak at all. Standing on the platform used by the painters in the new Congressional Library, Professor Henry and myself conversed in a low tone, hearing distinctly from one end of the room to the other. The room is 99 feet long. The platform is about 7½ feet below the deeply-moulded iron ceiling. Professor Reid states, in describing his lecture and practical classrooms, which together occupied a space of about 80 feet square, that in every part, both of the lecture-room and of the practical classroom, whether crowded or empty, the slightest whisper or the loudest noise was heard distinctly, without offensive reverberation or the necessity of any exertion of the voice beyond that used in conversation. The favourable circumstances seem to be a perfectly tranquil and uniformly dense atmosphere, absence of all extraneous sounds, absence of echoes and reverberation, vicinity of reflecting surfaces, and perhaps in some measure the presence of substances which conduct sound well. A pure atmosphere, being favourable to the speaker's health and strength, will give him greater power of voice and more endurance, thus indirectly improving the hearing by strengthening the source of sound, and also by enabling the hearer to give his attention for a longer period unfatigued.

Marine Worms and Timber.

T. Stevenson.

In landlocked bays, where a deep-water landing-place is all that is required, and where the bottom is sandy or soft, timber may be employed with great advantage. Even in exposed situations timber can also be used, but the fatal disadvantage attending its employment in most places where there is no admixture of fresh water is the rapid destruction occasioned by marine worms. The damage occasioned to harbours in this way is noticed by Semple in his treatise "On Building in Water" in 1776, and very probably by much earlier writers. Indeed, the ravages of the *Teredo navalis* are very ludicrously described by Hector Boece, in his "Croniklis of Scotland," printed at Edinburgh, *circa* 1536. In the Atlantic Ocean the *Teredo navalis*, and at many places in the German Ocean the *Limnoria terebrans*, are the animals which are found to destroy any structure of timber which is exposed to the water. They are found to eat most rapidly between the bottom and low-water mark, but above low water the damage is not so great, and what is singular, they do not appear to exist at all below the bottom where the pile is covered with sand. These observations do not, however, quadrate with Mr. Hartley's at Liverpool, for he found the parts which were alternately wet and dry to decay faster than the parts which were constantly immersed. Even solid limestone is often destroyed by the persevering efforts of another marine animal called the *Pholas*. The late Mr. R. Stevenson made several experiments on the ravages of the *Limnoria terebrans* at the Bell Rock in 1814, 1821, 1837, and 1843, by fixing pieces of different kinds of timber to the rock, and getting regular reports on their decay. From those experiments it appeared that green heart, beef wood, and bullet tree were not attacked by the worms, while teak stood remarkably well, although suffering at last. The kyanising fluid and other preparations have been tried, but were not found to be of permanent service. In addition to these experiments on timber, no fewer than twenty-five different kinds and combinations of iron were tried, including specimens of galvanised iron. Although separate specimens of each were tried in places where they were always under water, and also in places where alternately wet and dry, yet all the ungalvanised specimens were found to oxidise with much the same readiness. The galvanised specimens resisted oxidation for three or four years, after which the chemical action went on as quickly as in the others. Green-heart timber is now generally had recourse to in places where the worms are destructive. It appears to have been first used by Mr. J. Hartley, of Liverpool, who published in the "Minutes of Institution of Civil Engineers" an account of its virtues in 1840, as ascertained at the Liverpool Docks. Its cost is considerably greater than memel or than most of the other timbers generally used. Memel logs for the inner piles of piers might, perhaps, from their not being exposed to abrasion from ships, be clad with green-heart planking at those parts which are exposed to the worm. Copper sheathing and scupper nailing are often and successfully employed as protections for piles in exposed situations. Breaming or scorching the wood, and afterwards saturating it with train oil, also forms a partial protection. It is much to be regretted that green-heart timber is so expensive in this country, and that some simple and economical specific against the worm has not been discovered for protecting memel and the cheaper kinds of pine.

Foundations.

Sir R. Rawlinson.

The modern architect has at his command means and appliances of the greatest utility, which were unknown to men in former times. Steam can be brought to aid in driving timber piles, and simple applications of water or air will sink hollow iron piles with comparative ease. The old Eastern plan of forming deep wells and then filling them up with concrete has been too much neglected. Modern well-sinkers will go down in any strata almost to any depth—certainly to any depth required in practice; and a secure foundation may thus be made for the loftiest structure in the most difficult ground. Masses of concrete or of brick or stone work placed on a compressible substratum, however cramped and bound, may prove unsafe. Solidity from a considerable depth can alone be relied on. Enlarging the area of a base or foundation by footings can be resorted to; but mere enlargement of area may not in itself be sufficient. A lofty structure which is to stand secure must have solidity sufficient to maintain each part in the position in which it is first placed. Foundations are too frequently slighted, or labour and material are wrongly applied. The compressibility of oolitic and tertiary clays can only be overcome by piling, deep sinking, heavy ramming, or heavy weighting. The point of bearing must be carried below any possibility of upward reaction. A heavy embankment or heavy pile of building frequently disturbs the surface ground at a distance of many yards, the subsidence causing a corresponding rise around or on either side, as the case may be. A tall chimney, or tower of like proportions, built on such a foundation, if not made safe to a sufficient depth, would most likely become a "leaning tower," if not actually a falling tower. Probably the depth of a foundation in compressible ground ought not to be less than one-fourth the intended height above ground; that is, for a shaft of 200 feet the foundation should be made secure to a depth of 50 feet. This could easily be done by piling, or by well-sinking and concrete.

Cold Hammering of Iron.

J. Nasmyth.

It either is or ought to be known to all practical men concerned in the working of wrought iron that if a piece of the very best and toughest iron is hammered in the process of forging until it ceases to be red hot, that the effect of such cold hammering, as I may term it, is to cause the iron to become so brittle that it will in many cases break across in the process; or if it does not at that time, this process of cold hammering has so removed and destroyed its tenacity as to render it capable of being broken with the slightest blow. What renders the knowledge of the effects of such a process the more important is that in most cases we shall find that, in order to give the pieces of forged work the requisite finish and fine surface as they come from the hands of our workmen in that department, that this very cold hammering and swaging, as it is termed, is required, the more so as it is by such a process that iron forgings are so finished from the hammer so as to require the least possible labour after; and as every good workman in that department is anxious to turn his work out of hand with the very best surface on it, which this cold hammering enables him to do, it is not a very easy matter, and not at all desirable, to require them to discontinue the practice, which many have endeavoured to do from want of a full knowledge of the subject. There is nothing inherently wrong in this practice of cold hammering—far otherwise; the evil rests with the applying such a cold hammered piece of forge work to its purpose without having been passed through the curative process, which is simply this, namely, to heat the piece of forged work in question to a dull red heat, and lay it down to cool at its leisure. By subjecting wrought iron to the most violent hammering or compression at a low temperature, and then submitting the ironwork so treated to the simple process of heating red hot and slow cooling, we enhance its tenacity or shock-sustaining qualities at least twenty times.





ANTONIO FABRES DEL

EDM. RAMUS SC

A JANISSARY.

An Etching from T. Art

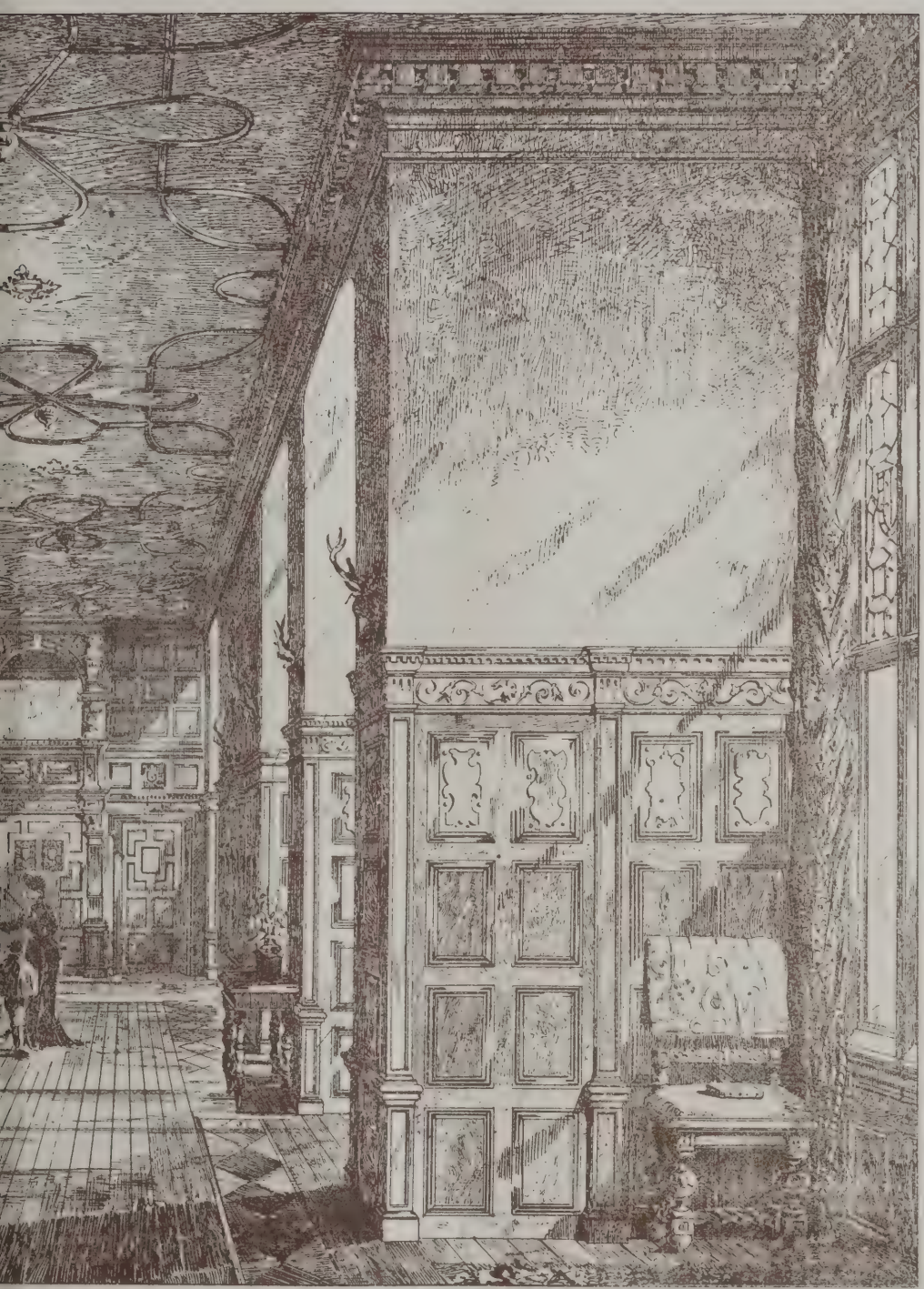


Spottiswoode & Co. Lith. London.

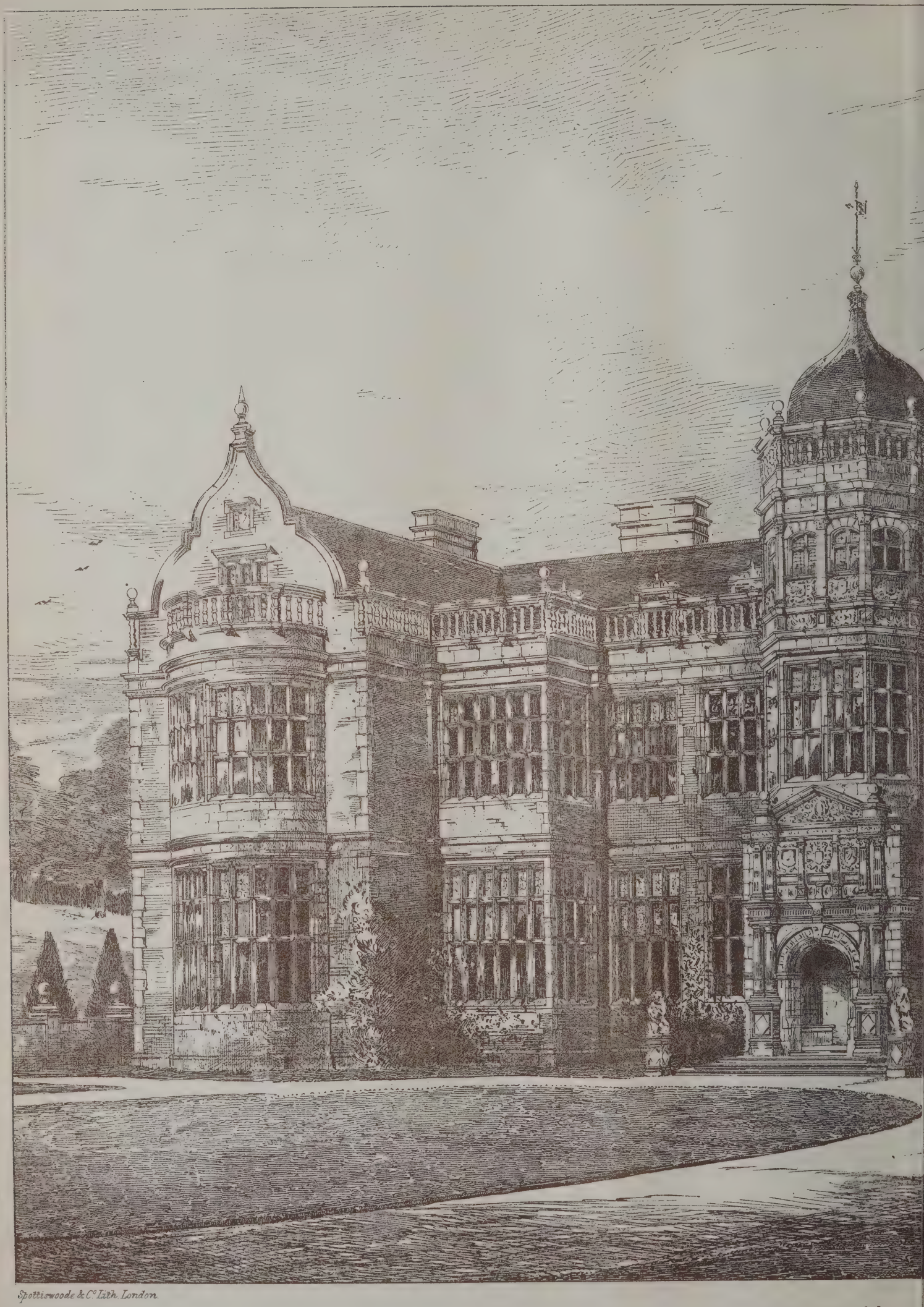
INGESTRE HAL

ENTRA

JOHN B



STAFFORDSHIRE.
E HALL.
Architect.

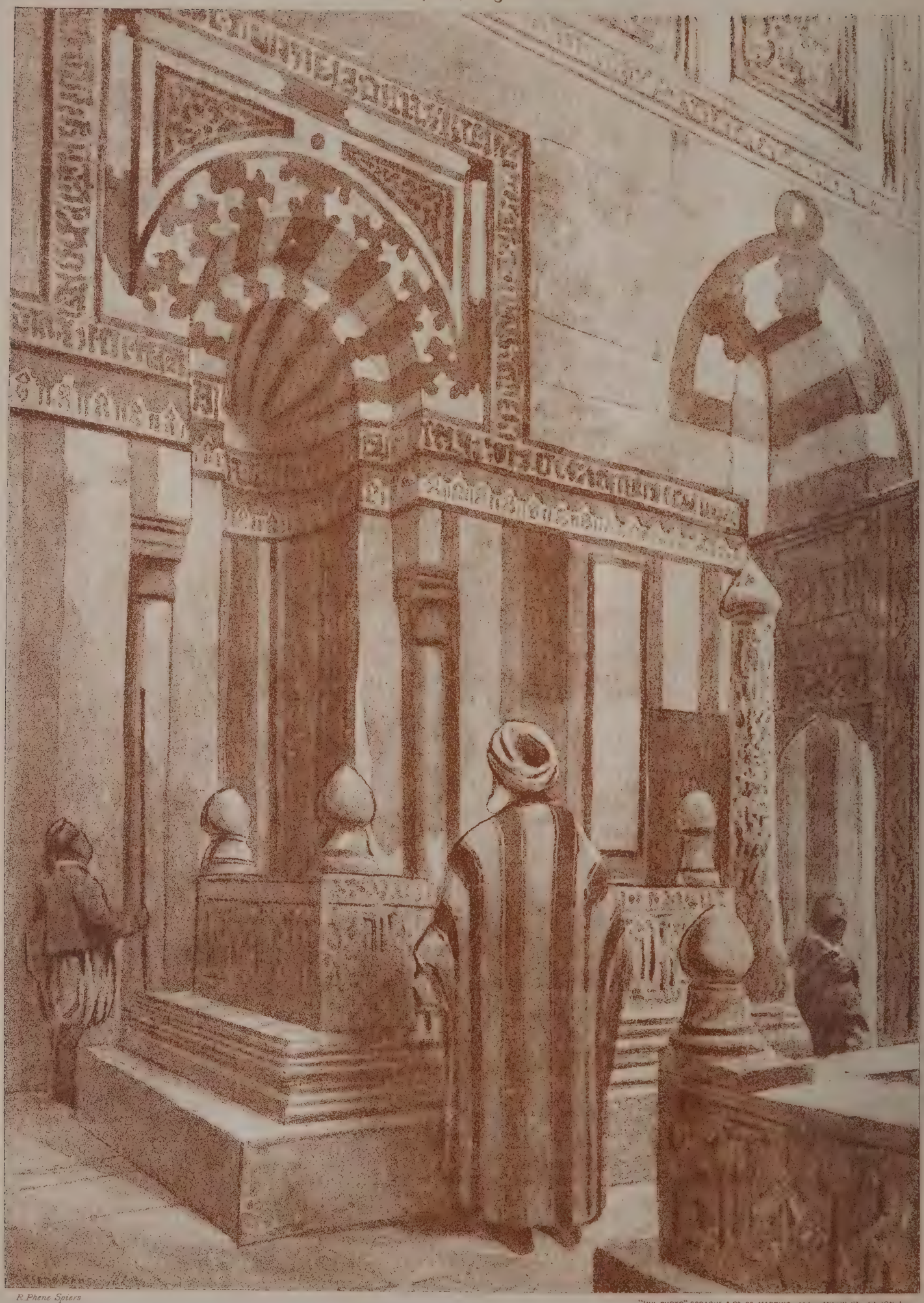


Spottiswoode & C° Lith. London.

INGESTRE HALL,
SOUTH
JOHN BIR



TAFFORDSHIRE.
RONT.
rchitect.



R. Phene Spiers

"INK-PHOTO" SPRAGUE & Co 22, MARTINS LANE, CANNON ST. LONDON E.C.

INTERIOR OF TOMB OF SULTAN BAROOUK, IN CAIRO.



H. Phene Spiers.

"INK-PHOTO" SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

ONE OF THE TOMBS OF THE MEMLOOK KINGS, OUTSIDE CAIRO.

ILLUSTRATIONS.

A JANISSARY.

ONE of the many creditable qualities of *L'Art* is its international character. The magazine seems to recognise all forms of art and artists of all countries. There is only one condition—the works must be of the highest class. Last week we gave an etching after ROMNEY, and it must be said that hitherto no illustration of the English painter's work produced in London comes near the etching which was published in *L'Art*. This week we give another etching from a drawing by Senor FABRES, a Spanish artist, which might have come from DELACROIX or DECAMPS. Very few people could have heard of the artist before they saw the effective etching by M. RAMUS. This generous recognition of foreign art is, however, no more than was to be expected from a periodical which holds the foremost place among works of its class.

INGESTRE HALL, STAFFORDSHIRE.

INGESTRE HALL, which was destroyed by fire over three years ago, and of which we give two views as restored, is situated about five miles from Stafford, in the centre of an extensive and beautiful park. The original mansion was built about the year 1600, and laid down on the lines of an earlier period of architecture, as indicated by the disposition of the plan, much of the subsequent detail pointing to a later date. As in so many mansions of the same period, a great deal of the comfort and convenience was here sacrificed to exterior effect. The old house, as it originally stood, must have been very fine, but subsequent additions and alterations executed in the debased Tudor style of some sixty years ago have done much to impair the native beauty of the building, and there now remains but a very small portion of the original design to show clearly what the whole was. A part of the south front, which is the principal one, escaped the effects of the late fire, but even this was spoiled by the demolition of the original gables and the substitution of others in the above-named style, and at the time mentioned, ill-proportioned and ugly. Happily the ravages of the fire, which gutted the place, brought them to the ground, and the architect of the restoration has endeavoured to put them back to what was considered to be the forms of the original idea. It is only to be regretted that the partial destruction to the north and west fronts, which were built about sixty years ago, did not admit of their being pulled down and treated more in harmony with the original design. The upper portion of the central feature of the south façade, which had formerly a flat roof, has been executed in more strict keeping with the general design than heretofore.

The interior has been entirely rearranged on the most modern principles, and a vast improvement effected in this direction. The arrangements for the prevention of fire are also complete, fireproof floors being constructed throughout, and the supply of water in any such contingency being abundant. The building is encircled by a main tapped at intervals, from which two branches are carried up at each end of the house inside, and provided with hose apparatus on each floor. The plan is so arranged that some of the principal partition walls are carried up from foundation to roof, thus dividing the building into sections and limiting the range of fire should such break out. The entrance hall, of which we give a view, is 66 feet long by about 30 feet wide, and opposite the entrance door is the grand staircase. At one end of the hall is a music gallery for use on festive occasions. The walls are panelled to about 9 feet all round, and surmounted by a carved frieze and cornice, all executed in wainscot. A good deal of elaborate work has otherwise been introduced. The grand staircase is similarly panelled. The ornamental ceilings have been executed in fibrous plaster, and the floors of polished oak. Mr. JOHN BIRCH, of No. 8 John Street, Adelphi, London, is the architect.

ARCHITECTURAL ILLUSTRATION SOCIETY.

4. INTERIOR OF TOMB OF SULTAN BAROOUK, CAIRO.

5. ONE OF THE TOMBS OF THE MEMLOOK KINGS, OUTSIDE CAIRO

THE BIRMINGHAM ART GALLERY.

THE report of the Museum and School of Art Committee of the Birmingham Town Council, states that the question of opening the Museum and Art Gallery on additional evenings in the week has been carefully considered. The building is already opened on Monday and Saturday evenings, and the committee have prepared estimates of the cost of opening on Tuesday, Wednesday, Thursday, and Friday in addition; and also of opening it on two additional evenings only. The extra cost of opening on two additional evenings per week is estimated at staff, 210*l.*; gas, 145*l.*; total, 355*l.* per annum, or say 3*s.* 8*s.* per evening. The additional cost of opening four extra nights (that is six nights) per week until 10 P.M. is estimated at 725*l.* In addition to these expenses, the committee consider that in case of opening each night during the week the engagement of an assistant-keeper would probably be necessary, at a cost say of 150*l.* per annum, bringing up the total extra cost of opening the Museum and Art Gallery for six nights per week to 875*l.* per annum. The committee report with reference to the evening attendance, that the average number of visitors on Monday and Saturday evenings, from January 4 to May 24, was 1,200; the highest number being 2,812, and the lowest 306 (on a very wet evening). Eight evenings in May give an average of 906 visitors, but the attendance during the autumn and winter months will, of course, always be greater—the attendance during eight evenings in February averaging 1,600. The question of opening every evening may very seriously affect the acquisition of valuable loans, owing to the prolonged nightly exposure of pictures to heat and dust, and to the additional hours during which artificial light must be used for cleaning purposes throughout the winter months. In all picture galleries of importance it is found absolutely necessary that the collections should not be continuously exposed to the dust and heat inseparable from the continuous presence of large crowds in the galleries, and when, in addition to daily exhibitions the rooms are open each night, it is found that the unduly high temperature there maintained has an injurious influence upon all works not placed under glass, and that even those which are protected by glass cannot be adequately defended from the effects of a heated and overcharged atmosphere. In view of the large additional cost entailed and the undoubted liability of the contents of the gallery to damage from the causes above stated, the committee think it would be undesirable to open the museum and art gallery for more than two additional evenings per week, and they therefore recommend that they be authorised to open it for such additional period, at an estimated extra expenditure of 355*l.* per annum, this additional opening in their judgment being adequate to the public requirements.

THE REMAINS AT TIRYNS.

A SPECIAL meeting of the Hellenic Society was held on Friday last in the rooms of the Society of Antiquaries, for the purpose of discussing the questions at issue between Dr. Schliemann and the *Times* correspondent at Athens, respecting the remains discovered by the former at Tiryns and Mycenæ. Dr. Schliemann had come expressly from Athens to read a paper in support of his views, and Dr. Dörpfeld, his collaborator, also read a paper. The chair was taken by Dr. Evans, F.R.S., president of the Society of Antiquaries, and there was a large attendance of ladies and gentlemen.

The first paper was read by Mr. F. C. Penrose, in the course of which he said:—My visit to Tiryns and Mycenæ last April was a very hurried one, undertaken solely in the desire to understand better Dr. Schliemann's descriptions. My companion, however, whose letters in the *Times* are doubtless familiar to you, had been over the ground before, and was also familiar, by the study of many years, with Pelasgic work in Greece and Italy. We were led by what we saw both at Mycenæ and Tiryns to doubt the extreme antiquity assigned by Dr. Schliemann to the remains he has excavated, and I gave my companion leave if he thought fit to state that I agreed with him in this respect. The only question which I wish to raise is this—Do the walls which have been uncovered by Dr. Schliemann belong to the same epoch of civilisation as the so-called Treasury of Atreus and the Gate of the Lions at Mycenæ? But while raising this question, far be it from me to undervalue the munificence, the zeal, and self-devotion of Dr. Schliemann, and the very remarkable discoveries which he has made; but when I think of the character of the work I saw at Tiryns and Mycenæ, notwithstanding all I have read or heard since on the subject, I think that there must be a further sifting of the evidence before these structures can be assigned unquestionably to the Pelasgic epoch. The position I take up is this, that there is such a fundamental difference in character of work between the un-

doubted Pelasgic architecture of Mycenæ—that is, the Treasury and the Lion Gate, &c., and the so-called palace of Tiryns, that they have nothing whatever in common. The meanly built walls of the latter, generally of quite small stones, easy for one man to lift but with somewhat larger stones inserted here and there, which have been worked with the saw and chisel, and also with a tubular metal drill, and with not unfrequently bricks introduced—fairly burnt red bricks—all these circumstances seem to be quite inconsistent with the Pelasgic period, and they appeared to pervade the larger portions of the walls. Dr. Schliemann seems to attribute the presence of burnt bricks to the action of the conflagrations which have destroyed the palace. In the opinion of an experienced brickmaker whom I have consulted, no regular bricks could be converted from sun-dried bricks built up in a wall by such a cause, although they might be partially vitrified in an irregular manner and would probably be cracked. The bricks I am referring to had all the appearance of kiln-burnt bricks, whereas the stones of the undoubted Pelasgic walls are large, dressed without metal tools. The saw cuts, too, which are seen all over the newly-discovered remains, are not found in the standard Pelasgic works. Certainly at Mycenæ, and I think at Tiryns, there are mixed up with the walls claimed as pre-Homeric, stones taken from older structures as borrowed materials—and these appeared to me as of regular Hellenic workmanship of classical times. The analogy of certain very rude and mean walls recently unearthed on the Acropolis of Athens has been thought to confirm the date of the palace of Tiryns; but the walls of Athens, though they seem to be older than the Persian invasion, carry us only a very small way backwards towards the age of the Atridæ. These remarks apply quite as much, or more, to the house and tombs at Mycenæ. I believe the treasures and pottery found at Tiryns, as well as at Mycenæ, have their own difficulties before they can be recognised as pre-Homeric, but they cannot of themselves prove the great antiquity of the structure in which they were found. Only on three points will I venture a remark. There is some similarity between the buttons, or *bullæ*, found in these tombs with others found at Olympia, which, of course, cannot be pre-Homeric. Again, the swords, especially those of the leaf pattern, have great resemblance to swords with which we are familiar in the north, of Celtic or Teutonic make. And I lately saw in the museum at the Pump Room at Bath a mask, of which I produce a photograph (obtained for me by the kindness of Mr. Elton), which has a remarkable family likeness, although of meaner material, with the golden masks of the Mycenæ tombs. This mask, made of lead or a kind of pewter, was found among the Roman baths, and was probably used in the sepulture of some Celtic ally of the Romans, in the first or second or third century of our era. As respects the decorations—I speak from the drawings, for I did not see the originals—although there may be some archaic character about them, they are so rude and inartistic that they might be bad imitations of earlier work. The pottery fragments seem to be of a very mixed character. That there are some archaic specimens on so ancient a site is not surprising, but these fragments are, to say the least, inconclusive, except so far as to show that the site has been occupied and reoccupied, and that the walls we now see may be entirely or chiefly of the latter construction. However, as I said at the beginning of this paper, I make these statements in the hope that these newly-discovered works may be examined by those who have opportunity, research, and leisure to go carefully into all doubtful points, and if the final report should be in favour of their great antiquity, I doubt if any one, except, of course, Dr. Schliemann and Dr. Dörpfeld, will be more gratified than I shall be.

Dr. Schliemann then read his paper as follows:—In July 1876 I solicited and obtained from the Greek Government the permission to excavate at Mycenæ, because by a certain passage in Pausanias, which I considered to have always been misunderstood, I hoped to discover the tombs which had been shown to that traveller as the tombs of Agamemnon and his companions. On the way to Mycenæ I had to pass Tiryns, and I could not resist the desire to stop there for a week in order to sound the ground both inside and outside of that ancient stronghold. I found the surface of the upper plateau to be very uneven, owing to a number of house walls, apparently composed of lime and bricks, which were peeping out from the surface, and which formed such hard and compact masses that I could not cut them with the ordinary pickaxe. They must, therefore, at all times have prevented the cultivation of the field. I firmly held these walls to be of a late Byzantine time, and to belong to a villa of the eleventh or twelfth century of our era. I was strengthened in this belief by a floor of lime-concrete and pebbles which I found at a depth of from three to five feet between the walls, as well as by a few Byzantine potsherds which I picked up on the surface of the ground, and by distinctive Byzantine pottery which I found down to a depth of three feet in a ditch at the southern extremity of the upper plateau. I trust, gentlemen, that you will generously pardon me, as a layman in architecture, this error, considering that all travellers, and even the greatest luminaries in architecture who visited Tiryns, must necessarily have fallen into the same mistake, for you contend with me that, if such had not been the case, the prehistoric palace at Tiryns would have been excavated many years ago, and that honour could not have been reserved to my collaborator, Dr. Dörpfeld. The architecture of the ancient Greek houses has hitherto been a mystery to us; we could not boast of knowing the plan of a single dwelling-house of the Classical time of Greece. It is, therefore, but natural that great importance should be attached to our discovery of a vast palace of the remote heroic age, and we are not at all surprised that our discovery should be received with incredulity. We are not at all surprised that men eminent in science and art should come out to Tiryns to verify the veracity of our discovery. But it is of paramount necessity that they should read our book "Tiryns" before setting out on their journey, and that they should take it with them for reference and for testing the accuracy of our plans, which my dear, much-lamented friend James Fergusson used to call masterpieces of architectural skill. Unfortunately this first and capital condition has not been fulfilled by your travellers. They had probably not read the book at all; at all events they left it at home, and they were consequently obliged to reconstruct the plans, which is a very hard, not to say an impossible work, for earth and sand have been heaped up in the palace by order of the Greek Archæological Society in order to preserve the painted floors and the thresholds from injury, and nothing can now be seen of these and other important items, whereas, with the plan in hand, the visitors could easily bring them to light by digging a little with the foot. Besides, your travellers without plans had necessarily to jump into the same atrocious errors into which all travellers fell before our excavations, namely, the error to mistake the prehistoric walls of the palace for late Byzantine walls of lime and bricks, whereas in reality they consist of quarry stones loaded with clay mortar. But in the great conflagration which destroyed the palace the stones were calcined wherever beams of timber fed the flames, and thus the traveller thinks now he sees lime everywhere and particularly so in the glare of the Oriental sun. How easy it is to mistake a wall for what it is not and to make mistakes of more than 2,000 years in the age of a wall! That, I think, could not be better illustrated than by the great circular enclosure wall at the royal tombs at Mycenæ, which was brought to light in a very ruined state in my excavations in 1876. But, wishing to consolidate the terrace of the tombs, the Greek Archæological Society has reconstructed this enclosure wall in 1876; it has also restored approximately in the shape in which I had found them the internal walls of the tombs of which I have been obliged to take out every stone in order to save the gold. Now the *Times* correspondent, Mr. Stillman, an eminent Oxford professor, and two distinguished members of the American school at Athens, discover in these walls some sculptured blocks of the Classical time; they consequently proclaim that these walls are of the third century B.C., and conclude therefrom that the royal tombs of Mycenæ belong to and have been built by those Celtic barbarians who invaded Greece in the time of Pyrrhus (about 285 B.C.). They are strengthened in this belief by two shabby-looking, somewhat irregular buildings to the right and left of the tomb terrace, which they likewise attribute to those barbarian Celts. But it is an historical fact that the Celtic barbarians only came as far as Dephi and never reached the Peloponnesus; it is further an historical fact that those walls are hardly ten years old; it is further a fact, of which everybody can easily convince himself, that the so-called barbarian Celtic buildings to the right and left are merely the foundations of two prehistoric buildings, that these foundations were destined to remain always underground, and that they always have been underground, for the antæ on the top of them can leave no doubt in this respect. Gentlemen, it is an established fact, it is a stubborn fact, in archæology that an ancient ruin may be older, but that it cannot possibly be later than the latest objects of human industry which we find within it. Now let us see what we find in the prehistoric palace of Tiryns. We find the walls both in the outside and on the inside wainscotted first with a layer of clay and then with a still thicker layer of lime, which is smoothed and polished and covered with paintings of the most archaic patterns that have ever been found. We find among them the pattern of the marvellous thalamos ceiling of Orchomenos. Similar wainscotted and painted walls I found at Mycenæ; they were also found in ancient Phœnician buildings in Syria, and you may see them to the present day in the prehistoric city which has been discovered beneath three layers of pumice stone and volcanic ashes on the island of Thera, which is by more than 2,000 years older than the beginning of the Byzantine empire in 395 B.C. With regard to other objects of human industry, whoever takes the trouble to examine the illustrations in our book on Tiryns will see that, generally speaking, they are of the same shape, fabric, and manufacture as those of Mycenæ, which all archæologists unanimously attribute to 1200–1400 B.C., with the excep-

tion of the terra-cotta idols, most of which have much more ancient types, with the exception also of the arrow-heads and knives of obsidian, which for rudeness can only be compared to those I found in the prehistoric tumulus at Marathon, erroneously called the tomb of the 192 Athenians who fell in the battle of Marathon (490 B.C.), or to those found in the cave dwellings in the Dordogne in France, which were inhabited at the time of the mammoth. I think it almost superfluous to reply to the objection raised that walls of quarry stone bonded with clay denote barbarian builders of a late Byzantine time, for it can be easily proved that in prehistoric times the lower part of all house walls consisted precisely of this masonry, the upper part being built of sun-dried bricks, for similar walls are found by many hundreds in all the five prehistoric cities of Troy, in the treasuries of Mycenæ, in the thalamos of Orchomenos, in Samos in Cephalonia, in Eleusis, in the Acropolis of Athens, beneath the edifices destroyed by the Persians, and last, not least, in the prehistoric city in Thera. In conclusion, I express the hope that in a short time other eminent scientific men, members of this exalted Hellenic Society, will, after having read our book "Tiryns," take it with them to Greece to ascertain the accuracy of our statements and plans, and my collaborator and I will defer to the judgment seat of this illustrious body to decide on their report whether the result of our hard work at Tiryns deserves to be called "one of the most extraordinary hallucinations of unscientific enthusiasts which literature can boast of," a title which the *Times* correspondent, Mr. Stillman, so liberally bestows upon it. The appreciation of this Hellenic Society will be a great spur and encouragement to us in this new campaign.

Dr. Dörpfeld also contributed a paper, of which a translation was read by Professor C. T. Newton, and which enforced in detail the views lately expressed in the *Times* by Dr. Dörpfeld, and pointed out that all those indications which had been referred to by the *Times* correspondent and insisted upon by Mr. Penrose, as proving the remains at Tiryns and Mycenæ to be of a later date than that which was assigned to them by Dr. Schliemann and himself, such as the tools, and particularly the drill which appeared to have been used, and the mortar and other materials for the building of the walls, were equally apparent in remains at Troy and in Egypt which were admittedly of as high an antiquity as he claimed for the remains at Tiryns and Mycenæ.

Mr. H. F. Pelham then read a paper by Mr. Stillman, the correspondent of the *Times*, in support of the views which have already been expressed by that gentleman.

On the motion of the chairman, a vote of thanks was cordially given to the readers of papers, and especially to Dr. Schliemann, who had come at so great a sacrifice from Athens to London to defend his position against the attacks which had been made upon it.

In the discussion which followed Professor J. H. Middleton expressed a general concurrence in the conclusions of Dr. Schliemann and Dr. Dörpfeld.

Mr. Pelham, who had made himself acquainted with Dr. Schliemann's views and spoke with some experience of excavation in Italy, was disposed to think, though he did not presume to dogmatise, that considerable further evidence was required before Dr. Schliemann's views could be accepted.

Dr. Schliemann, Dr. Dörpfeld, and Mr. Penrose briefly replied to the criticisms passed upon them, and Dr. Karl Blind quoted the opinion of the late Dr. James Fergusson in support of Dr. Schliemann's views.

The proceedings terminated with a vote of thanks to Dr. Evans for presiding.

DOMESDAY BOOK.

THE committee appointed by the Royal Historical Society to carry out the details of the commemoration of the 800th anniversary of the completion of the Domesday Survey, has prepared and issued a circular addressed to local antiquaries, giving information as to the way in which it is intended to celebrate the event in October next. The commemoration will take the form partly of a series of meetings for the reading of papers and the publication of a volume of Domesday studies, and partly of an exhibition of manuscripts at the Public Record Office and the British Museum. The exhibition at the Public Record Office will comprise the manuscript of Domesday Book (two volumes), the Abbreviatio, the Breviate, a copy of the Boldon Book, the Red and Black Books of the Exchequer, the two volumes entitled "Testa de Nevil," early Hundred Rolls, Books of Aids of Edward III., &c. The exhibition at the British Museum will consist of the Survey of Lindsey, Monastic Cartularies containing surveys, Inquisicio Eliensis, transcript of the original Domesday return for Cambridge, printed editions of the survey and translations, and, it is hoped, loan contributions from other libraries. As it is desirable to make this exhibition as complete as possible, the committee hope that the owners of all manuscripts bearing on the subject of Domesday will lend them for the purpose. The principal librarian of the British Museum has consented to take charge of anything that may be sent to him for this purpose. As a permanent record of this commemoration, it is proposed to compile a bibliographical list of existing works relating to Domesday Book, which will include brief descriptions of the various Domesday manuscripts, with references to their places of deposit and the titles of all papers and pamphlets on the subject. The following is a list of the chief subjects on which it is proposed that papers shall be read:—"The History of the Manuscripts of Domesday and their Custody," "The Purpose, Occasion, and Objects of the Survey," "The Order of the Compilation," "Geographical Limit of the Survey, and the Cause of the omission of certain Districts," "Ancient Demesne," "The Boroughs and Cities," "Changes in the Extent and Names of Shires and Hundreds," "The Distribution of Socage Tenure throughout the Country," "The Lands laid Waste in the North," "Industrial Condition of England," "Population," "The Church in Domesday," "The Magnates of Domesday," "The Classes of Tenants," "The Danegeld and the Fiscal System of Domesday generally," "Legal Forms in Domesday," "The Clamores, Occupationes, and Invasiones," "Courts and Jurisdictions," "The Measures of Land," and "Comparison of the Domesday Survey with other Surveys, such as the Exon Domesday, Winton Domesdays, Gheld Inquest, Gloucestershire Fragment, the Inquisitio Eliensis, the Liber Niger of Peterborough, the Survey of Lindsey, and Boldon Book."

THE PREHISTORIC BOAT.

ON Tuesday, Mr. Justice Chitty delivered judgment in the case of Elwes *v.* the Brigg Gas Company, and thus determined the ownership of the ancient boat which was found embedded in the bank of the river Ancholme at Brigg. His lordship said the parties concurred in the statement, more or less conjectural, that the boat was some 2,000 years old, and that, having been abandoned or left derelict by the original owners on what was now the bank of the river Ancholme, it became, by the operation of natural causes, such as by sinking in the ooze and the deposit of alluvial soil, buried in the earth, and so it remained for many centuries, until it was recently discovered and excavated by the defendants. When discovered it was lying embedded in the clay, at a depth from the surface of 4 feet at one end and 6 feet at the other, and when brought to the surface it appeared to be a boat of rude construction, 45 feet in length, hollowed out of a single oak tree. The wood had not become petrified or fossilised, but retained the properties of wood. During the hearing the question had been discussed as to whether the boat, just previously to its discovery, ought, in point of law, to be considered as a mineral or as part of the soil in which it was embedded, or as still retaining the character of a chattel. It was one or other of these three things. In his lordship's opinion, it was, for reasons to be given, not actually necessary to give a decision on that discussion. In support of the contention that the boat was a mineral, reference was made to the case of Hext *v.* Gill, and to the statements in the judgment of Lord Justice Mellish (with which Lord Justice James concurred) that the term "minerals" included every substance which could be got from underneath the earth for the purpose of profit. The terms of such a definition were wide enough to include the boat; but he was not aware that the term "minerals" had ever been held to include anything except that which was part of the natural soil. Unquestionably coal was deemed in law a part of the natural soil, without regard to what geologists might show to have been its origin. In law the natural processes by which the trees of a forest had become coal were not investigated; the result only was considered. But the boat had not become petrified or fossilised. It had always been distinguishable from the natural soil itself. If, therefore, he were required to decide the question he should hold that it was not a mineral. In support of the contention that it ought to be deemed at law as part of the soil in which it was imbedded, reference had been made to the principle embodied in the maxim "Quicquid plantatur solo," or, as it was sometimes stated, "Quicquid fixatur solo, solo cedit." That principle was an absolute rule of law, not depending on intention. For instance, if a man dug in the land of another, and permanently fixed in the soil stones or bricks or the like as the foundation of a house, the stones or bricks became the property of the owner of the soil, whatsoever might have been the intention of the person who had so placed them there, and even against his declared intention that they should remain his property; nor did it appear to be material that the things should have been placed there by the hand of man, but it would seem to be sufficient if they had become permanently

fixed in the soil by the operation of natural causes. In support of the contention that the boat always remained a chattel it was urged that, though embedded in the soil, it always was distinguishable from the soil itself, and preserved its original character of a chattel. It certainly was a chattel now. Not long ago, in the course of making excavations in Hampshire, there was discovered a jar containing Roman coins—not gold or silver coins, and therefore not falling within the royal prerogative of treasure-trove. Apparently the coins formed the small change of the treasure of a Roman legion. Could it be said that the jar or the coins were part of the soil within the principle referred to? Similarly, a short time since there was found beneath the soil (his lordship believed in Devonshire) a Roman lamp of ingenious construction made of lead and in an excellent state of preservation. Could it be said that the lamp was part of the soil? Such questions, although interesting, need not be decided in the case before him. The first question which did actually arise in the case was whether the boat belonged to the plaintiff at the time of the granting of the lease. He held that it did, whether it ought to be regarded as a mineral, or as part of the soil within the maxim above cited, or as a chattel. If it was a mineral or part of the soil in the sense above indicated, then it clearly belonged to the owner of the inheritance as part of the inheritance itself. But if it ought to be regarded as a chattel, he held the property in the chattel was vested in the plaintiff. He was entitled to the inheritance and in lawful possession. He was in possession of the ground, not merely of the surface, but of everything that lay beneath the surface down to the centre of the earth, and, consequently, in possession of the boat. The principle of the decision of the Court in "Reg. *v.* Rowe" appeared to apply. There the question was whether the property in some iron lying at the bottom of a canal was well laid in the indictment in the land company. The water had been taken out for the purpose of cleaning the canal, and the prisoner was indicted for stealing the iron, which had been dropped into the canal by the owner. The Court held that the canal company had a sufficient possession of the iron to support the indictment. If the fact of the iron having been left on the surface of the ground covered by water was sufficient to give in law possession of the chattel to the person in possession of the land, it appeared *à fortiori* to follow that the facts of the present case justified a decision that the plaintiff was in possession of the boat. For the boat was embedded in the land; a mere trespasser could not have taken possession of it; he could only have come at it by further acts of trespass involving spoil and waste of the inheritance. The plaintiff, then, being thus in possession of the chattel, it followed that the property in the chattel was vested in him. Obviously the right of the original owner could not be established; it had for centuries been lost or barred, even supposing that the property had not been abandoned when the boat was first left on the spot where it was found. The plaintiff, then, had a lawful possession, good against all the world, and, therefore, had the property in the boat. In his opinion it made no difference, in those circumstances, that the plaintiff was not aware of the existence of the boat. The defendants' claim must, then, rest on the lease and what had been done or had occurred since it was granted, including the finding of the boat. By the mere demise the boat did not pass to them, a lease being only a contract for the possession of the land. The defendants discovered the boat in making excavations pursuant to their documentary contract. The contract was however silent as to what was to be done with the soil excavated. In the circumstances, some permission ought to be implied as to the removal and disposal of what might be excavated. The question was as to the extent of this implied permission. As against the lessors, the permission ought not to be carried beyond what might be reasonably inferred to have been the intention of the parties. The excavations were to be made to a depth of 15 feet. Obviously it was not the intention of the parties that the soil excavated should be piled up on other parts of the small plot of ground comprised in the lease. The implied permission to remove and dispose ought then to extend to what the parties might fairly be deemed to have contemplated would be found in making the excavations, but did not extend further. He was of opinion that the license to remove and dispose extended to the clay and ordinary soil likely to be found when excavating in pursuance of the license, but did not extend to what was unknown and not contemplated. If the boat ought to be considered as a mineral, though that was not his opinion, then it fell within the exception of minerals contained in the lease itself and was expressly excluded by the lease. If, however, the boat ought to be considered as part of the soil by reason of its having becoming permanently fixed thereto, or if it ought to be considered as a chattel it was equally excluded, for it would be unreasonable to infer that it was intended to be included in the lease. Further, if it ought to be regarded as a chattel the defendants did not acquire any property in the chattel by the mere finding as against the plaintiff who, upon the grounds already stated, was the owner of the chattel. For these reasons he held that the plaintiff was entitled to the boat.

HOSPITAL HUTS *v.* BRICK BUILDINGS.

IN his latest report on the sanitary condition of Kensington, Dr. Duffield, the Medical Officer of Health, writes:—From time to time I have referred to the proceedings of the Asylums Board in regard to provision of hospital accommodation for smallpox patients, and in my report dated March 2 I alluded to the intention of the managers to proceed at once to the erection of a permanent hospital at their Gore Farm Estate, Darenth, all difficulty having apparently been removed, by the failure of the plaintiffs in the appeal case, Fleet *v.* The Managers, to get the judgment of Mr. Justice Pearson reversed.

I have now to report that the Local Government Board have intervened in a manner to put a stop to further proceedings for the present, by having addressed a letter to the managers respecting the proposed hospital (plans for which had previously received their assent), to the effect that they "are advised that the present condition of medical opinion with regard to the construction of smallpox hospitals, and to the number of patients whom it may be desirable to treat under one administration, is so far undecided as to render it inexpedient to expend larger sums than may be found absolutely necessary on structures which further experience may show to be not wholly suited to their purpose." The Board, therefore, propose "that whatever provision is made at Darenth site for future epidemics should rather be in the form of huts than of brick buildings," offer suggestions with reference to the utilisation of the huts in the possession of the managers, and the erection of others, and request the managers to give further consideration to the subject. The Chairman of the Board naturally enough animadverted on the new position taken up by the Local Government Board in advising the managers to go back to the erection of huts after the long experience which had been obtained as to their cost, and the difficulties of administration under this system. Resolutions were adopted referring the letter to a committee, and stopping all preparation of plans. It may be mentioned that the estimated cost of the permanent hospital is about 120,000*l.*, that the encampment in 1884-85 cost in round figures, 40,000*l.*, and that any re-establishment of it would necessarily involve a considerable outlay, it being alleged that the buildings and tents of which the two camps were composed are not worthy of being re-erected. As a matter of fact, however, huts with accommodation for 350 patients are still standing and in fair condition. As the site will assuredly be retained and used in epidemic times, it would appear to be desirable that an administrative block should be erected without loss of time, whatever may be the ultimate decision in regard to other buildings of a permanent character.

EXCAVATIONS IN POMPEII.

A CORRESPONDENT writes as follows to the *New York Journal of Commerce*:—

It seems odd to speak of a dead city as a growing one. But that is exactly the case with Pompeii. There are many cities in Italy that do not grow half as fast as the one buried by the ashes of Vesuvius 1,800 years ago. A person visiting it at intervals of a year notices a marked enlargement of its boundaries. The Italians, you know, are the champion diggers. They make the shovel fly when they attack the grave of Pompeii. We saw a gang of them at work there. A Government overseer watched them like a hawk. He wanted to be sure that they pocketed no jewelry, coins, or objects of art or utility yielded by the excavations. The only produce of their toil in that line as we stood by was a bit of iron, which the guide called a hinge, and the fragment of a small marble column. The spades busily plied were gradually bringing to light a beautiful house. The floors were mosaic, with simple but graceful designs in scroll pattern—nearly as fresh of colour as if laid yesterday. The walls bore frescoes of fainter tints—grinning masks, fawns, cupids, birds, fish, and fruit. It had evidently been the home of a well-to-do citizen of Pompeii. The nervous movements of the workmen betrayed their anxiety. They were hoping at every moment to make a valuable "find." Perhaps they might hit upon a great iron chest, studded with round knobs like a boiler, and full of gold, money, or ornaments, or they might strike another wonder in marble or bronze, or they might be startled by coming suddenly upon a skull or other human remains. In the latter event, the work is suspended till a careful inspection is made.

The responsible and intelligent person in charge proceeds to ascertain if the dead Pompeiian has left a mould of himself or herself in the plastic ashes. If so, he prepares a mixture of plaster of Paris, breaks a hole in the crust, and slowly pours in the liquid till the mould is full. When it has hardened the casing is tenderly removed. Lo! there is a rough image, showing some poor creature in the agonies of death, prone on the floor, face downward.

Thus, most usually, were the inhabitants of the doomed

city caught by the destroying angel. The skull, or leg, or arm, or whatever other part of the skeleton has not relapsed into its original dust, may attach itself to the plaster cast in the proper place, or may require to be joined on by a pardonable "restoration." In either case, the effect is thrilling in its horrible reality. Nothing in painting or sculpture can shock the beholder more than these self-produced and truthful statues exhibited in the museum, which is the first and most interesting thing shown to visitors. But, though neither gold nor silver, nor the minutest scrap of a skeleton, nor anything else of importance was unearthed for my benefit, I quitted the new excavations with reluctance to examine those parts of Pompeii with which the world is already familiar, through the medium of books and pictures. I found myself quite at home in the bakery, the wine shop, at the oil merchant's, at the houses of Pansa, of Sallust, of the "Tragic Poet," and the rest. The high stepping-stones across the streets looked familiar, as if I had trodden them before. The deep ruts cut by the carts as they groaned up the hill, coming from the ancient Stabia, were like friendly landmarks. So fully have literature and art made us acquainted with this disinterred city.

The guide tells me that only about one-third of Pompeii has yet been uncovered. I take his word for it. He is also of the opinion that the best parts of the city have already been dug out. He evidently wishes that the work would stop. He is very human in this, for he finds it tiresome to show people about the present Pompeii. Treble its size, and his labour would be threefold. And he is forbidden to accept money. But I imagine that this very stern prohibition does not prevent persons from offering him (say) a couple of francs on "the sly," or him from accepting them.

It may be true, as our guide insists, that the temples, forums, baths, theatres, and fine houses now above ground surpass anything of the kind that may hereafter be discovered at Pompeii. But the Italian Government is not disposed to take that for granted. Liberal sums are yearly appropriated to push on the work. It bears fruits. A new temple or amphitheatre may not be struck every year, but something is constantly being turned up to instruct the world in the manners and customs of the old Romans, so well reflected in the representative city of Pompeii. Of bronze or stone statues, household implements, and tools of trades the yield is immense and steady. These may be counted by the thousand in the splendid museum at Naples. One can see so many articles of luxury and use exactly similar to those he buys nowadays, that he is fain to pause and try to remember what besides the steam engine, the photograph, and the electric telegraph we moderns have invented. There being no more room at Naples to store these treasures, the excess of them is huddled together in the courtyards and houses of Pompeii herself. It is estimated that at the present rate this mine of antiquities will not be worked out in fifty years.

Correspondence

The Æolus Waterspray and General Ventilating Company.

Sir,—Will you permit us to state that the petition presented for the liquidation of the Æolus Waterspray and General Ventilating Company, Limited, has no connection with or reference to the business of our client, Mr. Richard Oakley, trading as the Æolus Waterspray General Ventilating and Electrical Engineering Company, 235 High Holborn, to whom all the interests in the British patents of the limited company were transferred so far back as March 1884?—Your obedient servants, Johnson, Harris & Dowding.

3, 4, and 5 Queen Street, Cheapside, E.C.:
June 29, 1886.

CHURCH BUILDING AND RESTORATION.

Cheadle.—St. Giles's Church has been reopened after restoration. The work has been carried out from the designs and under the superintendence of Messrs. Thomas Lewis & Son, architects, Newcastle-under-Lyne. A new oak pulpit, supplied by Messrs. Jones & Willis, London and Birmingham, has also been fixed. The general contract was undertaken by Mr. A. P. Cotterill, of Crewe. Mr. J. Jackson, Newcastle, supplied and fixed the heating apparatus.

Exbourne.—The old church of St. Mary has been reopened after restoration of the chancel and partial renovation of the nave. The style of the church is Late Decorated, and one of its features is the fine west tower. The works have been done by Mr. W. Pethrick, of Hatherleigh, under the direction of Mr. R. Medley Fulford, of Exeter.

Glasgow.—A new Established church has been opened at Possilpark, having been built from designs by Mr. David Thomson, architect, Glasgow. The contractors employed were—For mason work, Messrs. Leckie & Co.; joiner, Mr. James Laidlaw; plumber, Mr. John Young; plasterer, Mr. Alexander Brown; slater, Mr. William Darrie; painter, Messrs. John Brabner & Co.; gasfitting, Mr. Archibald Watson; heating, Messrs. Cormack & Sons. Ventilation is effected by the introduction of Buchanan's sunlight ventilators.

Leicester.—The church of St. Barnabas, New Humberstone, has been opened. The architects are Messrs. Goddard & Paget, of Leicester, the principal contractor being Mr. G. Hewitt, of Humberstone Gate. Sub-contractors—Messrs. Thrall & Payne, stonework; Mr. S. Wilmott, woodwork carving; Messrs. Elgood Brothers, ornamental ironwork. The gas fittings are by Messrs. Webb & Son, Leicester. The bell was cast by Messrs. Taylor, of Loughborough, and the tiling was supplied by Messrs. Ellis & Partridge. Mr. J. Clifton acted as clerk of works.

Liverpool.—The new church of St. Polycarp has been opened. The church, which is Early English in style, will accommodate 600 persons, and has been built by Messrs. Brown & Backhouse from the designs of Mr. George Bradbury, at a cost of about 4,000*l.*

Manchester.—The foundation-stones of a new Wesleyan chapel to accommodate 800 persons have been laid at Moss Side. The building will be of brick with stone and terra-cotta dressings. The work is being carried out by Mr. L. C. Webster, of Chorlton-on-Medlock, from the designs and under the supervision of Messrs. Dunk & Geden, architects, London.

Newbottle.—A new church erected at Newbottle has lately been opened. The building is of stone, with a slate roof, the style adopted being Early English, and the church is furnished with seats to accommodate 568 persons. The architects are Messrs. Oliver & Leeson, of Newcastle, and Messrs. Hirst & Sons, of Sunderland, are the contractors.

Northampton.—A new church has been opened in St. Michael's Road. The building, a handsome structure, capable of accommodating about 1,060 persons, was designed by Mr. S. J. Newman, A.R.I.B.A., of Abington Street, and the work has been carried out by Messrs. Reynolds & Son, the cost of the undertaking, including the site, being about 4,100*l.*

Scarborough.—A Wesleyan church has been opened, having been built at a cost of about 5,000*l.* It was designed by Messrs. Morley & Woodhouse, architects, Bradford, and the work has been carried out by the following contractors:—Masonry and plastering, Mr. W. Peacock; joiners' work, Mr. Scales; plumber, Mr. Stephenson; painter, Mr. Wrightson; upholsterers, Messrs. Tonks; heating, &c., Messrs. Waters & Woodhouse, all of Scarborough. The church comprises nave, chancel, transepts, and tower and spire; the style is of the Mediæval character, and the building will accommodate 550 persons.

Swanage.—A new Wesley Memorial Church was opened in this town on Thursday, the 1st inst. The building is of the hard local stone, with Langton and Portland stone dressings outside, while the interior dressings are in Monk's Park Bath stone. It is in the style of late French Gothic, and has a tower and spire some 110 feet high. A very handsome Caen stone pulpit or rostrum, worked to the designs of the architects, has been executed and given by Mr. R. Webber, of Clapham Road, London, and a three-light window over has been filled with really fine stained glass representing Faith, Hope, and Charity, the authors of this being Messrs. G. & A. Lucford, of Kentish Town. The whole of the visible woodwork is in oak and pitch pine. The accommodation is about 530, including the end gallery. The cost of the building, including the value of work and materials given, will amount to some 4,250*l.* The church, with which the inhabitants of the town are extremely pleased, has been carried out by Messrs. Wellstead & Griffin, of Swanage and Broadstone, and the architects are Messrs. Bucknall & Jennings, of Swansea and Bristol.

NEW BUILDINGS.

Belfast.—New premises have been erected in the Royal Avenue, Belfast, for the proprietors of the *Evening Telegraph* The entire contract has been carried out by Messrs. H. &. J Martin, Ormeau Works, Belfast, from the plans and under the personal superintendence of the architect, Mr. Henry Seaver, of 35 Royal Avenue, a rising member of the profession in Belfast. The new buildings occupy the site next the Free Library, at the junction of Royal Avenue and Little Donegall Street, having a frontage of 76 feet 6 inches to the former, and 101 feet 6 inches to the latter street. The edifice is 79 feet high,

and is understood to be the loftiest in the Avenue. It is considerably more spacious in the rear than in the front, the width at the back being 83 feet. The materials used in the construction of the principal elevations are red sandstone, from the Dumfries quarries, the subsidiary parts being carried out in red perforated brick from the Ormeau Works. The style adopted has been a free treatment of the Classic period. The main façades have been designed so as to divide into a series of bays of equal spans and bold proportions rising almost the full height of the building. These bays are separated by rusticated pilasters standing out from the line of building, and rising to a height of 48 feet, terminating with richly carved and moulded capitals in the composite order; from these spring semicircular stone arches with elaborately moulded labels. These arches are surmounted by a richly-designed and boldly-projecting stone cornice having cantilever blocks with enrichments of moulded brick and tiles. Above the main cornice rises a well-proportioned parapet wall, broken at intervals by dormers of imposing dimensions. The arrangement of the various departments has been carefully studied, as also the fitting up of the establishment. The stereo-room has been specially designed so as to guard against any possibility of fire spreading to the rest of the building. The walls surrounding this department are carried through the roof; the floor being composed of concrete resting on iron beams, and the doors are of iron.

Bucknall.—A new infectious diseases hospital, erected jointly by the local authorities of Hanley, Stoke, and Fenton, at Eaves Lane, Bucknall, has been opened. It is built on the pavilion system, and consists of five separate pavilions, and will accommodate twenty-eight beds, and at a push this number might be increased to forty, as the quantity of air space, viz., 2,000 cubic feet, and floor space 144 square feet, is based on the extreme limit. The administrative pavilion is a two-storey building, and comprises on the ground floor a dispensary, waiting-room, living room for attendant, kitchen, scullery, larder, and store closets; and on the upper storey, six bedrooms, bathroom, and airing closet. In this block there is also a fire hydrant, with length of hose capable of reaching to any of the pavilions. The laundry block contains wash-house, drying-closet, disinfecting-closet, ash-place with riddling-machine, coal and wood house, room for the storage and chopping of straw used for filling mattresses in the hospital wards, ambulance house, and mortuary. The disinfecting closet, the apparatus for which has been supplied by Messrs. Thomas Bradford & Co., of London and Manchester, is on an entirely new principle. The process is carried out by means of super-heated steam, thus doing away with the slightest danger of scorching the clothing. The drying-closet is heating by a stove, serving also for the purpose of heating the irons for the ironing-room. In the ash-place the finer portion of the ashes after being riddled by means of the riddling-machine is mixed with earth dried on the kilns, the heat to which is supplied from the coarser portion of the ashes, and afterwards utilised for the earth closets provided throughout the hospital. The space occupied by the hospital is in the whole about $6\frac{1}{4}$ acres, of which $4\frac{1}{4}$ acres are used for the hospital buildings and grounds, the remainder being devoted to the disposal of the sewage by irrigation. Particular attention has been paid to the ventilation and heating of the various wards and rooms throughout the entire hospital. The fresh air is admitted through hinged zinc inlets, provided with baffle plates, and by means of an improved construction of the windows, whereby one sash may be raised to allow the entrance of air between the two without causing the slightest draught at the bottom. In the wards gratings are also provided under each bed. The foul air is extracted by means of Kite's patent roof-ventilator, and by separate ventilating flues in each chimney-stack communicating with the room. The heating is effected by means of the Manchester grates—two of which in the wards are placed in the centre of the room. These contain at the back of the fire a hollow space which is supplied with fresh air conveyed in pipes from the outside and delivered warm into the room through a grating over the mantelpiece. The walls are built with picked common bricks, with quoins and angles of pressed bricks. The gables are tiled and half-timbered, with plaster working between. The architect for the buildings was Mr. G. W. Bradford, of Miles Bank Chambers, Hanley; the principal contractor, Mr. J. Gallimore, Newcastle; clerk of works, Mr. Leonard Price.

Tillyfour Castle, Aberdeenshire.—Mr. F. Gregson has restored the ancient baronial castle upon that estate as a residence. The remains of the old structure have been restored, and a large addition made thereto in exactly the same style of architecture. The building, now approaching completion, is consequently irregular, with the old castle as the principal feature, the additions being of the height of two storeys, and the whole structure having a frontage of 174 feet. The castle contains two halls, one in the low floor, 30 feet by 19 feet, and one in the upper floor, 30 feet by 20 feet. Throughout, the internal walls of the building are panelled with oak. The ground around the castle has been nicely laid out, and a new approach made to it along the side of the Don. The building is designed by Messrs. Wardrop & Anderson, Edinburgh, and will cost about 10,000*l.* The contractors are—mason work, Messrs. Pringle & Slessor, Aberdeen; joiner work, Messrs. Beattie, Edinburgh; plasterer work, Messrs. Kirk & Pigot, Aberdeen; plumber work, Mr. Proctor, Edinburgh; slater work, Mr. George Davidson, Aberdeen.

ARCHÆOLOGY.

Old Rome.—In making a deep cutting at the Chester Gas Works for the new gasholder tank, when the cutting had reached a depth of 23 feet below the surface, a pig of Roman lead was discovered in a state of excellent preservation. The inscription it bears along the upper surface is as follows:—IMP VESP AVG V T IMP III., while on the side is inscribed DE . CEANGI. Its weight is 192 lbs. The translation of the inscription is that it was a pig of lead, a tribute from the tribe in North Wales commonly known as the Ceangi to the Roman power. The inscription points to its being cast during the fifth consulate of the Emperor Vespasian, and the third consulate of Titus, or the year A.D. 74, and consequently it may be assumed that the lead has been lying where it was found some 1,800 years. The ground wherein it was discovered was gravel and marl, which evidently formed part of the old river bed. The spot is some 140 or 150 feet within the present river wall. Fragments of Roman tiles and Roman pottery were also picked up, and several Roman coins of the time of Vespasian and Titus, wonderfully fresh. A similar pig of lead, cast in the same year, and a tribute from the same tribe, is in the possession of the Duke of Westminster, at Eaton, and was found in 1838 on the Tarvin Road.

GENERAL.

The Slade Fine Art Scholarship in University College, London, has been won by Mr. C. D. Hay Campbell, of Edinburgh.

Mr. J. E. Boehm, R.A., has been commissioned to prepare a new Royal portrait medallion for the Imperial coinage.

A Statue of Lamartine, by M. Marquet de Vasselot, was on Wednesday unveiled at Passy.

The Society of Arts Conversazione will be held, by permission of the Royal Commission, at the Colonial and Indian Exhibition, South Kensington, on Friday next, the 16th inst.

An Autumn Exhibition of Modern Pictures will be opened in Nottingham on September 11.

A Wholesale Fish Market is contemplated to be constructed on the site of Lucas's Repository, Liverpool.

The Wing of the Brussels University containing the great Academic Hall was destroyed by fire on Wednesday. The building, once the historic palace of Cardinal Granvella, was inaugurated as a university fifty-two years ago. The greater part of the library has been destroyed in the fire.

The Leicester Town Council have adopted a scheme by Mr. J. Gordon, C.E., for the reconstruction of the borough sewerage.

Mr. E. Mirfield, of East Bierley, has offered to provide a mechanics' institute for that town, the cost of the undertaking being estimated at about 2,000*l.*

Count Francesco Vespignani has been appointed architect of the papal palaces in recognition of his care in superintending the works of restoration in the apse of St. John Lateran. The office has been vacant since the death of Signor Fontana.

The Richmond Vestry, on Monday, decided to ask the Corporation of London to purchase the grounds belonging to the Duke of Buccleuch, near Richmond Hill, in order that the place might be made a recreation ground.

The Hospital Committee of the Liverpool City Council have agreed to appoint an assessor or assessors to report on the designs for the proposed hospital for infectious diseases in Grafton Street.

The Annual Meeting of the Lincoln and Nottingham Archæological Society opened last week at Lincoln.

Mr. T. L. Worthington, of Manchester, has obtained the Donaldson silver medal in the fine art section of Professor Roger Smith's courses, and Mr. R. L. Pearce the Donaldson medal for construction.

The Metropolitan Board of Works have decided that the salary of the superintending architect is to be 1,500*l.* a year, inclusive of travelling and incidental expenses; that the age of the person to be appointed be not less than 35 and not more than 50 years.

The Architect.

THE WEEK.

The exhibition which was held for months in one of the wooden buildings on the site of the Tuileries was closed on Saturday. The proceeds were intended to be devoted to raising a monument to Claude Lorraine. As the price of admission on Sundays was only a quarter of a franc, and on week days a half franc, a large number of visitors must have passed the turnstile. The contents were offerings from artists, and were another proof of the generosity of the French painters whenever an appeal is made to them. In some cases pictures of good size were given, but the majority of the works were studies. They were as much a tribute to M. Français, the landscape painter, who organised the project, as to Claude. Costly books on art were given by amateurs. The whole of the works are to be distributed among the subscribers by means of a lottery in November, the price of each ticket being 20 frs. It is guaranteed that the purchaser of twenty tickets will have at least one prize.

This year's national fête in Paris has brought honours to some artists. M. Paul Dubois, the sculptor, has been raised to the dignity of a commander of the Order of the Legion of Honour. M. Boisseau, also a sculptor, is nominated a chevalier, and the honour ought to have been awarded at an earlier date. M. Yon, the painter, has received a similar distinction, as well as M. Pouzadoux, who has charge of the modelling and casting for the Museum of Comparative Sculpture in the Trocadéro. M. Bœswillwald, the well-known diocesan architect, is named a chevalier, while M. Baudot, inspector-general of diocesan edifices, is elevated to the grade of officer. Among the officials rewarded are M. Ronchaud, director of the national museums, and M. Hecq, chief of the secretariat in the department of fine arts and civil buildings under the Minister of Public Instruction.

The local authorities of Merthyr Tydfil have adopted the report of the Town Hall Committee recommending the design submitted by Mr. E. A. Johnson, of Abergavenny and Newport, for the municipal buildings, and he has been awarded the prize of 50*l*. Fifteen other designs were also submitted. The building will cost nearly 12,000*l*.

The Municipal Council of Paris are in favour of having the proposed metropolitan railway constructed underground, like the London line. But the Government are opposed to this view, and are about to introduce a scheme in which tunnels will be absent. A journey through the London tunnels is not a pleasure trip, and we can easily imagine the discomfort endured by the deputation from Paris when they first made the experiment. But an underground line would have the great advantage of allowing Paris to remain in all its beauty, and experience shows the difficulty of constructing viaducts that will gratify the eyes. Is it desired to have a repetition of what is to be seen at Ludgate Hill and on the Thames? The objections of the municipal councillors are deserving of approval by every one who is eager to uphold the amenity of the city. It should also be remembered that it is now possible to construct a subterranean line with better ventilation than exists in the Metropolitan Railway. The necessity of the new railway is not self-evident; but if it is to be constructed for the sake of giving employment, it should be laid out in such a way as to cause no regret hereafter.

The opening of the Corporation Art Gallery was celebrated in a characteristic way on Monday by a dinner, at which Sir Frederick Leighton was one of the guests. The President acted with his usual good sense in considering the gallery as no more than a step in the right direction. All honour was due to the Corporation, he said, for having provided a decorous abode for the works of that collection; but they would not remain content with that. They would not be content that it should represent so few of the living energies of the English school, still less would they—the most wealthy and open-handed Corporation in the world—suffer and tolerate that the catalogue should remain a record of the generosity of private individuals and not of the public munificence. To any one who reads between the lines the meaning of the President's words will be plain. The contents of the gallery are not worthy of the richest city in the world, nor is it right for the Art Committee of the Corporation to begin housekeeping with doles, as if they were a charitable society. The authorities of the humblest town in France spend more money on art every year than the Corporation of London.

The President of the Society of Antiquaries lately applied to General Pitt Rivers, the Inspector of Ancient Monuments in Great Britain, for information about bringing remains under his care. The following reply was given:—"Clause 10 of the Ancient Monuments Act of 1882 makes provision that any monument of like character to those scheduled may by Order in Council be deemed to be an ancient monument to which the Act applies. Should the Society of Antiquaries desire to recommend any additional monuments to be included in the schedule, I write to inform you that on receiving a list of such monuments from the Council of the Society I will lay it before the Commissioners of Works, with a view to obtaining their consideration of the matter. It would greatly facilitate matters if the names of the owners of the monuments could be appended to the list, and it would be an additional advantage if the Council, through their members, could obtain the consent of the owners to having the monuments placed under the guardianship of the Commissioners of Works."

The Council of the Society of Antiquaries have accordingly appealed to the local societies for advice and assistance in the matter. The preservation of such monuments is of the highest importance, and in order to insure it, the concurrence of the owners in placing them under the protection of the Act is highly desirable. The Council trust that the local knowledge of the members of the archæological societies throughout the country will not only assist in extending the schedule of the monuments brought under the Act, but will aid in insuring a favourable acceptance of the provisions of the Act by the owners of these interesting relics of the past.

The members of the Norwich Art Circle are doing a service to art by holding exhibitions from time to time of members of the Norwich school. This time John Thirtle's works have been selected. His name is no longer familiar except to a very few connoisseurs. Thirtle was born in 1777; was the son of a shoemaker, and is believed to have been apprenticed to a London picture-frame maker; and was one of the original members of the Norwich Society of Artists, of which John Crome was the head. Five works of his are named in the catalogue of the first exhibition, held in 1805. Soon afterwards he set up in business as a carver and gilder, eking out his means of life by painting and giving drawing lessons, and constantly exhibiting at the Norwich shows. Once, in 1808, he had a picture in the Royal Academy. Four years later he married a sister-in-law of J. S. Cotman, and in 1815 he formed one of the seceding group which, after an unhappy quarrel not unprecedented in artistic circles, left the original society. He was a good portrait-painter and a charming landscapist in water-colour, his drawings being full of observation and treated with a freedom, breadth, and delicacy that are really remarkable.

A paper which was read by Professor Fream at a conference at the Colonial and Indian Exhibition suggests that the experiments which have been made by the Government in forestry have been fairly rewarded. In New South Wales a department was established in 1877. The total expenditure up to 1884 was 75,923*l*., while the revenue was 85,992*l*. In Victoria there was a larger profit, for in 1883 the expenditure was 2,538*l*. and the revenue 8,580*l*. In South Australia the income balances the expenditure, but trees are not planted entirely for sale in that province.

IRISH INDUSTRIAL RESOURCES.*

FORTY years have gone by since Dr. Kane, who was at the time a Professor of Natural Philosophy and Chemistry, published his "Industrial Resources of Ireland"—a book which was based on lectures given before the Royal Dublin Society. It was considered a sort of revelation, for up to that time the material resources of the island were taken on trust by the majority of the inhabitants. Dr. Kane was not the first who investigated the subject. When, for example, he spoke of building-stones, he made use of the elaborate experiments which had been instituted by Mr. George Wilkinson, the architect of the Poor Law Commission. But the "Industrial Resources" was the first comprehensive summary of the natural wealth of Ireland in all the forms which related to agriculture and manufactures.

Dr. Kane (he has since been knighted) was compelled to raise the question why in a country containing so many elements of wealth the people remained poor, and he had to acknowledge that the chief cause was ignorance. "The fault is not in the country," he said, "but in ourselves; the absence of successful enterprise is owing to the fact that we do not know how to succeed." And he quoted the authority of the Belgian Minister, M. Briavionne, who strenuously urged the Belgian Legislature to attend to industrial education, lest Belgium should become a second Ireland.

An effort was made by the Government of that day to supply the needed industrial education. The first of the teachers was Professor W. K. Sullivan, who was one of the ablest of the many chemists trained in Liebig's laboratory. It was no disadvantage to the new Professor that he was suspected of sharing political opinions with the younger men of that period. Professor Sullivan laboured hard for industrial education, but there was a prejudice in the country which was not to be overcome. Ireland is the land of gentility, and her sons do not care to demean themselves by taking up anything which is not genteel. As far back as 1853 we find the Professor saying that he would be satisfied if he could persuade even a few of the public to believe "that the prosecution of industry is a noble occupation, which in our days, and in countries like Ireland, requires, perhaps, a greater combination of skill and knowledge than the so-called learned professions, and that an unbounded field lies open to skill and industry in Ireland." A great many costly educational experiments have been made during the years which have elapsed since those words were written, but they have all failed in producing captains as well as soldiers of industry. Let us hear Professor Sullivan describe the kind of education which is in vogue now in Ireland:—

> To judge by the present provision for intermediate and higher education in Ireland, it would seem as if all the youth of the country were destined to be clergymen, physicians, lawyers, or civil servants. Industry has certainly no place in it. Our whole educational system is out of gear with the wants of the country. Our agricultural emigrants, male and female, are about the most unskilful emigrants from any country, and are only fitted to do the rudest labour; our town emigrants at best are imperfectly trained artisans or poorly educated clerks. At home the sons of farmers and small shopkeepers strive to escape not alone from their father's business, but from all industrial pursuits, and when unable to obtain a profession they seek for a place, however humble, in the Civil Service or even in the police."

A people who are in so abnormal a condition can hardly help being disaffected. They have no definite aims or hopes, and as they have little to risk they need not be much afraid of change in any form. Hearing so much about legislation, it is not surprising that they have a superstitious faith in the power of Acts of Parliament, as if clauses could be framed to convert bogs into dry pasture or to prevent foreign competition. It was not, however, on legislative feats that Dr. Kane relied to make Ireland rich and happy in 1844, and in that respect Dr. Sullivan resembles his predecessor in Queen's College. A chemist takes a view of cause and effect which does not correspond with that of a member who is as anxious for the victory of his party as if he took part in a hurling match between two parishes: one believes in natural laws, and is assured that they cannot be set aside by any verbal feats of the parliamentary draughtsman, and in Ireland natural laws are found to prevail in a rigorous form.

Indeed, one of the differences between the two treatises on the "Industrial Resources of Ireland," by Professors Kane and Sullivan, consists in a recognition due to increased knowledge of the difficulties which in the nature of things attend every effort to make the island productive. It is not the wonderful country overflowing with milk and honey which the Nationalist poets describe. Here and there are fertile districts, but even the Golden Vale itself cannot hold a position with its produce in the modern markets without adopting some of the lessons of scientific agriculture. If Ireland possessed any extraordinary advantages, either above or below ground, we may be sure that Englishmen would have been tempted to speculate in utilising them. Under the best of conditions the inhabitants need much exertion to gain a modest amount of profit, but it is amidst circumstances of the kind that manly courage is best developed.

Let us take, first, motive power and fuel. In Sir Robert Kane's book the enormous water-power of the island is estimated. The Shannon between Limerick and Lough Allen represented by itself 38,667 horse-power in constant action, while the total power of the island, assuming it to be acting day and night all the year round, was put down at 1,248,849 horse-power. At the time all the English mills had engines with only 83,000 horse-power. The greater part of the Irish water was, and is, wasted. Sir Robert Kane adopted suggestions from English hydraulic engineers about its utilisation. One of the expedients he proposed was the introduction of Fourneyron's turbine. There is less confidence now about the advantages to be derived from the Irish streams, rivers, and lakes. Dr. Sullivan admits that water-power is often more expensive than steam-power:—

> In discussions on Irish industrial resources too much stress is, I think, laid upon our abundant water-power, without taking into account its cost, which, of course, involves not merely the price of horse-power as against steam-power, but also the expense involved in having to go to the site of the power, whereas in the case of steam-power it can be produced wherever there is a favourable conjunction of all the other conveniences.

Whether the water can be utilised in connection with electricity is a question of the future. Dr. Sullivan believes in the affirmative, but it will not be wise to defer exertion until that time arrives.

Dr. Sullivan is forced to admit that Ireland is on the whole very poor in fuel. The bogs, which occupy nearly three million acres, or one-seventh of the entire area of the island, are no more likely to produce a fuel that can be utilised on a large scale than a material for "wax candles," which was Jasper Rogers's pet product. Dr. Sullivan suggests that the turf or peat might be converted into combustible gases in a Siemens' furnace, and that seems a more rational mode of utilisation than into gunpowder or tar. He speaks of draining the great bogs, but in all such proposals cost is omitted. On one of the Irish railways which runs through bog, the contractor put down 2,000*l.* a mile for the cost of making drains that would be sufficient to keep a narrow strip sufficiently dry to carry the rails. He found that the work ran out to over three times that sum.

The coal-fields of Ireland are not extensive, and in the north Scotch coal is sold at a cheaper rate almost at the pit's mouth. According to the last return the Irish output was 126,114 tons, of the value of 57,258*l.*, which is over 9*s.* a ton on the average. It is calculated that "the whole of the estimated available coal in Ireland would not supply fourteen months' supply for Great Britain." But Ireland has no necessity to depend on native supplies for the fuel required in industrial works. In towns on the eastern and southern coasts English coal can be obtained as cheaply as in London.

It is time, however, for us to turn to the materials that are connected with building. The greater part of the country consists of limestone beds, much of which can be utilised for building stone. The calp is not always an agreeable colour, and after a few days of rain a village of limestone houses presents a dreary aspect. There are few places in which stone is not available, and hence we can

* *Report on the Cork Exhibition.* By W. K. Sullivan, Ph.D., F.C.S., &c., President of Queen's College. Cork: Purcell & Co.

understand proposals to build labourers' cottages at prices ranging from 55*l.* to 80*l.* a-piece. Building materials of an expensive class are rarely required except in the larger towns, for, according to the instructions to the Government valuators, "houses of one storey in height are more valuable, that is, they let at a higher rate in proportion to their cubical contents, than houses of two storeys, and houses of more than two storeys diminish in value, as ascertained by their cubical contents, in proportion to their height." Even in its houses Ireland is the country for anomalies.

There is a good deal of variety in the ornamental stones; fine slabs of marble in many colours are to be obtained, but there seems to be no way of ascertaining how much is produced and exported. Professor Sullivan gives the following account of the building stones, but his hesitation about the qualities of several among them suggests how little is known on the subject :—

The carboniferous limestone which forms so prominent a feature in the geological structure of Ireland is in many places sufficiently hard and close-grained to constitute various kinds of marble. In Galway a beautiful green altered limestone or serpentine occurs, which has been to some extent worked. Granite occurs in several parts of Ireland, but especially in four principal districts. The Dublin and Wicklow mountains consist mainly of granite; the mountains about Newry and the south of the county of Down; the south-west of Galway and the county of Donegal. The Dublin and Wicklow granite has not much variety, and though a beautiful building-stone is not in general well adapted for polishing. But the syenite of Croghan Kinsella, on the borders of Wicklow and Wexford, would probably prove, especially in depth, a highly ornamental stone. There is a great variety of granites about Newry and in the county of Down; some varieties take a high polish. The pegmatite of Sliabh Donan ought to make a very fine building-stone. The Donegal and Connemara granites are not as well known, but there is a red granite at the Gap of Barnesmore which if worked might prove a good ornamental stone. The cost of carriage would, however, be a great disadvantage. There is a fine porphyry in sandstones of the North of Ireland. Good sandstones are found in other parts of the country also, as, for instance, at Rosenalis, in Queen's County, and at Cape Clear and other parts along the coast of the county of Cork. There are also numerous indurated grits adapted for making paving setts, but many of these stones could not be worked at a price to compete with Welsh stone, owing to position and cost of carriage.

Dr. Sullivan seems to think that the Welsh paving-stones gain more than their right share of success, and there seems to be a prejudice against Irish setts. In a competition with quarry-owners, who possess the best machinery for squaring stones that can be obtained, the Irish contractors are handicapped. But it is plain from the correspondence relating to the paving contract in Dublin that the Irish corporations must have more than one reason for declining native stone. Should Berkeley's suggestion of a brazen wall around Ireland to prevent foreign importations be realised, the Irish builders and contractors would be among the first to denounce it.

The Welsh slates are also beating the Irish. According to the census of 1881 there were only 103 men in Ireland engaged in slate-quarrying, which number can hardly comprise all the people engaged. The Inspector of Mines estimated the product of the Irish slates quarried in 1883 at 10,000 tons, the value being 20,000*l.* But if we take the estimate in Sir Robert Kane's book, that quantity of slates was produced in the Killaloe quarries alone about 1844. On this subject Dr. Sullivan writes :—

Irish slates have to contend with many difficulties, of which I need only mention three :—(1) Competition with Welsh slates from extensive quarries which have been worked to a great depth, and where, consequently, the rock has not suffered from water or air, and where the best appliances and the highest trained skill are employed; (2) the Welsh slates have had possession of the market so long that a prejudice exists among builders and the public against the use of any other; (3) the produce of a new slate quarry is necessarily at its worst, for the rock near the surface is more or less acted upon by water and changes of temperature, has more incipient joints, and is not so evenly fissile or well-coloured as the rock which is reached when the quarry is worked for a considerable time. In 1883 about ten slate quarries were in operation, or at least had not been given up.

Dr. Sullivan, in his former essays on Irish resources, refers only to the cement that was found at Lough Ree. But the late Henry Reed, who was the first authority in Great Britain on the subject, assured the writer that he was making a cement in more than one place in Ireland which would be found to be superior to any imported from Germany. Some specimens appear to have been exhibited in Cork, and, according to Dr. Sullivan, sustained very high tests of strength.

A new industry such as cement-making has, however, little chance of gaining a footing in the English, or indeed in any, market so long as the Irish railway and other carriers charge the rates for transit which now prevail. It would seem sometimes as if the managers considered they were under an obligation to impede traffic. We have heard commercial travellers complain of the attempts that are made on Irish lines to treat their samples as ordinary personal luggage. The statistics given by Dr. Sullivan are extraordinary. If lamps are sent from Birmingham to Limerick, *viâ* Dublin, the through rate will be 76*s.* 8*d.* But if the Irish managers can have a hand in the bill the cost will amount to 110*s.* Some goods sent from Bradford in Yorkshire to Tralee cost 77*s.* 6*d.* per ton : the charge for them between Cork and Tralee is 58*s.* One other case may be cited :—

In Cork a kind of concrete or artificial stone called "ferrumite" is made, which is very well adapted for flagging pathways, dressed quoins, and many other purposes. The slabs should obviously be put in the same class as the flags for which they are intended as a substitute, namely, class 1. They are, however, put in class 2, and consequently cost twice as much to convey them by rail. In a relatively cheap material of this kind a higher rate of carriage is very often sufficient to turn the scale against a trade.

But the railway companies are not satisfied with their efforts to kill the home trade by excessive charges. There is also excessive delay in transit, a defect with which the general indifference to time well accords. In fact, the foreign competitors find a most serviceable auxiliary in the manner of conducting railways and steamers. The evils have become so aggravated that many of the wisest men in Ireland believe that trade cannot have fair-play until all the railways are acquired by the State and worked by Government officers.

This penny-wise policy which inspires railway directors is not confined to them. The manufacturers of silks, poplins, and tabinets had also faith in it. For a time it certainly succeeded, and some of them contrived to make fortunes, but finally the trade was ruined. It might be supposed that every tradesman would know that the success of textiles must now generally depend on the novelty no less than on the beauty of the patterns, but the producers of poplin would not on any account expend money on designs. Cotton-spinners and makers of cheap goods might need an outlay of that kind, but poplin, having an old reputation, was above art. So thought the makers, until it was found that stuff could be produced resembling poplin for one-tenth the price, and with infinitely finer patterns. The Irish material at once lost its position. The manufacturers deserved no commiseration, for their ruin was caused by stinginess; but the unfortunate weavers in the garrets of the Liberty were made to suffer, and the representatives of one of the few remaining artistic industries of Dublin were driven to the workhouse. In order that we may not be supposed to exaggerate the mismanagement in this case we shall let Dr. Sullivan give his experience :—

I have seen crimson and black velvet made in Dublin which could not be surpassed by the looms of Genoa. The decay of the manufacture is, I believe, mainly due to the employers, who, from want of foresight, indolence, or carelessness let their business get into a crystallised state, which no change in fashion, no competition of new fabrics, no improvements in processes or mechanics, could influence. The patterns brought from France in the reign of Louis XV. continued to furnish models for new designs—nay, were repeated without change. In at least one instance I remember to have found a favourite pattern in Dublin in a French stuff at least as old as the Regency!

The refusal to recognise the old principle, "live and let live," of which the poplin trade is an illustration, is likewise seen in many other industries. In that case the crisis occurred at a time when a demand was arising in England and America for rich furniture stuffs. Wisely directed, the poplin trade might have been vastly extended, and in all

probability it would now be in a state of prosperity surpassing that of the eighteenth century. "It takes a long time and much labour to create a market," says Dr. SULLIVAN, "which may be lost in a few years by negligence or unfair trading:" the words deserve to be inscribed on every manufactory in Ireland.

The poplin trade is not the only one which has suffered through indifference to design. Another instance, although much less important, is seen in bog-oak carving. Many people consider it is incumbent on them to patronise ornamental woodwork, and neither in Tunbridge Wells nor in any visitors' haunt in England or Scotland is anything to be found to match for cost the knick-knackery in black oak and arbutus which is supposed to be produced in Killarney. For a time people were willing to pay high prices, but the round towers, crosses, dogs, and snakes became monotonous, for there was as little difference between the figures as between Shoreditch brackets. The trade is going. "The real cause of the comparative insignificance of the carved and ornamental woodwork industry," says Dr. SULLIVAN, "is the wretched taste that pervades the whole of the products. I cannot see the faintest sign of improvement in this respect for the last twenty years, yet it is by artistic taste alone that such an industry could be made to prosper. The ornaments in Connemara serpentine are, if possible, in worse taste." The want of patronage must have a most depressing tendency on the Irish art schools, for we suppose the only place where anyone could speak of a commission to a student would be in Belfast. We are not surprised, therefore, that when the Exhibition Committee offered a prize for a design for the cover of their catalogue to the Cork students, the drawings submitted "were wretched, and by their poverty of invention, and the use of the usual conventional symbols in perfectly meaningless ways, it was forcibly proved how little they understood of the uses of art." A Belfast designer had to be called in, which ought to be humiliating to the city which produced MACLISE, FORD, and MAHONY. If the cover of the report be his work, he is dexterous with Celtic ornament.

The report of Dr. SULLIVAN will not, we suppose, be much admired in Ireland, for it contains too many stern, incontrovertible truths, and there are no passionate appeals for new Acts of Parliament to serve as substitutes for honest exertion. The country would be better if there were more teachers of his class, who would have the courage to say that if Irishmen wish to remove the evils which paralyse their industry, they must use their brains as well as their arms. The Cork Exhibition Committee could not expend their surplus more wisely than by circulating the report throughout the country, omitting, however, all the names of the nobodies who are introduced in the volume.

HENRI REGNAULT.*

HENRI REGNAULT, the French painter, was born on October 30, 1843, and his brain was pierced by a Prussian ball at Buzenval, on January 19, 1871. Few men have insured so vast an amount of fame from twenty-seven years of life. The Government organised an exhibition of his works after his death, and for the catalogue THEOPHILE GAUTIER wrote a preface in his best style. Paintings by REGNAULT are in the Louvre, the Luxembourg, and other museums. Several biographies of him have appeared; there are reproductions of his works in many forms, and a friend has, with reverential care, collected and annotated his letters. We see a statue of him among the great men of Paris in one of the niches of the Hôtel de Ville. For his monument no less a place than the Ecole des Beaux-Arts was selected; an architect and a sculptor gladly combined to produce the design, and one of the greatest sculptors in France was proud to add a supplemental figure, which was suggestive of the affection with which the memory of the painter was attended. And now we have his memoir in the series of "Artistes Célèbres" following one on PHIDIAS.

So much interest may be partly ascribed to the manner in which REGNAULT'S life was prematurely closed, and partly to the lovableness of his nature. But there can be no doubt that France lost a great artist in him. Above all the men of his generation he seemed best qualified to be recognised as the successor of DELACROIX. We can see from his works that REGNAULT was possessed of some of the sacred fire which inflamed DELACROIX; he had a like esteem for every appearance of power in man or animals, and was no less fascinated by scenes of terror. But while the elder artist was in an unhealthy condition throughout his life, and painted force because he vainly aspired to its possession, REGNAULT was full of vigour, and seems to portray himself in some of his strongest figures. It was characteristic of him that in almost the last lines he wrote while serving as a common soldier—for he would accept of no promotion—he expressed the conviction that what France wanted was stronger men, and that henceforth there should be no dallying with pleasure. He had in his life acted as if he were always inspired in that way. He never forgot the necessity of physical exercise, and his studio resembled a gymnasium. If REGNAULT were possessed of a magic gift it would have been used to give him greater skill in horsemanship, in flying from trapèze to trapèze, and in painting masterpieces. The three forms of exercise seemed to be necessary to his existence. One of the consequences of his muscular power was his capability to use both hands in painting, and, like all robust men, he took pleasure in dogs and horses.

REGNAULT came of a good stock. His father was distinguished as a chemist, a professor, and a member of the Institut. He was considered to be the worthiest to succeed EBELMEN in the direction of the works at Sèvres, and he held the office for about twenty years. But he could not understand his son, and apparently the last man to whom HENRI REGNAULT would submit one of his works was his father. It was not surprising that, when the bent of young REGNAULT'S disposition was made very plain, his father should seek to place him under artists whose style might be called scientific from its coldness. His genius could not, however, be chilled, and in the sketch for an *Entombment*, which he produced in 1864, we can see a revelation of future power. In the Ecole des Beaux-Arts he was better understood by his fellow-students than by the professors or judges. He tried for the Prix de Rome more than once, and had concluded that he must dispense with a residence in the Villa Medici. But happening to see the impassioned look of a young musician, he did his best to represent it in a figure of a goddess, and the hurried work so captivated the judges that they awarded him the Prix.

REGNAULT remained in Rome from 1867 to 1871. Like many artists before him, he was at first disappointed with what he saw. He had known the buildings, statues, and paintings by repute, and they seemed far less grand than the visions he had framed. REGNAULT was not a follower of any master, and he could not take anything as sublime at another man's dictation. The people of Rome had more attraction for him than the antiques or the great masters, and he preferred the ordinary folks of the city to the models. REGNAULT was a musician, and it is to be feared that the performances of the papal choir had something to do with the humble estimate he formed of the standard attractions of Rome. However, it was not long before he felt overcome by awe when he tried to copy a part of the Sistine ceiling, and he recognised that RAPHAEL could do better work than his *Madonnas*.

The woodcuts in M. WAY'S book on Rome (a translation was published in London) show us how closely REGNAULT studied the Roman people. Work of the kind was before his time supposed to be beneath the notice of a holder of the Prix. Painters are not always efficient illustrators of books, but REGNAULT'S sketches are more effective than DE NEUVILLE'S in the same volume. His skill in characterisation is evident. The figures are never posed, but seem to have been transferred to paper when most animated; and whether he draws cardinals' servants in their stiff liveries, peasants in the excitement of a game of mora, bookworms chaffering for volumes at a stall, savage clephts, or toil-worn scholars, his hand and eye are true to the spirit of the place. Many of the men who assisted in the work have since succeeded as painters, but their illustrations were far behind REGNAULT'S.

One of the woodcuts represents the semi-barbaric race

* *Les Artistes Célèbres: Henri Regnault.* Par Roger Marx. Paris: J. Rouam. London: Gilbert Wood & Co.

between horses that seem never to have undergone a training, and the scene probably suggested the picture of *Automedon with the Horses of Achilles*, which he sent from Rome to Paris. But it was received with little favour in the Academy, where ambitious works are considered unbecoming a prize-holder. Soon afterwards REGNAULT met with an accident while playing the part of the Greek horse-tamer, and to regain strength he took a voyage to Spain.

The influence exercised by Spain since WILKIE discovered the country has been most remarkable. REGNAULT was at an impressionable age; he had his friend M. CLAIRIN with him, and he was free from academic supervision. It is not surprising if he said many things which in the Villa Medici would be taken for heresy. Some of the carving in Burgos Cathedral he considered worthy of MICHEL ANGELO. The Spanish masters were, he maintained, more useful to the student than either MICHEL ANGELO or RAPHAEL, for, in their friendliness and good-nature one was allowed more intimacy than was possible with demigods. While he was in Madrid one of the little revolutions of Spain burst forth, and PRIM became the idol of the hour. It was a new experience for the artists, and they were carried away like the natives with worship of the dictator. The large equestrian portrait of PRIM which is in the Louvre was produced at this time, and as an expression of temporary idolatry it will hereafter be classed with DAVID's *Napoleon Crossing the Alps*. People may then find it difficult to discover why PRIM should be made the subject of one of the noblest equestrian pictures that painting has given us. DAVID made an impossible horse in an impossible position; but REGNAULT, instead of representing PRIM's charger as if he were performing in a circus, makes him appear standing with the legs stretched and rigid, as if to give a wider base to the controlling power he sustained. The dictator, who was a lover of pipe-clay and pomatum, could not understand himself as a god of war, and objected to the picture because his hair was not shown neatly parted. Poor REGNAULT begged of him to forget it as if it were a bad dream.

It was necessary for him to return to Rome in order that the terms of the scholarship might be complied with. REGNAULT left Spain with unfeigned regret, for he felt his powers expanding in that country. Rome, he thought, was used up. He was also filled with admiration for FORTUNY, who then had a studio in Rome, and thought that if he dwelt longer in Spain he might become like the young master. REGNAULT's eyes were opened to the advantages which a picture derives from rich stuffs and "properties," and what official regulations demanded from him was a picture which would demonstrate his power in painting from a nude model. In a state of disaffection he commenced his *Judith and Holofernes*, a picture which would pass if the figure of the naked warrior could be cut away. There are two parts in the picture—one is REGNAULT's, the other belongs to the Academy, and might have been painted in a fit of bad temper against official requirements.

When the moment arrived, REGNAULT fled from what he called the fetid sky and the Italians of the Opéra Comique. He took the shortest course to Spain, and once there, he and a few of his friends led a gipsy life, and made their way in that fashion to Granada. The Alhambra entranced him. It appeared to be a treasure-house, and he copied it in detail, laying up materials for future pictures. He had no thought of making pictures; it was enough occupation to master the place. His father had asked for information about the tiles and other pottery, and this gave occasion for study that might be called profound. After a time he wished to know more about the Moors, and he made the journey to Tangier, and there he fixed his quarters, not like an excursionist, but as a veritable native. The *patio*, or court, was covered with glass, and converted into a studio, from which everything European in the form of furniture was eschewed. There he painted several of his pictures, and especially the *Salome*, which was a new interpretation of the character. It was not as a languishing young lady REGNAULT painted the dancer. He represented her with thick black hair, partly nude, and smiling. The type is not European, and there is no suggestion of gratified revenge. To this *Salome* the execution of the Baptist could be no more than a trifling incident, and her smile imparts terror to the scene. The novelty of the figure and the originality of the scheme of colour puzzled the critics. The picture was supposed to be demolished when it was described as a chemical experiment, and even yet it continues to excite controversy.

In his *Moorish Executioner* there is the same downright way of painting disagreeable things. When the picture was seen at South Kensington people turned away from it scared by the blood which runs over the steps, the contorted trunk, and the head which seems to utter curses. Summary justice can never make a pleasing picture, and it was forgotten that in the delightful Alhambra scenes of the kind were not uncommon. His *Sortie du Pacha* made less strain on the emotions. It should not be forgotten that these pictures were produced while REGNAULT was attached to the French School at Rome, and, strictly speaking, they were, therefore, no more than works of a pupil.

After visiting France REGNAULT returned to Tangier, travelling through Spain to reach it. He wished to paint a colossal work, representing a Moorish general laying the fruits of his victory at the feet of his sovereign. The subject was realised by his friend, M. CLAIRIN, in the picture exhibited last year in the Salon, and which was purchased by the State. REGNAULT erected a new studio in Tangier, and was about to settle down to his great task when the war broke out between France and Germany. He was too good a Frenchman to stay in Africa when his arm could be of use. Accompanied by M. CLAIRIN, he came without delay to Paris, and, with some of his fellow pensioners from the Villa Medici, he joined the 69th battalion. He took his full share of the suffering which was entailed during that winter on the men who were defending Paris against the enemy. His death was caused by his patriotic enthusiasm. A retreat had been sounded at Buzenval, but as some cartridges remained with him, he returned alone to discharge them against the enemy, who were concealed behind the wall. He declined to return while one was left, and met a hero's death.

The painter's art is so difficult to acquire that any defects which can be found in REGNAULT's works are excusable on the score of youth. It must also be remembered that he was a long time feeling his way under direction which he could not respect. He was unable to recognise his own power until he visited Spain, and the work he then produced must ever excite astonishment.

Everyone who can appreciate bravery and art will take an interest in the life of REGNAULT. M. MARX, with fine insight, recognises both sides of the painter's character, and has given a biography which forms one of the worthiest tributes offered to the memory of REGNAULT.

TESSERÆ.

Michel Angelo's Architectural Drawings.

WILLIAM BURGES.

THE British Museum is not very rich in the architectural drawings of this master, yet it will probably be better to go through them, as they are more accessible to the student than those in other collections would be. They are for the most part sketched in with common ink (which has now turned brown) with a common pen, and drawn right off by hand, the circles being put in anyhow. Some of them probably have been first of all scratched in with charcoal, but we have no traces of it; one of them, however, has evidently been inked in upon something resembling chalk, or very black soft pencil. The drawings, even the details, are exceedingly rough, and if ever worked from must have been drawn out on a board by a pupil, and afterwards corrected by the master. They consist of all sorts of subjects—windows, capitals, entablatures, &c.—but none of any great interest. The Musée Wicar, at Lille, is the place one must go to who wishes to see what the architectural drawings of Michel Angelo are really like. It appears that Wicar got hold of a sketch-book of Michel Angelo's very similar, in fact, to that of Villars de Honnecourt, and it is this book, cut up, and glazed and framed, which constitutes one of the riches of the Lille Museum. The book contains architectural studies of the contemporary edifices—of those of Bramante and Brunelleschi; studies from Classic buildings, and his own compositions, including the façade of St. Laurence, and the plan of the vestibule of the Laurentian Library; and lastly, directions for casting artillery. It is curious to compare this latter with the Trébuchet of Villars, so excellently described and elucidated by Professor Willis. I find the following notes in my copy of the Wicar collection:—"These drawings are executed in brown ink, with the help of a common straight-edge; there are no cross-

hatchings, and where the plans are tinted they are done so in a very careless manner. Very often no straight-edge is used, and the lines are drawn in by hand; lines are often drawn with a blunt point on the paper."

Early English Doorways.

F. A. Paley.

An Early English doorway is often a wonderful piece of art, however little it may attract the attention of ordinary observers. It is most pleasing to notice the long trails of dog-teeth lurking in the dark furrow of a label or channelled recess; to see the end of some inconvenient member got rid of by throwing a flower across the point where it suddenly stops or dies into the wall; to admire the efflorescent boss and the foliaged capital intruding their luxuriance upon the mouldings and hollows, as if they had overgrown their original and proper limits. How beautifully, too, the knots of pierced and hanging leaves extend like some petrified garland or bower of filigree work round the arch, dividing the plainer mouldings into groups, and almost imparting life to the very stones. There are abundance of doorways of this style which exhibit the most delightful varieties in their forms and groupings; always, yet never the same. Some examples occur at Bolton and Furness Abbeys, whose arch-mouldings extend five or six feet in width. The west fronts of several of our cathedrals have Early English doorways of amazing magnificence. Alas, that we should now try to borrow an unreal splendour by "running" archways by the yard in vile terra-cotta or viler patent cement! And strange that, with such noble examples of rich perspective effect and artistic display before them, our architects will generally persist in inventing mouldings for themselves rather than copy any of the perfect works of ancient art which are everywhere to be met with, and of all degrees of costliness. The wretchedness of modern mouldings can only be appreciated by those who take the pains to compare them with the ancient.

Pompeii.

J. G. Bruce.

Pompeii has been an ill-built city. The walls of the houses are like those of London. The masonry of our Roman wall is much superior to most of that at Pompeii. The buildings consist of tiles, lava, volcanic tufa, and organic tufa, or what we would call petrified moss. It is astonishing how largely this organic tufa, which we are familiar with in the Roman buildings in the north of England, enters into the composition of its buildings. The walls of the city have been originally made of pieces of lava not much larger than a good-sized fist. It has, however, been repaired at two subsequent periods with large-sized and well-squared blocks of organic tufa and travertine. The fountains in Pompeii are numerous, each being provided with a cistern, something like that at the north gate of Borcovicus. I measured the ruts in the streets. From the centre of the one to the centre of the other is 4 feet 7 inches. I measured one street, which was 7 feet 3 inches wide, and another, which was 6 feet 4 inches. We must not be surprised that the streets in our English stations are so narrow.

John Nash and Regent Street.

James Elmes.

Regent Street and Regent's Park will carry the names of George IV. and John Nash, as patron and architect, with considerable applause to a late posterity. The clearing away of the narrow dirty streets, alleys, and filthy courts without sewers or underground watercourses—a very honeycomb of cesspools and hive of solid abominations—that existed between Oxford Street and Pall Mall, to make way for a broad, handsome, and varied thoroughfare from the New Road, Marylebone, through the handsome *cul de sac*, Portland Place, to St. James's Park, is not only a work of great sanitary welfare to that portion of the metropolis, and has opened a necessary thoroughfare from Westminster to the wealthy district of Marylebone, but is one of the greatest architectural improvements that have taken place in the metropolis between the reigns of Charles II. and George IV. The expense of purchasing the ground and property and interests upon it was enormous, but the calculations of the architect, and the powerful support he received from his royal patron, enabled him to accomplish, after many and varied obstructions, this vast undertaking. When the plan for this street was completed, the ground was offered to public bodies or individuals under severe restrictions as to external design and quality of materials, at heavier ground rents than had ever before been paid for houses of retail business. Sites for public and private buildings were taken, as the speculators or builders required; and as fast as portions of the main street were finished, and became connected with lateral streets, they were opened to the public. Nash did not compel any of the lessees to employ him as their architect, but left every one to make his own choice, reserving to himself and the commissioners for carrying the works into execution a right of rejecting such plans as did not accord with the intended style of the street. From this cause arises the pleasant variety that distinguishes Regent Street from the monotony of many of its more opulent northern neighbours. Instead of single houses it consists of many fine rows of houses, some of which would not disgrace a palace or royal residence, and might be taken for such did not the subdivisions of the shops or offices show their application. Many of them, Waterloo Place, the Quadrant that leads from it to Regent Street, the mansion that he built for himself on its eastern side, and some of the best connected series of houses, and the two circuses that connect the great crossings of Piccadilly and Oxford Street by a continuation of the main street to Langham Place, are from the designs of Nash. Some of these, to hasten the completion of the work, he undertook himself as a building speculator, which neither amended his fortune nor increased his comforts; but Nash was a bold, enterprising man, and had a spirit not easily daunted by difficulties. The other architects who principally contributed to this great undertaking were Soane, C. R. Cockerell, the younger Repton, Decimus Burton, the two Smirkes, and the elder Abraham.

Marble.

G. Wilkinson.

The physical or external character of marbles constitutes the chief consideration with reference to their use for decoration or ornamental architecture, their colour and internal structure being the most important. Their chemical character has reference more to the facility with which they may be converted into use, and their capability of receiving and retaining a certain polish. In their simplest and purest state, marbles chiefly consist of carbonate of lime, which is of a white colour; the whitest kind, however, is frequently associated with quartz or silex, which more or less deteriorates it. This is more or less united both chemically and mechanically in various ways with nearly all the marbles. The variations in colour arise chiefly from accidental causes, in the greater or less admixture of carbon, or the stains of various metallic oxides, or the sectional outlines of embedded fossils. Magnesia enters largely into the serpentine variety of marble. The more crystalline and least earthy marbles are the least durable, the compact or finely granular crystalline marbles being superior to those which are largely crystalline or of a slaty texture. Almost all the varieties burn into quicklime; several of them, however, exfoliate in the conversion before they become caustic, and fall into sand when exposed to the ordinary mode of separating the carbonic acid; such qualities are, therefore, very inferior for ordinary cement, as they make a costly and meagre mortar.

Arabesque Decoration.

A. Poynter.

It is remarkable that the only mention Vitruvius makes of this style of decoration is in reprobation of it; but he describes it so accurately that the passage is worth repeating, if for no other reason. After pointing out and classifying what he considers legitimate objects for painting walls, such as architectural compositions, landscapes, gardens, and sea-pieces, the figures of the gods, and subjects drawn from mythology, and the poems of Homer, he proceeds thus:—"I know not by what caprice it is that the rules of the ancients (observe that Vitruvius looks up to the ancients in his day, that is to say, to the Greeks), who took truth for the model of their paintings, are no longer followed. Nothing is now painted upon walls but monsters, instead of true and natural objects. Instead of columns we have slender reeds, which support a complication of flimsy stems and leaves twisted into volutes. Temples are supported on candelabra, whence rises, as from a root, foliage on which figures are seated. In another place we have demi-figures issuing from flowers, some with human faces, others with the heads of beasts, all things which are not, never have been, nor ever can be. For my own part, I hold that painting is to be esteemed only so far as it represents the truth. It is not sufficient that objects be well painted—it is also necessary that the design be consonant to reason and in no respect offensive to good sense." Pliny also laments that, in his time, gaudy colouring and quaint forms were held in greater estimation than the real beauties of art. But with all deference be it spoken, there is another side to the question, which these great authorities seem to have overlooked. Conventional decorations of this kind were within the reach of thousands to whom paintings in the higher branches of art were inaccessible, and a more general diffusion of taste must have been at once the cause and effect of their universal adoption—how universal, the remains of Pompeii reveal to us. If we examine the ancient arabesques independently of these prejudices, we shall find endless beauty, variety and originality; graceful details combined in consistent and ingenious motives and analogies, and great skill and freedom in the mode of execution. We shall also find reason to doubt whether the introduction of the arabesque style really had the effect of discouraging painting of a higher class, since even at Pompeii poetical compositions of great merit are frequently combined with the lighter ground work of the general decoration. However fanciful and capricious the arabesque style may at first sight appear to be, there can be no doubt that it may be treated

according to the general fixed principles of art, and that the artist will be more or less successful as he keeps these principles in view. A due balance of the composition is essential, so that the heavier parts may sustain the lighter through every gradation, and there must be such a disposition as not to cover too much or too little of the ground. Unity of design is to be studied in a connection of the parts with each other, and in the harmony of the details and accessories, which ought as much as possible to tend to some general aim. It would lead us much too far to enter upon the subject of colour; but it may just be observed that in the ancient decorative painting the balance of colour is strictly attended to. Their walls usually exhibit a gradation of dark panels in the lower part—a breadth of the most brilliant colours in the middle and principal division, and a light ground thinly spread with decoration in the upper part and in the ceiling—an arrangement dictated by the natural effects of light and shade and reflection. As lightness and grace are the peculiar attributes of arabesque, the foliage which forms its most fertile resource should never be overloaded; its details and modes of ramification ought to be drawn from nature.

Swanscombe Church, near Gravesend.

J. G. WALLER.

It is built of an heterogenous mixture of materials, chalk, rag, masses of stone of various kinds, and an admixture of Roman tile. The tower shows some attempt at a regular plan in the disposition of its material; it is for the most part constructed of small stones, laid in courses of three and four alternately with one of flint: this disposition is by no means regularly observed, sometimes there are two courses of flints, and sometimes but two of stone. There is something in the above arrangement like an imitation of the Roman flint being used in the place of tile. The quoining presents some curious features, and has evidently been controlled by the nature of the material at hand; it exhibits a strange variety of stones, some disposed in long and short masses, some alternately with Roman tiles, and the latter are found worked into the rubble, here and there, without any order. It may also be well to observe that a large circular window of Roman tile, on the south side, is now blocked up. The chancel is chiefly flint-work, set in herring-bone, and covered with durable rough-cast. The south side, where much of this is removed, shows very evident indications of the walls having been formed by planking the sides until the mortar or concrete had firmly set. The marks of the planks are still very visible. This part of the church has undergone many alterations: an addition to the east end is easily to be distinguished, from its patched appearance; lancet lights of the twelfth century have superseded windows of a much earlier date, traces of which still remain; and a doorway on the north side appears to have been blocked up at the same time as the addition was made to the east end, but its architectural features are quite destroyed. Herring-bone work, according to Mr. Bloxam, is not of itself a criterion of date; but the flint-work in this fashion I have above noticed appears to me, from its being always connected with other facts, to be one of the indications of Anglo-Saxon work.

"Saltpetreing" in Stone.

G. R. BURNELL.

The actions capable of affecting the stability of the composition of ordinary building stones, by reason of the new forms of matter they superinduce, may principally be considered to be those resulting from the absorption of the gases of the atmosphere, and especially the extraordinary process known by the name of "saltpetreing," or more correctly speaking, of nitrification. This process displays itself in the formation of minute crystals, efflorescing from the interior to the exterior of the stone, and it leads to the destruction of the exposed surfaces of the latter, through the gradual removal of the minute particles, in consequence of the disintegration produced by an expansive action of the crystals in process of formation. It is supposed that the organic matter diffused through nearly all stratified deposits gives rise to the formation of certain nitrates (such as the nitrate of lime or the nitrate of soda) under the influence of damp and of air, and of light of certain descriptions — for nitrification certainly takes place most abundantly near damp ground, rising in a wall *pari passu* with the range of the capillary attractions of its materials, and upon the northern or shaded faces of the said walls. Not only does this nitrification throw off the minuter and less adherent particles of the building materials themselves, whether they be stone or brick, but it is also able to detach any protecting coat which may be put upon them, if the adhesion of that coat to the subjacent material should not be of a very energetic nature. Let the adhesion however be ever so energetic, if once the action of nitrification should have been established it must run its course, and the amount of evil it is capable of producing will simply depend upon the quantity of organic matter originally contained in the materials or susceptible of being absorbed by them from the atmosphere. The secondary limestones which have not been affected by plutonic action, the loamy clays, some kinds of pit sand, sea sand, and some descriptions of natural cements, are particularly exposed to the danger of nitrification in damp positions; and whenever it is once established it is in vain to expect to be able to preserve any mural paintings, or even any sculpture of a delicate character. It is also to be remarked that nitrification will frequently take place in the most dangerous manner precisely in those materials whose exposed surfaces are covered with coatings impervious to the air; and that in houses or buildings of that character it is most energetic on the interior faces of the walls, or precisely on those which are the least exposed to the atmosphere. In fact, it is mainly in consequence of the absorption of moisture by the building materials, and of the chemical changes thus produced in the organic matter those materials may contain, that the peculiar form of decay which accompanies "saltpetreing" arises.

Cast-Iron Girders.

COMMISSIONERS ON IRON.

The use of simple cast-iron girders for bridges appears to be limited only by the power to make sound castings (which arises chiefly from the difficulty of pouring the metal equally and the inconvenience of handling large masses). Mr. Rastrick, however, would not put any limit to the length. Mr. Hawkshaw considers that they may safely be made more than 50 feet long; in which opinion Mr. Fox and Mr. Grissell concur, but name 60 feet as the limit. Mr. Glynn, Mr. Charles May, and Mr. Joseph Cubitt would make them from 40 to 50 feet. Mr. P. W. Barlow, Mr. Fairbairn, Mr. W. H. Barlow, and Mr. Stephenson state 40 feet as the limit; and Mr. Brunel names 35 feet, as he does not consider that sound castings can be insured to a greater length. Mr. Fairbairn, however, mentions a girder in Holland 70 feet long cast in one piece. It appears to be universally admitted that the form resulting from Mr. Hodgkinson's experiments on the tension and compression of iron is that which gives the greatest strength; but the actual proportions are generally modified to suit the varying circumstances under which girders are employed. Mr. Stephenson sometimes makes the top flange equal to the bottom one, but usually in the proportion of 3 : 5, partly to obviate any risk from unequal cooling of the materials, and partly from the necessity of having a large top flange to bolt the flooring to. In preference to using a single girder, Mr. Stephenson recommends two girders to be bolted together, with a baulk of timber between, to which the rail is fixed. Mr. Hawkshaw, Mr. Fox, and Mr. Joseph Cubitt recommend that the top flange be increased beyond the proportions given by Mr. Hodgkinson, in order to resist the lateral torsion. Mr. W. H. Barlow and Mr. Locke would use the arched form of girder whenever practicable, and the former gentleman says that straight girders have been in fashion, and consequently more used than practice actually required. Mr. Fox, in girders subject to dead weight only, would make the proportion of the top flange to the bottom one as 1 : 6, but in railway bridges he recommends 1 : 4. Mr. Thomas Cubitt mentions that shoes, or sockets, or any projections cast on girders, have a tendency to create flaws from causing the dirt to accumulate in those places, and he considers that the shape which will insure a sound casting should be as much considered as the theoretical form of greatest strength.

THE ROYAL ARCHÆOLOGICAL INSTITUTE.

THE annual congress of the Royal Archæological Institute will be held at Chester, under the presidency of the Duke of Westminster, beginning on Tuesday, August 10, and concluding on the following Tuesday. The proceedings will commence with a reception of the Institute by the Mayor and Corporation of Chester at an inaugural meeting at the town hall, when the President will deliver his address. This will be followed by an inspection of the city, and in the evening Dr. E. A. Freeman will open the historical section. Among the places to be visited during the week are Llangollen, Valle Crucis Abbey, the Pillar of Eliseg, Offa's Dyke, Chirk Castle, Wrexham Church, Eaton Malpas Church, Nantwich, Acton, Bunbury, Beeston Castle, Tarvin Church, Kelsbarrow, the junction of Roman roads at Nettleford, Eddisbury Hill, Lob Sack, Cuddington, Hawarden Castle, Ewloe Castle, Mold Church, Bailey Hill, Caergwrle Castle, Gresford Church, Flint, Conway, and Carnarvon. On Thursday morning, August 12, the annual meeting of the members of the Institute will be held, and in the evening of that day there will be a conversazione at the town hall. The Bishop of Chester will be the president of the antiquarian section, and the architectural section will be presided over by Mr. Beresford-Hope. The vice-presidents of the meeting will include Sir Theodore Martin, Sir James A. Picton, the Rev. Sir Talbot Baker, Sir Robert Cunliffe, Sir Richard Brooke, Sir Philip Egerton, Sir T. G. Frost, Sir Philip Mainwaring, Sir Llewelyn Turner, Sir Watkin Wynn, the Rev. Canon Tarver, the Rev. Canon Eaton, and Mr. Herbert Gladstone.

NOTES AND COMMENTS.

AMONG the artists recommended for the Prussian gold medal, in addition to Mr. OULESS and Mr. HERKOMER, are the two architects of the Berlin exhibition building, Herr KAYSER and Herr GROSSHEIM; the Austrian sculptor, Herr TILGNER; and the following painters:—Herren GESELSCHAP and FLICKEL, of Berlin; BAISCH, of Carlsruhe; DÜCKER, of Dusseldorf; KLAUS-MEYER, of Munich; RUDOLPH ALT, of Vienna; and Signor AUGUSTE CORELLI, of Rome.

HERR MENZEL, the painter, has been nominated a chevalier of the Prussian Order of Merit. This is the first time of bestowing the dignity on an artist. Although the order was founded in 1842 in order to serve for civilians as the older Order of Merit does for soldiers, the members almost entirely belong to the Government service. ALEXANDER HUMBOLDT received the honour, and so did LEOPOLD RANKE, the historian. It was also bestowed on THOMAS CARLYLE for his "History of Frederick the Great," and never was reward more dearly earned, for the work took all the vigour out of the author.

THE death of M. F. E. SIMON, the inventor of the chromolithographic process, is announced from Strasbourg. He was in his eighty-first year. All inventions are perfected by slow degrees, otherwise it might be supposed that ALOYS SENEFELDER, the actor, who first hit upon the plan of utilising calcareous stones for printing, must have perceived that if one colour could be put on paper, it was practicable to place several beside it by a repetition of the same process. The art has had a good many ups and downs. At one time it was supposed to create plates that were false in art because they were over-coloured, but the success of oleographs suggests that chromolithography was not sufficiently glaring to satisfy the crowd. M. SIMON must have had the satisfaction that his countrymen continued to produce the finest examples of the art.

THE Bishop of CARLISLE proposes that the Church of England should celebrate the QUEEN'S jubilee by subscribing funds for the erection of a Church House. His lordship says:—It has long been felt that the Church of England needs a more distinct local habitation than she possesses at present. There are meetings of all kinds which have to take place in the most miscellaneous quarters, and for some of them it is difficult suitably to provide. The Southern Convocation, notwithstanding the kind hospitality of the Dean and Chapter of Westminster and of the Governors of Queen Anne's Bounty, is miserably housed, while the establishment of the Lay House has added a new problem of accommodation. Should the desire be realised in the gathering together of a body which should represent the whole English Church, the difficulty of accommodation would assume still more formidable proportions.

THE scaffolding has been removed from the great Ecole de Médecine, which is in course of construction in Paris from the plans of M. GINAIN. The style is Classic, of a severe type. A great deal of work remains to be done in the interior, and no time is yet fixed for the inauguration of the school. Another important work, the new Sorbonne, is also in progress in the same district.

THE French people do not believe that they have much to learn from any of the exhibitions which are now open in England. It was proposed to send over workmen, but all the Municipal Council would disburse for the expenses was a thousand francs, or 40*l.* sterling. It was also made a condition that the travelling students were to be selected from Parisian workmen who had been nominated by their trade societies or by the councils of *prud'hommes*. The English innkeepers will, therefore, not gain much this year from the Paris treasury. How the sum can be appropriated in order to allow the men to profit by exhibitions in Folkestone, London, Liverpool, and Edinburgh is more than we can make out, although we are aware that French economy can produce amazing results. Whenever there is an exhibition in Paris a large sum of money is contributed, and a regiment of workmen are sent over. It is evident the French do not wish to show reciprocity in that form at least.

MR. GAMBIER PARRY is about to issue in a volume several of the addresses on art which he has delivered at meetings of societies from time to time. The title will be "The Ministry of Fine Art and the Happiness of Life." The following papers will form the contents:—"The Purpose and Practice of Fine Art," "The Ministry of Fine Art to Common Life," "The Ministry of Fine Art to Spiritual Life," "The Ministry of Colour to Sculpture and Architecture," "The History of Mosaic—(1) Ancient, (2) Christian," "The Art and the Artists of Glass Painting, Ancient and Mediæval," "The Adornment of Sacred Buildings," "Art in Archæology," and "The Builders and Buildings of the Abbey of St. Peter, now the Cathedral, at Gloucester."

GENEVA has set an example to the cities of Europe in setting up freezing chambers on a large scale in connection with the abattoirs. The whole of the arrangements were carried out under the direction of M. EMILE SCHRODER, architect, who has made a speciality of work of a similar class. The meat from the abattoirs is subjected to the freezing process, and it can remain in the chambers until it is required by the butcher. During the hottest weather it will remain fresh, and loss will therefore be avoided. There is no necessity for a large stock in the butchers' shops. Our sanitarians would do well to consider whether a similar innovation might not be feasible in English towns. To see "butchers killing flies," a kind of war which SHAKESPEARE noted, is not pleasant to a gourmand.

THE fire brigade of Paris is not organised on as extensive a scale as Captain SHAW'S, and in consequence several fires which lately occurred have not been extinguished as quickly as was desirable. It was also found that the people were not disposed to become amateur firemen. The Prefect of Police has therefore advised the various commissaries that the ordonnance which dates from December 11, 1852, can still be put in force. According to it, all masons, carpenters, roofers, plumbers, and other workmen are bound whenever requisition is made on them, to proceed forthwith to the place on fire and to bring their tools and ladders. Horses are also to be supplied on demand to the owners. Chandlers and grocers are under obligation to supply the torches which may be necessary in order to give light during the operations. The requisitions can be made by the commissary of police or the officer commanding the firemen on the occasion. It is not supposed that the work is to be gratuitous, for the labour and goods will be paid for on production of a certificate duly signed. But any person who will not comply with the requisition can be prosecuted. The Paris houses fortunately take a long time to burn, otherwise there would be little hope for them with so improvised a service.

SPONTANEOUS combustion is said to be an impossibility, but a phenomenon that at one time would be ascribed to that cause has lately been observed in the suburbs of Paris. In 1871 a fire occurred in a villa. The reparation was carried out under the direction of an architect, and the house has since been occupied by the same owner. One day he observed that the ceiling of the dining-room appeared as if some of the plaster was about to give way, and, as the bulging increased, he called in an architect. He concluded that a beam must somehow have given way, and workmen were employed to make a more close examination. It was then discovered that the wood was almost entirely consumed. Some spark may have remained, and during fifteen years the destruction must have gone on by inches, for no other hypothesis was brought forward than one of very slow combustion. The circumstance is so remarkable as to appear almost incredible, although firemen can relate stories of a similar kind.





MARSHAL DUROC.

An Etching from L'Art.

Printed by Sprague & Cº 22, Martins Lane Cannon St EC



Spottiswoode & Co Lith. London

NEW STABLES, INGEST

JOHN B

16th 1886.



HALL, STAFFORDSHIRE.

Architect.

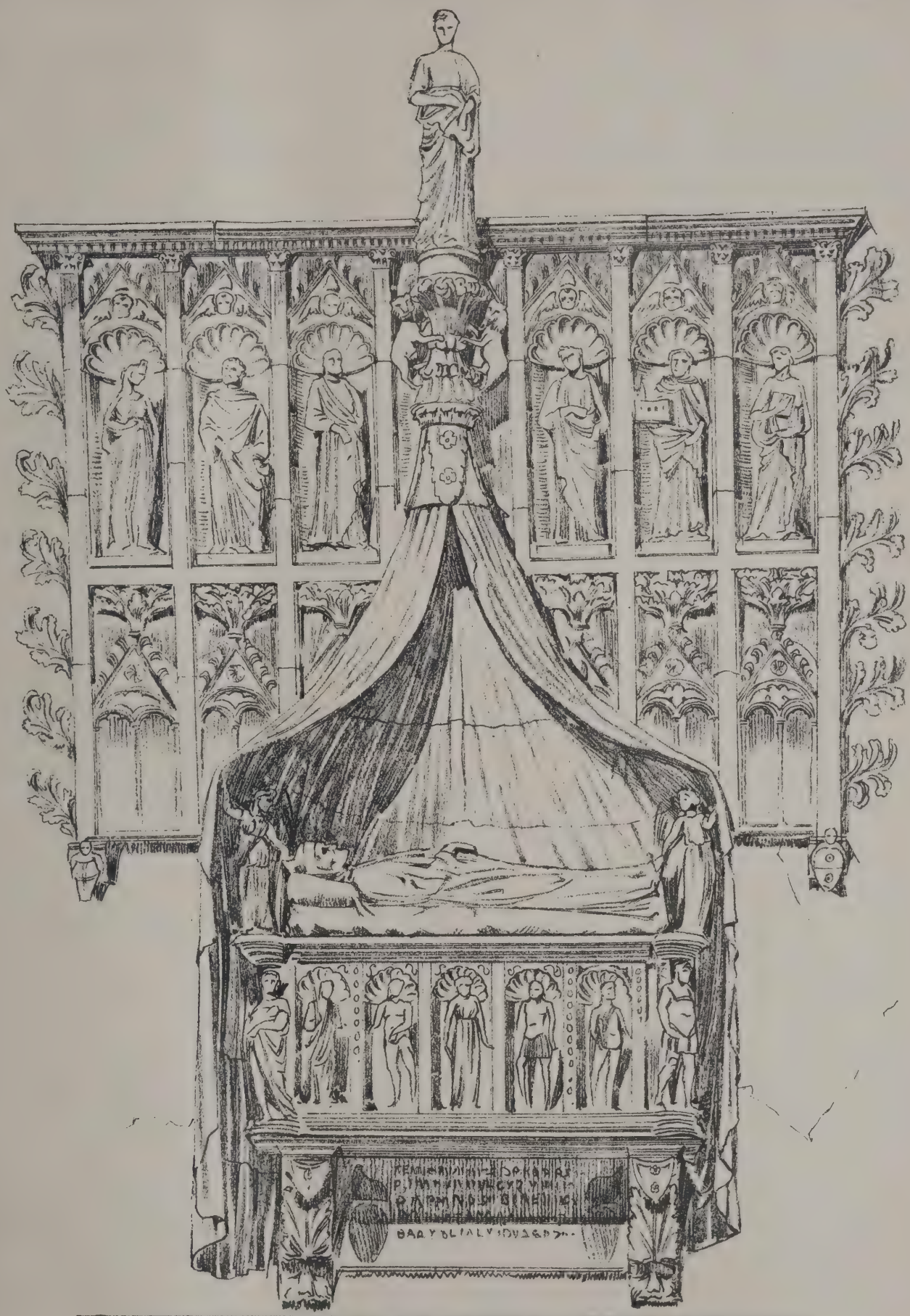


The Architect, July 16th 1886.

The Architectural Illustration Society. Plate No. 6

HOUSE AT BICKLEY, KENT.

ERNEST NEWTON, Architect.



Doges Tomb
SS. Giovanni e Paolo -
Venice -

Reginald Blomfield

ILLUSTRATIONS.

MARECHAL DUROC.

"L'ART" having the advantage of the support of the leading painters in France, several etchings after M. MEISSONIER have appeared from time to time in the volumes. We give this week the etching of the figure of DUROC, which is taken from the picture "1807," that was purchased from the painter by the late Mr. A. S. STEWART, of New York.

To DUROC belonged the distinction of being the only man for whom NAPOLEON had a sentiment approaching affection. It was owing to admiration for the stern and resolute character of the artillerist. The story is well known of the grief shown by the Emperor when the Marshal was mortally wounded in the retreat after the battle of Bautzen. During the night he remained in the cottage beside DUROC, and was indifferent to all the appeals which were made to him by his staff for instruction about the preparations for the next day's battle.

ARCHITECTURAL ILLUSTRATION SOCIETY.

6. HOUSE AT BICKLEY.

7. DOGE'S TOMB, SS. GIOVANNI E PAOLO, VENICE.

NEW STABLES, INGESTRE HALL.

THE new stables at Ingestre, now completed, provide accommodation for over fifty horses, with apartments for grooms, helpers, &c. They are built of red brick and stone dressings from the Tixall quarries, and an effort has been made to keep them in harmony with the old hall, at the same time preserving the character of stable offices.

The plan is quadrangular in form. The principal entrance is on the north side, through the archway surmounted by a tower, built entirely of stone. On either side of the archway are residences for the head groom, &c., sick boxes, and harness and saddle rooms. Of the two side wings of the quadrangle, that to the right is composed of stall stables and that to the left of loose boxes, each wing having a washing place in the centre. The wing at the far end is the coach-house and fodder stores, &c., in front of which a portico, built of stone, gives sufficient space for the washing of carriages and other vehicles. The roofs of cleaning places are open, and constructed of pitch pine, as are also the principals of the roofs to the several stables.

Fireproof flooring and other necessary precautions against fires have been adopted, and water-services are laid on throughout. A thorough and effective system of drainage and ventilation has been carried out, and there is every hope that the different chambers may be thus rendered sweet and clean at all times. Messrs. MUSGRAVE'S fittings have been used in the stables, the floors being laid with yellow clinkers. Accessories, such as mess-room, w.c.'s, dung-pit, &c., are provided for in the rear of the building. Mr. JOHN BIRCH, of No. 8 John Street, Adelphi, London, W.C., is the architect.

THE KING OF BAVARIA'S PALACE.

A CORRESPONDENT of the *Daily News* was fortunate in obtaining permission to visit the palace which the late King of Bavaria erected in the wooded isle on the Chiemsee, and for the following account of the imitation of the Château de Versailles we are indebted to that journal :—

The castle, of which the central building and the right wing only are complete, a mass of granite and solid stone adorned with statues and reliefs and surmounted by an attic at the height of thirty yards, stands upon a broad eminence, which gradually slopes down to the lake on both sides. The view from the windows embraces a park in several terraces, each adorned with waterworks of colossal dimensions, so that the eye has to travel over a mile of nature improved by art, before it reposes upon the blue surface of the lake, encircled by violet hills in the distance. To exclude all else from view a trellis-work, which in the course of years will form a green wall, fifteen yards high, is raised on either side, at first wide enough to comprise the terraces and fountains, and narrowing as it slopes down to the lake, but always spacious enough for a broad lawn in the middle and two carriage-drives on either side. As we slowly ascend these drives from the lake the dimensions of the castle, which are underrated at a distance, gradually appear, and by the time we have reached the lowest terrace we are fully aware that we have one of the finest buildings in the world before us. The centre of the lower terrace is occupied by the Latona fountain, consisting of five basins of red, green, and yellow marble, rising one out of the other. The lowest is surrounded by sixty-four gilt metal tortoises and crocodiles, each the size of a man, from whose open jaws thick jets of water rise, and fall into the basin above. Here monstrous golden frogs alternating with strange beings, half men half animals, rise in strange confusion, and higher up in the centre of the fountain kneels Latona, in all the grace of youth, one arm outstretched in supplication, the other wound around the baby form of Apollo. The seventy-two jets of water are so arranged as to pass over the white marble group of Latona and Apollo, who are seen in a huge crystal globe, which the sun's rays gild and colour. The water jets alternately rise and fall, forming a thousand broken reflections and myriads of flitting diamonds around the strange forms to which the movement of the water gives animation and warmth. At either side of the Latona fountain two huge basins throw up thick jets of water which can be seen from all the country around. Twenty broad steps of Bavarian granite lead to the terrace above. The centre is a gravel square, which allows an unobstructed view of the palace and its three golden gates, to which, however, rises another flight of granite steps. On the large terrace there is an oval fountain at either side, gracefully curved and adorned at each of its twelve angles by colossal statues and groups of gold river gods, sprites, and groups of children. The gilding of the bronze is so new that the eye longs for something else to look upon, and for repose from all this glaring beauty. In the centre of the fountain to the left rises a rock, twenty yards high, upon which allegorical figures show the fate of good and evil. In the shade of palms upon a Sphynx is seated Clio, who inscribes the names of the great upon her tablet; above her a warrior, sword in hand, climbs up the rock to fame, encouraged by a winged Victory, alluring him with a laurel wreath held on high. At the top of the rock a winged genius of light upon a horse blows his trumpet to the skies, while the undeserving lie in a motley crowd under the horse's hoofs. On the other side of the rock one figure is being precipitated down, and below an agonised woman awaits its fall. Enormous dragons guard the rock, which is covered in all its parts by ferns, palms, and lichens, from which jets of water fall into the basin below. All the figures on the rock are of bronze and double life size.

On the other side, a similar fountain with twelve gilt statues surrounds a rock crowned by Fortune on a wheel, distributing her gifts, fruits and flowers, to maidens kneeling to receive them. Four dolphins guard this rock, which is surrounded by smaller rocky islands upon which groups of children play among ferns and water-lilies. A little beyond two fountains of white marble are peculiarly interesting. A large square basin, measuring certainly ten yards in diameter, is filled by jets of water falling from the jaws of a golden lion and a golden leopard seated on the front parapet. This basin is allowed to overflow into another marble basin in the ground, at either side of which a marble statue, copied in beautiful Carrara from the classics of old on pedestals of grey marble, stands erect. It is impossible to describe the beauty of the contrasts produced by this mixture of brown bronze, white marble, and gilt metal, toned down as it is everywhere by the graceful fall of transparent showers. Orange trees in full bloom, scenting the air, formed a row of bright verdure on the background of dark pines whose growth had been forced into the forms required. Up the last twelve steps of granite, across the last terrace to the arched portico, and the golden gates are opened ajar to admit the visitor, first into a marble entrance hall with many pillars supporting the hall above. In the centre, on a pedestal of red marble and a tall vase of a rare violet stone, stands a peacock in enamel, copied so exactly from nature that the sheen on its splendid plumage seems real until our hands have touched the cold metal of which it is cunningly formed. Through this hall we pass to the back of the house, where a handsome courtyard paved with white and black marble is enclosed on three sides by the central block of buildings. The entrance hall is still unfinished, granite and brick and rafters are still visible in all their crude ugliness, when suddenly a gate of gold is thrown open, and a shower of light and colour meets the eye. It is the staircase—white polished marble under our feet, opaque glass over our heads, and between the two extremes all the wealth of Golconda, if Golconda owned artists. The stairs of white marble, half concealed under ruby velvet, rise to a narrow platform, where they divide to a double flight of steps guarded by a balustrade of brown and white Piedmontese marble, topped by a parapet a yard broad. On the outside the house seemed to have two stories, inside these have disappeared and every apartment rises from first floor to roof, the staircase taking up the whole height of thirty yards. Eight large pictures painted in bright and joyous colours, and parted from each other by porphyry columns with golden capitals, cover a part of the

walls; these are surmounted by a frieze of white marble, the figures standing out boldly, some reaching with their graceful limbs to the pictures above and below. Above the marble, alternating with gold in all parts, is a row of charming pictures representing children playing in the clouds and the blue heavens above.

The subjects of the large pictures are all suggestive of the great work which began with the staircase. A merchant from India lays out his precious goods, the gold and ruby textures, strings of pearls, plumage of birds; from them a youth—the King—is selecting what will adorn his home. On another canvas a sculptor, a goldsmith, a painter are hard at work. Beautiful maidens, strong men, bring from field and garden fruits and plants to increase the wealth and beauty of the whole. One picture shows a group of splendid women doing homage to a young Apollo in a regal mantle, who seems to point to another frame, where Cythera thrones as queen of beauty. On the first landing a deep niche interrupts the red marble wall. It is filled by a graceful marble figure of Diana with two slight girls at her side, under whose feet a rill of water flows into a shell below. The background is pale green marble and is polished so cunningly that it forms long perpendicular reflections, which deceive the eye and lead the beholder to believe that Diana and her maidens are concealed behind a veil. The delusion is so complete that many a hand will be outstretched to draw that veil aside. On the two higher landings white marble statues much over lifesize are placed in niches of polished black marble. One is Minerva, the other King Louis XIV. in the garb of a Greek god. A folding door opens upon a series of apartments, loftier than it is possible to picture to oneself, each comprising two distinct rows of windows above each other, the intervening space filled by pictures from many a master hand, the draperies in velvet covered with gold embroidery an inch high; the floors of rosewood inlaid with designs in a darker colour, chimneys of marble, the mantelpieces bearing clocks and vases of Sèvres, signed by all the noblest names in French art. Not a single room resembles another, each is a complete masterpiece and in itself so beautiful that the mind refuses to believe anything more lovely still can follow. The paintings on the walls never take the form of pictures in the ordinary sense. They form part of the wall itself, and are set with the fantastical gilt ornaments of French Renaissance, which also frame the mirrors and the tapestries. The tables are either polished stone, lapis lazuli, malachite, or painted porcelain and inlaid wood, the arm-chairs, stools, and sofas carved wood gilt, and gold embroidered velvet, the candelabra gilt bronze, venetian glass, or Meissen porcelain.

The front of the middle building with its twenty-two windows below, opening upon a narrow balcony, and its twenty-two windows above, is entirely taken up by the large gallery of mirrors, which is flanked by two halls having six windows at the side, that are separated from the gallery by high columns only. That human mind should have conceived a hall of such dimensions seems well-nigh incredible even to those who have paced to and fro in it. Notwithstanding the enormous space, it does not look empty or desolate. The ceiling is arched, and the paintings, which commence on the walls, gradually pass to the ceiling, where pictures in rich harmonious colours alternate with bronze reliefs of a pale green colour, both framed in rich ornaments of gold. Opposite the twenty-two windows are as many mirrors, and the space between windows and mirrors is taken up by tall gilt metal candlesticks, eight feet high. In front of every mirror and in front of every window stands an antique vase of silver, five feet high, and beneath it a canopy in carved wood gilt, covered with deep blue velvet, upon which five rows of gold embroidered lilies an inch high produce a marvellous effect. Imagine all this repeated forty-four times over, and add to it the wealth of colour in the paintings on wall and ceiling, from which moreover descend three rows of candelabra of gilt bronze, with fifty candles each! In eight niches stand white marble copies of the noblest works of classic art, the Venus of Milo reduced to natural size, the Medicis, Diana, and Niobe. On columns of malachite are placed busts of the French generals of the seventeenth century, no heed being taken that their victories signified as many defeats for the country whose King has placed them in his gallery. The subjects of the pictures all treat of the life of Louis XIV. His great and small deeds are immortalised by the brush of the painter, and it is a wonder that the King's self-immolation did not go so far as to picture even the devastation of the Palatinate. While gazing on high I was afraid my eye would meet the Castle of Heidelberg, as it is being destroyed by the French scourge, which nearly reduced it to ashes. At either end of the hall the pictorial art on the ceiling passes over into the plastic, and many figures are half painted and half modelled; a *scherzo* which is copied from the French Renaissance in its less desirable forms. The rooms at either end of the gallery of mirrors contain marble chimneys, one surmounted by a colossal marble relief, the other by a painted portrait of Louis Quatorze. That famous King's most autocratic opinions which our democratic days scoff at seem to have been held in high esteem by the Bavarian Louis, for there are idealised portraits of the French King with inscriptions below, such as "L'état c'est moi! Le roi gouverne par lui mème!" words which at Herrenchiemsee it cost me no effort to believe King Louis repeated while he gazed at his portly form in one of the thousand mirrors there. Before leaving the gallery I will add a few figures which will prove that my astonishment is based upon sound foundations. The hall is 260 Bavarian feet long, 38 feet broad, and 45 feet high. It takes 2,500 wax candles to light it. The floor is of light brown rosewood, inlaid with dark laurel wreaths and the lilies of France; the windows are hung with solid white lace, and concealed behind white blinds.

The next marvel and the greatest is the Royal bedchamber, a lofty room of moderate dimensions, with three windows above and below, the upper being draped with crimson silk that throws a magic light upon the masses of gold distributed all over this regal apartment. It is divided into two parts by means of a golden balustrade, the back part being rounded. Here the King's bed stands on a raised daïs, up to which lead five broad steps, covered with ruby velvet on which are embroidered large golden suns. The bed is of gilt bronze, a work of art as we meet it once in a lifetime. It is covered with a counterpane of gold cloth, embroidered in colours, the centre representing King Louis XIV. without his wig, a large emerald on his breast, a sapphire in his hair. The bed is surmounted by a canopy of gold with a high crown of gold in the centre and four enormous bunches of white plumes at the four corners; from the canopy descend the curtains, to examine which a lover of art will devote several weeks. The outside is ruby velvet embroidered in gold, so that of the ground colour scarcely anything is seen; the inside is covered from top to bottom by pictures from the Bible, at first sight the produce of the miniature-painter's brush, but, on close inspection, the triumph of the needlewoman's skill. Where could the hands be found that in the short space of a few years could cover twenty square yards with such marvellous work? The centre of the background is occupied by a sun embroidered in diamonds and pearls; and when I heard that the King never once used this bedroom, I was led to believe that he expected a visit from the Roi Soleil himself, and hoped to astonish even his magnificent majesty. The walls of this room are entirely hung with red velvet embroidered in gold, the children holding garlands of flowers being so solid that a real baby held to the wall cannot stand out from it more boldly than do these works of the needle. On one side of the bed, within the space confined by the golden balustrade, is the washing-stand, a tall mirror in gold arabesques, the table of marble supported by gilt bronze figures—the basin, ewer, and ten vases in gilt bronze of a size that would astonish even a giant, and of a beauty that it is impossible to describe. The other side of the bed is taken up by a prayer stool in ruby gold-embroidered velvet, the background filled by a St. Michael in colours, of such splendid workmanship that the original by the miniature painter, upon which the stitches were worked, must be less beautiful. Above the prayer stool there is a tiny altar with a copy of Raffaele's *Annunziata*, which, with the prayer-book it adorned, was sold by the Perugian family that had owned it since Raphael's time to the Empress of Russia, who in her turn lent it to King Louis, one of her great favourites in the years that preceded her illness. On the right and on the left side there are armchairs of gilt carved wood, the arms supported by erect children, seat and back covered with gold-cloth, on which a frame of gold embroidery surrounds a group of children embroidered in colours, works of art that should be kept in a museum. The room contains besides six stools of similar workmanship, two white marble chimneys, with Sèvres vases of red porcelain, and quaint old clocks, two mirrors filling the space between the three windows, where tables of dark red marble support Sèvres candlesticks formed of a hundred flowers and fruits, placed at either side of alabaster groups of graceful girls. The velvet hangings on the walls are parted in several places to admit paintings framed by rich arabesques, which form a frieze surrounding the painting on the ceiling, a splendid mass of beautiful forms and beautiful colours. Helios is driving the sun, and the hours dancing round him. The King's attendant told me that Helios some time ago was a splendid likeness of the young king himself, but that one day he gave orders to have his features erased, and now Helios is none else than the perpetual Louis XIV. himself.

Next comes the Council Room with a large table in the centre and a truly royal chair of blue velvet embroidered in golden stars. Rich chimneys, splendid clocks, some of them eight feet high, velvet draperies, marble busts, pictures, and tapestries everywhere, but no mirrors. Somewhere in this neighbourhood is the king's own bedchamber, which he has used during the three visits to Herrenchiemsee. It is very much like the Sun King's rooms, only more habitable. Instead of three it has two windows—the ruby velvet is replaced by deep blue, the steps to the daïs on which the bed stands are three instead of five, the suns of gold on it are half the size. No plumes surmount the canopy, but the embroidery in colours is even handsomer. A life-size picture of the Crucifixion takes

up the background, the curtains are worked in pictures from the New Testament, the prieu-dieu is exactly like the one in the other room—of course nothing more suitable could be found than Raphael's *Annunziata*. The washing-stand is quite as splendid; but it is just possible to use the vases of blue Sèvres and gilt bronze; a Brussels veil half conceals the mirror, folds of Brussels lace fall from the toilette table to the ground; the walls in blue velvet gold-embroidered, the gold ornaments, the chimney-pieces—everything is quite as beautiful, but more human. Near the prie-dieu a small door opens to a winding staircase, which descends to the dressing-room and bath below. The table between the two windows is one enormous piece of lapis lazuli, the candlesticks blue china, with an Ariadne between them. On the mantles vases of English ware stand on either side of a quaint clock. That to the right represents a bronze statuette of the King, who is outstretching a delicate hand to stop Time, represented by a globe encircled by the dial, which moves round. But the hour, a graceful female figure, stops the king's hand, and seems to show that even kings like Louis have no command over Time. This clock, in the King's own bedchamber, is certainly a new clue to his character. On an easel near one of the fire-places there is a picture of young Louis Quinze in regal robes, handsome and arrogant to a degree, another clue to the King's character. In a writing room close by there are busts of Louis Quinze's four mistresses, and on an easel a picture of Maria Lexinska. In the panels of the walls there are pictures of Versailles, with the Court and the King, generally the centre of gaieties such as poor Bavarian Louis never dreamed of for his solitary self. The dining room is the best proof of his love of solitude. In the centre of the room a high armchair stands at a round table, which upon the least sign from the King descends to the ground floor of the castle, and reappears with the next course, enabling the King to dine without having seen a human form or having heard a mortal voice. Before concluding, I must mention two small rooms, the jewels of the whole place, one being the ladies' boudoir, the other a smoking room for the King. The former is a small apartment with two windows, the walls covered entirely with mirrors, separated from each other and from the ceiling by a hundred thousand roses of gilt china, which hang in garlands from the ceiling, fill all the corners, form the chimney piece, and frame a niche containing the only seat in the room, a sofa of pale blue satin with soft cushions, but no back. The candelabra are of roses; the ceiling of white china has exquisite miniature paintings from which men are excluded. There is Atalanta without Meleager, Dian without Apollo. To imagine anything more exquisite than this room is simply impossible.

The smoking-room has one window only, the embrasure filled by a sofa of white satin, upon which are worked sylvan scenes of exquisite beauty, the woods beloved by the king, the lake which had such fatal attraction for him. The writing table is pale blue velvet in the middle and porcelain painting on either side. Two Sèvres candlesticks and several small porcelain groups of priceless value give it an air as if it had been used but yesterday. In this room the tables, the chimney-piece, the frames of mirrors and tapestries are all of painted and sculptured china; the folding doors have four china panels, each framed by blue china, surrounded by golden arabesques. Into each panel is painted a delicate figure representing one of the Seasons on one door, one of the Elements on the other. I firmly believe such doors have never opened upon such a room before. The floor is of bois de violettes and gives a delicate perfume to this and the adjacent room. Another long gallery completes the suite of nineteen rooms.

My description is so very imperfect that I must add some remarks for the use of those who like myself have seen the Château de Versailles, the Winter Palace in St. Petersburg, Peterhof, and Zarskoje Selo—and who will attempt to compare these with Herrenchiemsee? It should be remembered that in all these palaces the mirrors, the gildings, the hangings, and the pictures are old; that in Herrenchiemsee all has been completed but yesterday, so that the bright splendour is quite incomparable. In many instances the intentions of Louis XIV. were incompletely carried out or left out altogether, because the cost was too high and the means of transport were imperfect. Bavarian Louis has studied all the plans, has read all the available literature on the subject, has travelled to Versailles and back a hundred times, and has carried out the magnificent King's very dreams of splendour. Thus the fountains in front of the Castle do not exist at Versailles, because having been made of plaster a storm destroyed them soon after their completion, and they were never restored according to the old designs. When the King viewed what his mind had created and his eyes glanced over the hundred rooms that exist merely in brick and mortar, across the empty space where the second wing was to stand, what wonder if his mind went astray as he perceived the total impossibility of ever completing what would in history have given him a place with the most magnificent princes of times of old? His valet told me that he paced the mirrored hall and all the other apartments in the light of six thousand candles, his steps resounding in the solitude, his ever-silent lips for once apostrophising the images of the dead around him until night changed to morning. Then he would step out upon the balcony, and while the sun rose over the hills, by one slight movement of his hand, set the waters working in the fantastical forms his mind had created for them, and in the glow of early morning, amid the rushing waters, with beauty around, his eyes would be raised heavenward, and he perhaps deemed himself one of the gods.

THE COCKBURN ASSOCIATION.

THE eleventh annual report of the Cockburn Association for the improvement of Edinburgh and its neighbourhood has been issued. It begins with a notice of the proposal for the restoration of Edinburgh Castle, in regard to which the Council record their gratitude to the Government for the work they have already accomplished, and express a hope that it will not be long before a general scheme of improvement is undertaken. The thanks of all Scotsmen, the report goes on to say, are due to Mr. William Nelson, who has undertaken the restoration of three of the most interesting and picturesque features of the castle. The report also takes notice of the restoration of St. Bernard's Well, which Mr. Nelson is at present effecting. The Council hope that the proposal for the restoration of Holyrood Chapel, in commemoration of the jubilee of Queen Victoria, will be successful. They suggest also that something should be done to improve St. Margaret's Well, which is at present in a lamentably neglected condition. They draw attention to and condemn the practice of painting the stone fronts of houses and shops in unbecoming colours, take notice of certain advertisement hoardings, and point out that the North British Railway Company are at present erecting brick buildings at the Waverley Station, which, as seen from the North Bridge, are an eyesore. They urge that something should be done to make these buildings more in harmony with the architecture of the city generally. They express the hope that the seats at "Rest and be Thankful," which have been again put up, will be protected by the public. In conclusion, the report refers to the death of Bishop Cotterill, who was a member of the association from its commencement, and took an active interest in its work. The total charge for the year has been 83*l.* 3*s.* 5*d.*, of which 27*l.* 4*s.* represents subscriptions, and the expenditure has been 27*l.* 11*s.* 7*d.*, leaving funds in hand to the amount of 55*l.* 11*s.* 10*d.*, of which 50*l.* has been placed on deposit receipt.

ROYAL ACADEMY ARCHITECTURAL SCHOOL.

THE following are the latest admissions to the different sections of the Architectural School:—

Upper School.—L. Dennis, F. J. James, W. Leck, C. F. Mallows, H. Manning, E. H. Selby, H. D. Walton, and C. Wilson.

Lower School.—A. M. Butler, H. S. Daniels, W. M. Duke, E. C. Frere, F. E. Haarer, C. H. Hopson, J. M. Murray, G. W. Nicolay, R. W. Paul, C. S. Spooner, N. Taylor, W. R. Wilson, H. E. Woollacott, and L. Youngs.

Probationers.—F. R. Bance, A. C. Blomfield, R. Bryden, B. F. Fletcher, H. A. Gregg, H. V. Lanchester, J. P. Oliver, V. R. Page, and H. A. Wilson.

Bygones.

"*Antiquity after a time has the grace of novelty.*"—Hazlitt.

GERBIER'S COUNSEL TO BUILDERS.

ABOUT the middle of the seventeenth century there were more than thirty English and foreign painters in England who were of some note. The majority belonged to the Flemish school, the greatest being Rubens. One was the miniaturist, Balthazar Gerbier, who was also a "Jack of all trades," for he dabbled in architecture, literature, and diplomacy, as well as in painting. The statesmen of the time found him a very useful spy. His life was made up of strange vicissitudes. Gerbier accompanied Prince Charles and Buckingham in the romantic expedition to the Spanish Court; he was master of ceremonies at the English Court; he made a voyage to Surinam; he bought and sold pictures; and he set up an academy in Bethnal Green, where everything was to be taught, including, we suppose, deportment. Gerbier, being a universal genius, designed houses, and assumed Inigo Jones's office of Surveyor of the Palaces. Among his books is one entitled "Counsel and

Advice to Builders." The late Mr. Sydney Smirke, R A, gave the subjoined account of it in a paper which was read before the Institute of Architects :—

The earliest edition of Sir Balthazar's "Counsel and Advice" is 1663. The early date, therefore, of this book gives it a value, and a stronger interest attaches to it in our eyes, as giving some insight into the practice of architecture at the period of our great master, Sir Christopher Wren. Sir Balthazar was born at Antwerp in 1592, and was brought up as a miniature painter. He was knighted by Charles I., and was employed by him, in conjunction with Rubens, to negotiate a treaty with Spain; he also resided at Brussels in a diplomatic character. He was subsequently employed as an architect by Lord Craven.

The treatise commences by adverting to the author's previous work, which he describes as a little "manual, concerning the three chief principles of magnificent building, viz. solidity, conveniency, and ornament;" wherein he "notes the incongruities committed by many undertakers of buildings." He points to the Grecians and Romans as the best builders, and urges that men should not be subject to fancies nor "inslaved by weathercock-like spirits, to make their buildings according unto things *à la mode*." He further condemns the incongruity committed by surveyors, "who were minded to show that they were skilled in describing columns, cornishes, and frontispieces, although, for the most part, placed as the wilde Americans are wont to put their pendants at their nostrils."

The author then proceeds to treat more particularly of his advice to all builders. "Whoever," he says, "is disposed to build ought, in the first place, to make choice of a skilful surveyor, from whose directions the several master workmen may receive instructions by way of draughts, models, and frames." I should here say that the author throughout uses the terms surveyor and architect as perfect synonyms; there is no indication whatever of that distinction which is now, in England at least, universally received. He then adverts to some of the requirements of architects, and especially dwells on the knowledge of perspective as essential; he teaches that the architect should consider the ground whereon the building is to be erected, and then govern himself as the ground will give him leave; or, as Pope has since more elegantly expressed it, "consult the genius of the place." He must place the front of a country house towards the east, "by which means he may shelter his double lodging-rooms from the north-west." I cannot say that this piece of instruction is very intelligible. We can hardly regard the north-west as the aspect most to be shunned. The author here adds what he quaintly calls a *nota bene* to builders, viz., "he must cause all the back of his stonework (which stands within the brickwork) to be cut with a rebate 3 inches broader than the breadth of his jambs and cornish, which will hinder the rain from piercing into the inside of the wall and through the meeting of the brick and stone." He deems it necessary to make a sort of apology for this advice, as implying that

> Surveyors and master workmen in this refined age which abounds in books, with the portractures of the out and inside of the best buildings, are to seek the first points of their apprentiship; of whom I ask the reason why modern buildings are so exceedingly defective; and whether it is not because many of them have been but apprentices lately, and too soon become journeymen; and that surveyors (who either affect more the building to themselves a strong *purse*, or are blind to the faults which their workmen commit), like careless postillions, hasten with the packet maile to the post-office, be it never so ill-girted, whereby it oft falls in the midway.

The author then advises how to try the capacity of a surveyor :—

> "The readiest way to try him," he says, "is to put him to draw a ground plot in the builder's presence; to make him describe the fittest place for a seat; the ordering of the rooms for summer or winter; to contrive well the staircases, doors, windows, and chimneys—doors and windows so placed that they may not be inconvenient to the chimneys—the bedstead place from the doors and windows, and of a fit distance from chimneys."

He then adverts to the "seelings of rooms," adapting their height to the size, character, and use of the room. A bedchamber of state may be 30 feet wide, 40 feet in length, and 16 or 18 feet high; whereas a closet, 10 feet square, adjacent thereto, if made of the same height, would be "preposterous, and like a barber's comb case." The dimensions here set down for a state bedchamber seem somewhat extravagant; but it must be remembered that our author's advice is apparently addressed to royal or noble builders, and in the seventeenth century business was transacted, and morning visitors were received, usually in the bedchamber, a practice which, at the present day, has not fallen altogether into desuetude on the continent.

The author then proceeds to the subject of exterior architecture. He points out the necessity of cornices over doors and windows, to prevent rain from falling on them, which he illustrates in his usual quaint way, by comparing a "cornish" to the "broad brim of the good hat of a traveller in a rainy day."

"The good surveyor," he adds, "will order ornaments to the front of a palace according unto its situation; shun too much carved ornaments on the upright, whereat the southerly windes raise much dust;" also "shun those spectacle-like cant windows which are of glass on all sides, for it may be supposed that the inhabitants of such houses and rooms with cant windows (exposed to the north-west) may well imitate a merry Italian fisher, who in a winter, windy, rainy day, had been stript to his skin, and having nothing left to cover him save his bare net, wherein he was wrapt, put his finger through one of his holes, asking of passengers what weather it was out of doors." It is here to be observed, that at the period when our author wrote, Classical architecture, on its revival, was still struggling with the Gothic forms that had prevailed for so many centuries previously. These cant or bow windows were peculiarly characteristic of the Tudor and Elizabethan ages, and so firmly rooted were they in the domestic habits and usages of the time, that the revivers of Classical architecture were driven to make many attempts to retain the old favourite form with a new dress; and down to the present day we seem to have remained true to the old spectacle-like cant window of our forefathers, which, whilst it is almost universal in England, can scarcely be met with in modern architecture on the Continent.*

Sir Balthazar then proceeds to give us advice of not a very important nature on the subject of balconies, balustrades, and cornishes. He says that the Grecian and Roman surveyors ever made the cornishes and ornaments about the windows of the upper storeys to be bigger than those on the lower, and illustrates his remark by a somewhat pedantic reference to Michel Angelo, Raphael d'Urbino, and Albert Dürer. He then teaches us as to the proportions of doors and windows. The chambers of a palace, he says, should have the doors wide enough for two to pass at once, and the height to be double the width; all other chamber doors should be convenient for a man of complete stature to pass with his hat on. Windows must be higher than they are wide, because light comes from above, and the middle transome should be above 6 feet from the floor, otherwise the transome would be opposite a man's eye; "hindersome," as he says, "to the free discovery of the country." The leaning height of a window should be 3½ feet, and not so low that wanton persons may sit on them and break the glass, or that they may show themselves *in cuerpo* to passengers. "A good surveyor," he says, "shuns the ordering of doors with stumbling-block thresholds, though our forefathers affected them, perchance to perpetuate the ancient custom of bridegrooms, who, when formerly at their return from church, did use to lift up their bride, and knock her head against that part of the door, for a remembrance that she was not to passe the threshold of their house without their leave."

"Doors," he says, "should be on a row, and close to the windows, that when the doors are opened they may serve for screens, and not to convey wind to the chimney."

The hearth of a chimney ought to be level with the floor, and chimney mantels ought to be of stone or marble. It is necessary to cover the top of chimneys to keep out rain and snow: the smoke-holes can be very conveniently made on the sides of their heads. Had the knight lived in these times he would doubtless have been very severe, in his quaint way, upon the monstrous fashion of modern chimney-pots.

"Roomes on moist grounds do well to be paved with marble," and "a good surveyor shuns the making of timber partitions on the undermost storey." "The good surveyor doth contrive the repartitions of his ground plot so as most of the necessary servants may be lodged in the first ground storey, whereby there will be less disturbance, less danger of fire, and all the family at hand on all occasions." "Finally, he ought from time to time to visit the work to see whether the building be performed according unto his directions and moulds."

The author then proceeds to a chapter on clerks of works. "A clarke of the werkes," he says, "must be verst in the prices of materials and the rates of all things belonging to a building; know where the best are to be had; provide them to the workmen's hands," and so on, adding that "though nails to some seem not very considerable, yet ought the clarke of the werke to be discrete in the distributing of them to some carpenters whose pockets partake much of the austruche's stomach." "His eyes must wander about every workman's hands, as on those of the sawyers at their pit, so that they waste no more than needs in slabs; on the laborers' hands in the digging of the foundation for the bricklayers, that all the loose earth may be removed and springs observed."

Some of the ordinary duties of a clerk of the works are then enumerated; as, that he should prevent bricks being tumbled

* Lord Bacon, who wrote somewhat before the date of this book, had none of our author's prejudice against these embowered windows. "I hold them," says he in his well-known essay on building, "of good use, for they be pretty retiring places for conference; and besides, they keep both the wind and sun off, for that which would strike almost through the room doth scarce pass the window."

out of the cart; that he should suffer no sammell bricks to be made use of, and that he should not suffer the bricklayers to lay any foundation except the ground be first rammed, though it seem never so firm. "No great and small stuff," he says, "should be huddled together in the foundation, but all laid down as even as possibly can be, to ram it the better and the more equal, and must be of solid hard stuff with no concavities daubed over with store of mortar," and he adds here in a marginal note that these precautions were observed in building the foundations of Solomon's Temple, but he does not give us his authority for this information.

The clerk of works is further to see that the line-and-plumb rule be often used; that the bricklayers make small scaffling holes, and never suffer them to begin scafflings in the morning, but before leaving of their work; "for if in the morning," he says, "most of them will make it a day for the gathering of nuts."

Then follow some injunctions respecting mortar that I scarcely need particularise, and the author proceeds to the subject of masonry. The workmen must observe exactly the surveyor's moulds, and work close and neat joints, using but little mortar between them, not only because much mortar will be washed away, but that cornishes will also appear like a rank of open teeth; and they must not forget to shore up the middle part of the head of the windows, as well as the sides, to prevent an unequal settling of the work, and, consequently, cracks. There here ensue, for the next thirteen pages, detailed directions for the proportioning of the several orders.

"It is the rule of the ancient masters, whose reliques, to be seen throughout most places of Italy, make many strangers that come their gape so wide as that they need no gags."

The author now enters upon the subject of carpentry. He teaches:—

That the carpenters should be good husbands in the management of the builder his timber; on the cutting of the scantlings; their sparing to make double mortices, which do but weaken the summers. To lay no gerdes which are needless and hindersome to the bording of a room; no summers to be laid except the ends of them are either pitcht or laid in loam to preserve them from rotting, and therefore in Italy, France, and Germany, and among the most prudent and solid builders, the free masons, put stone cartouches in the top of the inside walls which are bearers to the summers, as such cartouches are seen in divers churches, and some of them are carved in ornamental figures.

He alludes, no doubt, here to the stone corbels upon which we sometimes see the ends of principal timbers resting: an excellent old practice which we in our own days follow, although in a much less picturesque way, by inserting the ends of our timbers into cast-iron shoes projecting from the face of the wall. The utilitarian tendencies of modern practice have been very subversive of the old picturesque ways of our ancestors, whether on costume, furniture, or architecture. An upholsterer now ascertains with precision the size of the piece of oak that will carry his table; he seeks till he finds the safe minimum scantling, and this successful discovery is the triumph of his art. Whilst our forefathers would take a log of oak, unregardless of this politico-economical search after the greatest possible strength with the least possible stuff, and would carve it into one of those ponderous and fantastic legs which charm us by their quaintness, although they defy our efforts to lift them.

In further illustration compare the broad, deep, capacious fireplaces, whereby our forefathers would warm themselves, with the scientifically-constructed, snug, Rumfordised stove, with bevelled cheeks, no hobs, contracted openings, all contrivances admirably adapted to meet our modern requirements of convenience and economy; but how destructive to the poetry of grandsires' ruder arrangements!—men of rough, bold stamp, who, provided they secured to themselves a warm chimney corner, appeared to regard with great indifference the minor evils of smoke and blacks.

Then follow many other details of the manner the carpenter is to lay his timber, and the author adds that the clerk of the works must be very careful not to suffer the carpenters to lay any timbers under the chimneys, "whereby many houses have been set on fire, and burnt to the ground." We have then a variety of scantlings for the timbers of floors and roofs, which scantlings he gives as fit for substantial structures, but which are "not usual in lime-and-hair birdcage-like buildings"—a remark that leads us to the conclusion that the flimsy structure of modern speculators was not wholly unknown to our ancestors. The care of the clerk of the works must also be on "materials of weight, as sauder, wherewith an unconscionable plummer can ingrosse his bill." In this respect we see that two hundred years' experience has not advanced us—we have still "unconscionable plummers." "The clerk is to see sauder weighed and well managed, and in the attesting of bills have a care not to pass his eyes slightly over them, lest when a plummer sets pounds of candles used about his sauder, that trick prove as insupportable as that of one who, having played away a round sum of his master's stock in a journey to the East Indies, set down in his bill to have paid a hundred pounds for mustard."

He must likewise have a clear insight on the glass paines of the glazier; suffer no green paines of glass to be mixed with the white. He must with his eyes follow the measurer of the work, his rod or his pole; so the line wherewith the joiner's work is measured, that it be not let slide through the measurer's fingers, since the joiner's work hath many goings in and out, and a leger-de-mayne may be prejudicial to the paymaster's purse. It were likewise better to agree with painters to have their work rated on running measure and on the straight, as the carpenter's work, who (being of an honest Joseph's profession), are as deserving to be well payd as the painters, who do but spend the sweat of wall nuts (to wit, oyle), the carpenters that of their browes.

As for coverings of buildings, lead is best for churches, for who would rob them but Goths and Vandals? Blue slates are most comely for a nobleman's palace; "a roof covered with them is of an equal colour, when as red tiled roofs the least breaking of them makes great chargeable work for the tiler, who often removes ten tiles to lay two new ones in their place, and renders the nobleman's roof like a beggar's coat."

Our author then proceeds to some remarks on the making of bricks, and recommends the clerk of works to look well to the working of the clay, which, if not well wrought, will never make good bricks. He says that it is usual to pay 5*s.* per thousand for making and burning bricks, the clay-digging therein comprehended. He then goes into some details as to the relative expense of making bricks and purchasing them made, whereby it appears that only 6*s.* 8*d.* is saved in 20,000 bricks by making them. He says that of clam-burnt bricks 500 out of 20,000 are unfit for work.

Various other details are entered into respecting the making and use of bricks. Men dig clay, he says, for 6*d.* the thousand; lime is burnt at 4*s.* per load, and costs 40*s.* a load. Touching the use of chalk in building walls, he says that "those that mend the making use of chalk in their walls must be contented (if the ground hath springs) with the green mould which breaks thro' the whitened walls within doors. Walls about a parke or court may be *fited* with chalk, which may be digged for 18*s.* per load, and brought for 2*s.* 6*d.* the load." "Good country bricklayers do work at 27*s.* the rod, the bricks not being rubbed. Good London bricklayers will work the rod for 40*s.* with rubbed bricks; the inside for 33*s.*, arches comprised."

Then follow some remarks about lime-burning, describing the mode of burning it "in China and other parts of the Indies," wholly with wood and not in kilns.

Our author now proceeds to a new division of his work, which he heads, "As for Choice of Master-Workmen." "King Henry the Eighth," he says, "showed a good precedent when the serjeant plummer, calling his workmen to caste, in his presence, a leaden medal which was given him:" the king told him "he would have no walking master-workmen." Those, therefore, which are fit to be employed are working masters, and not those who walk from one building to another; "nor will any master-workman deny to have had as much more done and well, by bestirring their hands and tools in their workmen's presence than otherwise." I cannot refrain here from calling your attention to the singular social change that has taken place since King Henry inflicted his reprimand on the walking instead of the working master. Fertile as he is said to have been in oaths, certainly no usual oath would have sufficed to express the royal indignation had he lived in these times, to have seen the master-workman not walk, but drive up to his works in as fair an equipage as that of any of his most favoured courtiers.

We have next a division of the work entitled "As for the Builder and Proprietor." He advises the builder (by which term he always means the employer) to buy his own materials, and to have in reserve such a stock of his own as he can well spare, and also, he adds, "against the mistakes of workmen, a stock of patience;" nor to begin building walls before March, nor after the middle of September.

The next twenty-eight pages contain a variety of miscellaneous and not very well-assorted notes respecting the prices of materials and workmanship.

Touching the paving of courts, to prevent the overgrowing of grass and the charge of too often weeding, he says, "It would not be amiss to lay chalk or lime under the paving, and to do the same in gardens under gravel walks"—a piece of advice which is well worthy of notice.

With respect to street paving with pebble stones, he alludes to a M. Le Cœur having recently introduced great improvements in paving works done under the commissioners. This French undertaker appears to have formed a company for carrying out a new invention in paving, "whereby they are not only able to make a most substantial good pavement, but are likewise capable by that same new invention to maintain it durable for twenty-one years." Our author (who, as must have been observed, is remarkable for the want of order and method in his remarks), brings his book to a close with some what he calls necessary notes. "What contributes more to the fatal

end of many a good mother's son is ill-building: paper-like walls, cobweb-like windows: doors made fast as with packthread, purposely made to tempt men who, through extreme want, are become weary of a languishing life, and to whose fatal end ill-builders are in a manner accessory." He says that the scarcity of thieves vaunted of by the Hollanders, German, and other northern nations, is to be attributed to the defence they are wont to make against thieves: he then describes very particularly the Hollanders' mode of making outside window-shutters so secure by fitting them very closely to the reveals, and by a careful arrangement of the bolts and hinges, precautions which, however necessary, certainly do not lead us to entertain any exalted idea of Dutch honesty in the seventeenth century.

The entrance to a hall, he says, is not so proper in the middle as at the end, or, at all events, set as much as possible near the end. He urges that the principal floor of a building should not be level with the ground; he then introduces "his story of one in authority, who, passing by a town wherein the people generally did not outlive their thirtieth year, caused all the backs of their houses to be made the front, and the windows which were forward to be made up, to free them from that infectious aire that did shorten their lives, which had its effect accordingly, and it is therefore I do so much insist on the point of placing a building where good aire is, and that neither chimneys nor doors may be so placed as to serve for the attraction of infectious aire, which kills more than the sword, or the sea overturnes ships." A truth which, although uttered in 1663, we seem now only just beginning to perceive the importance of.

The book closes with some desultory remarks of no great importance as to the choice of clerks of works and surveyors, from which I need only quote the following portion:—

Let all owners [of houses he means] be prepared to *repent*, whether they build or *not*, for it is like the fate of many who marry, or marry not. Let both the one and the other lay, as in a scale, their several charges, vexations, cares, labours, and pleasures; they will find this to be true, viz., if they build they must be at great present disbursements, vext with as many oversights, and to be over-reach'd in bargains concerning their materials. If they build *not*, they are subject to the inconvenience of houses built according to the fancies of [other] owners; and when they shall cast up the summs of money spent in the rent, besides many chargeable alterations, they shall finde that they might have built better and more fit habitation for them and their posterity.

LEGAL.

Queen's Bench Division.—Light and Air Case.

(Before Mr. Justice Denman.)

Skivens *v.* Clements, Jeakes & Co.

The plaintiff in this case kept a common lodging-house in Macklin Street, Drury Lane. The defendants are the well-known firm of engineers, and occupy adjoining premises. Defendants had lately raised the end of one of their buildings, and plaintiff alleged that the new portion of the structure obstructed the light and air flowing laterally into the ancient back windows of his premises, of which he held a lease, the unexpired term of which was five and a half years. He also complained that a small stable had been slightly narrowed by replacing a wood enclosure in brick, and that a pier or buttress had been built a few inches over the boundary of his yard. For these matters he claimed several hundred pounds damages, and in addition prayed the court to grant an injunction to compel the defendants to pull down the offending portions of their new building. A number of men who habitually used the plaintiff's lodging-house were called on his behalf, as was also Mr. Sewell, architect, and Mr. Harper, surveyor, who all deposed to there being less light and air, especially in the common kitchen, since defendant's new building had been put up.

The defence was that the plaintiff had suffered no damage to his light and that no trespass had been committed. In support of this view, evidence was given by Mr. Harston (A. and C. Harston), architect, and it was stated that Mr. Banister Fletcher concurred, and would have been called, but that being a candidate for the renewal of Parliamentary honours his presence was required in Wiltshire. The case was contested at great length (occupying three days) by Mr. Channell, Q.C., and Mr. Davis on the part of the plaintiff, and Mr. Lumley Smith, Q.C., and Mr. Mitchell, instructed by Messrs. Lee & Pemberton, solicitors, for the defendants. The Judge requested the jury, if they found any damages, to award a separate sum for each item of complaint, which they did as follows, viz., damage for loss of light and air, 5*l.*; damage for trespass by piers, 5*l.*; damage to stable, 3*l.*; ditto to tank, 1*l.*; total, 14*l.*

Defendants had paid 25*l.* into court. The Judge observed that this was a verdict for *defendants*, but afterwards proceeding to give judgment for 14*l.* for *plaintiff*, defendants' counsel objected to that course, and it was ultimately decided that the verdict of the jury should be recorded, but the judge would give no judgment; either party could, if they considered it worth their while, move the divisional court for judgment. He, however, refused the application for an injunction to pull down. The result is that plaintiff cannot get the 14*l.* awarded to him, nor can defendant get out of court the balance between the 14*l.* verdict and the 25*l.* paid in, except by the expense of moving the Queen's Bench Division of the High Court; nor, until such motion be disposed of, can any decision be arrived at in respect of the more important question of costs.

CHURCH BUILDING AND RESTORATION.

Hythe.—The plans of Mr. Pearson, R.A., for the restoration of the chancel of the parish church have been received. In his report he says:—"The improvement in the internal effect when the restoration is completed will be almost inconceivable." Mr. Pearson has divided the work into sections: (1) the completion of the groining of the chancel and its aisles, and the reparation of the roof and parapets; (2) the repairs to the stonework outside; (3) works in the crypt, and the opening of a newly-discovered door; (4) the reflooring of the chancel, and the completion of the whole work internally. Two tenders have been received. By the lowest, the first section of the work would be executed for 1,696*l.*, and the whole four sections for 2,414*l.* Towards this nearly 1,000*l.* is promised. The committee say they dare not accept the responsibility of giving the order for the work until they receive further contributions.

NEW BUILDINGS.

Topsham Vestry Hall.—The tender of Mr. Perriam has been accepted for this building, for which the plans were prepared by Mr. E. H. Harbottle of Exeter. The style is Queen Anne, and red brick will be used for the walls. The building will contain two spacious rooms, one on the street level and the other forming the first storey, and both will have separate entrances from the outside thoroughfare. Folding doors will divide the basement room, and both apartments will be lighted at each end by large circular-headed windows.

GENERAL.

Mr. T. Brock, A.R.A., has been elected an Honorary Member of the North-Western Literary and Historical Society, Sioux City, Iowa. A letter from the secretary to the society intimates that in electing Mr. Brock the members are desirous of conveying to him an expression of their recognition of his rare artistic genius and their appreciation of his great sculptures.

M. Marquet de Vasselot has received the Cross of a Chevalier of the Legion of Honour from the Minister of Fine Arts in recognition of the value of his statue of Lamartine.

A Lady has offered to purchase 42 acres of land for the formation of a public park at Ipswich.

Mr. R. Berrington, assistant borough surveyor of Wolverhampton, has been recommended to the Town Council as borough surveyor in succession to Mr. G. E. Thoms, who resigned the office.

The Monumental Railway Station at Bruges, which was built in the Gothic style to harmonise with the rest of the old Flemish city, was opened on Sunday.

The Members of the Winchester House Company (Limited) resolved on Monday to sell the freehold of the land to the Ecclesiastical Commissioners for the sum of 487,500*l.*

The Foundation-stone of the Finsbury and Shoreditch Polytechnic was laid by Princess Christian, in the presence of the Lord Mayor and Sheriffs of the City of London, on Saturday last. Mr. Henry W. Dobb, the architect, and Mr. Mollett, the builder, had the honour of being presented to the Princess.

The Music Hall in Dublin, which is in course of erection from the plans of Mr. C. J. Phipps, F.S.A., is to be opened in November.

The Parish Church of All Saints, Leighton Buzzard, which has been restored by Messrs. Bodley & Garner, has now been reopened.

The Shrewsbury Town Council on Monday proposed a scheme of improved water-supply, which is estimated to cost 25,675*l.*

The Foundation-stone of a church at Woodford, of Norman Transitional style, designed by Mr. James Fowler, of Louth, was laid last Friday.

The Penge Vestry have decided to purchase a large piece of land at Penge for the purpose of a recreation ground, which will cost about 4,000*l.*

The Congregation of St. James's Church, Edgbaston, Birmingham, at a meeting lately held, decided to build an organ chamber and choir vestry to the church, and over 400*l.* was promised in the room towards the cost.

A Committee has been formed to take steps for building a chancel and other improvements to Illingworth Church, Ovenden, the cost of which is estimated by Mr. W. S. Barber, architect, of Halifax, to be about 2,000*l.*

The Architect.

THE WEEK.

The Committee who are making the toilsome experiment of introducing technical education to Dublin have become the occupants of extensive premises in Kevin Street. The building is one of the large mansions which survive from the last century, and have become more remarkable from the squalid houses near them. There is much yet left in the city to reward the research of a follower of Queen Anne. Kevin Street is in one of the poorest districts, but the building on that account was obtained very cheaply, and it can be converted into a technical school at a moderate outlay. An application is to be made to the Science and Art Department for as generous a building grant as is to be obtained. We hope that the appeal will not be set aside because some unimportant official regulation has not been observed. If it be objected that the building is not new nor specially planned, the peculiar conditions of the case should be also considered. This is not the first educational attempt in an adapted building. The Dublin Society, which has done good work, has long utilised a house built for the Duke of Leinster. The Catholic University occupies private houses. The Royal College of Science was also a private house. With so many precedents, it would be an unworthy course to refuse a grant to the Technical School. The Committee of the school have undertaken an arduous task, and it is, moreover, one for which there are no precedents to give them encouragement. They are consequently deserving of all the support which the Science and Art Department can afford. But the rule which prescribes official teachers cannot be rigidly enforced if the school is to be successful. Practical men are needed. If, for example, Mr. Wigham could superintend a class, he would be worth a legion of the certificated teachers who know so little about workshop practice.

The decree relating to the organisation of the French International Exhibition of 1889 was announced on Monday last. The date fixed for commencing the works is September 1, and in consequence a very short time is allowed for the preliminary arrangements. The iron tower is to be undertaken as an important part of the scheme.

Mr. Swain, the clerk of works at the Truro Cathedral, can congratulate himself on the success of his appeal to the public for funds towards the erection of the lantern stage of the central tower. The sum of 1,831*l.* was obtained, and, although 1,043*l.* is still required, the order to commence the work has been given. But a work of the kind ought not to depend on occasional bursts of benevolence. The interest which attaches to the experiment of constructing a new English cathedral should be enough to attract supporters.

The Albert Hall, like the Crystal Palace, is an illustration of the consequences of believing that the public are sufficiently good-natured to enjoy any kind of pleasure which is put before them. Probably not one in a thousand of the visitors to Sydenham care to understand the costly architectural courts or the history of the sculpture. The lovers of high-class music allow the Albert Hall to be loaded with an increased debt every year of about 2,500*l.* It is supposed that the only way to make ends meet will be, first, to get rid of the privileges possessed by the holders of seats—that is, of occupying the places for which they paid a good deal of money; and secondly, to allow entertainments to be held in the hall of a more popular character than was contemplated when the shares were subscribed for under the influence of hero-worship. It is evident that many of the seat-holders believe that some revolution of the kind must be gone through. The owners of 544 seats are in favour of a change, while opposition is represented by the owners of 114 seats. The success of the concerts held in the adjoining grounds of late years is enough to demonstrate that the public can patronise music when it is of a really enjoyable kind. The Albert Hall performances were characterless. The hall itself was supposed to form the attraction. The building is not adapted for concerts like those which Mr. Chappell produces at St. James's Hall, and, in spite of all that is said by officials and their flatterers, it is not good for sound. The building is better adapted for a circus than for a music-hall, and it seems likely that it may be changed into something of the sort. The frieze which surrounds the exterior could not then be more out of place than it is at present, for it is a mockery to suggest that a building managed as this has been could have a connection with the history of art. The Albert Hall resembles a good many of the South Kensington schemes. Unfortunately there was no exchequer to cover the losses, and therefore it has to be proclaimed a failure.

It is too often taken for granted that architectural sculptors are only competent to deal with forms that are more or less conventional. The bust of *Mr. J. J. Griffiths*, by Mr. Mabey, of Westminster, which is in the Royal Academy, is enough to refute the belief as regards one artist who is a representative man in his profession. This bust has striking qualities, and might be acknowledged by members of the Academy. It is gratifying to find that Mr. Mabey is willing to attack work of the kind, and his success is a guarantee that his sculpture for buildings will not be of the stereotyped kind that is sometimes seen, and which will not sustain the test of a comparison with nature. Next year we hope Mr. Mabey will be represented by a larger work in Burlington House.

The new number of *L'Art* contains two plates which were exhibited in this year's Salon. One is a lithograph, designed by M. Fantin-Latour, *Lohengrin*, and represents the scene where the Knight of the Holy Graal asks the Princess Elsa whether she will marry him after the combat he undertakes to assert her innocence, and without any questions about his past life, his name, or lineage. M. Fantin-Latour is original in his methods. In this case he would seem to have tried the experiment of chalking over the stone—or at least the part filled by the two figures—with deep black, and afterwards bringing out the gradations and lights by scraping. The plate has the appearance of a drawing with charcoal, and is worthy of the attention of artists. The etching by M. Giroux, after M. Chartran's picture, *Apparition à Saint François d'Assise*, is one of those elaborate works which are only to be found in *L'Art*. The expense of producing them would be too much for any other periodical. The subject is taken from one of the Franciscan legends, and represents a vision which was seen in a barn. Among the articles which are illustrated, we may mention one on the Salon by M. Paul Leroi, which is outspoken in its exposure of the shortcomings of those who are entrusted with the control of the exhibitions, and courageous in departing from the selection which custom appears to enjoin to art critics in Paris.

It is supposed that the Cockburn Association is rather favourable to a restoration of Holyrood Chapel, but if the words of Lord Moncrieff, who was chairman at the last annual meeting, are of any account, it is evident there is not unanimity among the members on the subject. His lordship said it was not intended to express in the report any opinion upon restoration except this, that a relic so interesting to the whole nation ought to be at all events preserved as far as it could be in its existent state, and if any operations were to be carried out with the purpose of restoration, that these should be conducted with the greatest care and attention. His lordship's opinion was, that while preservation of course was exceedingly desirable, restoration was not possible. From all that he heard, he believed that architecturally there would be difficulties in the way, and he was not sure that it was not better as it stood, and a better memorial of the past, than any restoration could make it. In this opinion architects will agree. The ruin is impressive at present, but if it were transformed into a royal chapel the charm would be gone. There is a temptation to a wealthy merchant to have his name associated with Holyrood. We hope the good sense of the Cockburn Association will not encourage any desire of that kind, and the people would be certain to oppose it.

ROMANO-BRITISH MOSAIC PAVEMENTS.*

THE name of Mr. THOMAS MORGAN is well known in connection with archæological societies, and it is to be regretted he does not more often give the world the fruits of his lore in volumes resembling one on Romano-British Mosaic Pavements by him, which has lately appeared. The public in England have few opportunities of becoming acquainted with what has been done of late by native archæologists, and are therefore unaware of the system with which inquiries are conducted. Plausible theories have little chance nowadays in any archæological society; very severe tests are applied to everything which is brought forward, and the proceedings in general will, for method at least, bear a comparison with those of societies which are professedly scientific and unimaginative. But how can the public realise what is done at a meeting which is attended by few and of which no report reaches a newspaper? England is not alone in this respect. The French archæologists get through good work also, which is unknown to the mass of their countrymen, and for which they receive scant credit. Both countries possess massive volumes which represent the transactions of the societies, but the form in which they appear is a guarantee that the pages will be read by few.

How many people in England know the number of mosaic pavements which have been found in the country or could describe their character? That there are memorials of Roman occupation is assumed, and they may be in the form of mosaics, as in any other. But even educated Englishmen never give a thought to the subject; and if by chance they see a specimen they are likely to consider that the admiration bestowed on the mosaics is hardly warranted. The Romano-British pavements may not have as fine contours for the figures nor as graceful ornament as is to be obtained now, for there is no use in overpraising antiquity; still, as illustrations of mythology and as memorials of foreign occupation, they claim a high degree of interest. Moreover, the study of them brings us into relation with many aspects of Roman life and thought.

The Romans seem at one time to have attached as much importance to a floor with patterns as their successors did to a pictorial ceiling a few centuries ago. When we read that among the *impedimenta* of JULIUS CÆSAR were tesseræ and sectilia—which some French translators interpret as *bois de marqueterie*—to be used to floor the headquarters in his invasions, there seems to be something more than luxury in the use of mosaic pavements. Was it the habit to peruse the patterns when thinking? The character of the subjects mostly represented in the British examples will suggest that it was tacitly accepted that certain things were more eligible than others :—

It will be found (says Mr. Morgan) that the subjects most frequently repeated are :—*Orpheus with his Lyre* taming the animals, as at Woodchester, Withington, Barton Farm, Winterton, Horkston, Littlecote (Wilts), Chedworth, Cirencester, and Morton (Isle of Wight). *Bacchus and Panther*, as at Cirencester, Pitney, Thruxton, Stansfield, Bignor, and London; and, without his panther, at Frampton. His *Cantharus* at Bignor, Cotterstock, Littlecote, Crondall (near Farnham), Lee (near Shrewsbury), Itchen Abbas, Bramdean, Stansfield, Carisbrook, Silchester, Morton (Isle of Wight). *Harmonia* once, at Morton. *The Seasons of the Year*, at Littlecote, Thruxton, Morton; and at the latter place *The Seasons of the Day* also. *The Realms of Neptune*, with his naiads, tritons, dolphins, and fishes, at Withington, Cirencester, Bramdean, Bignor, Frampton, Horkston, Woodchester, and Littlecote. *The Enemies of Bacchus*, as Lycurgus with his axe; Pentheus, whose head is held up by Agave, his mother; and the head itself in the head of another compartment, at Morton. The angry *Juno* is there represented in her interview with Lycurgus, armed with the axe; and she appears also through her emblem, the Peacock, at Wellow, London, and Morton, where also are depicted her winged messengers, or Iris, sent to proclaim war against Bacchus, unless these are meant for the Winds. *Mercury* is shown five times at Frampton and once at Bramdean; the episode of the black king *Morrheus* and the nymph *Chalcomedia*, one of the Bassarids, at Morton. Another enemy of Bacchus is disposed of in the death of the Indian king, while a grandson of Cadmus, *Actæon*, son of his daughter Antonoe, fills up the tragic catastrophe which overwhelmed the family of Cadmus. The goddess *Isis* is only once drawn, and that is at Pitney, even if the figure should be really that divinity. *Cupid* is represented at Leicester, and is seen riding on the tail of a seahorse at Horkston. *Good Luck* was to be honoured, as at Woodchester.

Then there are scenes representative of occupations and amusements; winged gladiators are seen at Bignor, and in a few cases, where probably some staunch Conservatives resided, the old gods appear. The fret border is supposed by some to be more than a fanciful arrangement of straight lines, and to relate to fire-worship or to the legendary labyrinth. Astronomical, or rather astrological, instruments are figured in a mosaic at Morton. It will thus be seen that a certain high character was given to the subjects of the mosaics, and, indeed, the Roman was little disposed to unbend himself when he attempted to be artistic.

After a general dissertation on the subject, Mr. MORGAN describes at length the mosaics which were found in England, taking them in counties, and giving the first place to Gloucestershire, because the earliest mention of a Roman pavement by an English author relates to Woodchester in that county. In GIBSON'S *Camden* (1695), Woodchester was said to be "famous for its tesseraick work of painted beasts and flowers which appears in the churchyard two or three feet in making the graves." In the county are also the pavement at Chedworth, which Mr. GROVER describes as a very bright and beautiful mosaic, with an ingenious entwined border; one at Cirencester, and a fragment in the city of Gloucester. It is worthy of notice that the Romans appear to have utilised local materials to some extent, at least for their pavements. This is plain from the description of the Cirencester example given by Professor CHURCH :—

The materials (he says) used in the manufacture of the tessellæ appear to have been carefully selected, and many of them obtained from a considerable distance. The white tessellæ are from a singularly hard and pure limestone of the neighbourhood, the uppermost bed of the great oolite; the cream colour from the great oolite; the grey, the same stone altered by burning; the light yellow from the oolite; the chocolate from the old red sandstone; the slate, or dark colour, from the limestone of the lower lias; the brown are of Purbeck marble; while the light and dark red, the yellow and the black are of burnt clay, and the ruby red, glass. The last-mentioned colour is used for the flowers which adorn the head of the goddess Flora, and for the blood dropping from Actæon's wounds. The glass is coloured red by suboxide of copper, but by lapse of time it has acquired a green crust of carbonate.

When describing the mosaics at Bath, Mr. MORGAN makes use of the paper read by Mr. DAVIS, the architect to the Corporation, who has done more than any man in England for the exploration of Romano-British remains. But, strange to say, Bath, where so much Roman work exists, is not remarkable for its mosaics. Further research may, however, reveal important examples.

In London a good many specimens have been found. Mr. PRICE has watched over recent excavations with anxiety, and has been rewarded. Apart from the intrinsic value of the pavements, they are useful in helping us to determine the direction of streets and buildings.

The study of Romano-British remains might be expected to receive an impetus from the discovery of the villas in the Isle of Wight. The pavements at Morton Farm, near Brading, are very curious. It seems to us that here, as in many places, the design is better than the execution, and each may be no more than a copy from another work or a compilation from more than one. The figures are often well placed, but the contours are exceedingly stiff in every case, and sometimes there is the distortion that is seen in children's works. It is evident the artists had no notion of imitating nature.

It cannot be said that there is much for modern artists to learn from our Roman pavements. In the first place, as there was a limitation of materials, there is less effect in them than is now obtainable. The colour has, in general, a coldness that cannot be considered to be requisite for pavements. If there is no offence against æsthetics in having Eastern rugs to cover a floor, it cannot be a crime to lay down mosaics containing tesseræ of a rich colour. The illustrations of the mosaics brought from Halicarnassus which Mr. MORGAN gives are a commentary on the cold-

* *Romano-British Mosaic Pavements.* With Plates. By Thomas Morgan, F.S.A., &c. London: Whiting & Co.

ness which necessity imposed on the Roman artificers in Britain.

But, whatever may be their shortcomings as works of art, the worst of the mosaics which remain is interesting as historical evidence. We see how the antique Roman, like the modern Englishman, retained his native forms in his art-work, no matter how far he might travel from his capital. We see also that he tried to utilise the materials that were near him, when, unlike Cæsar, he could not bring his tesseræ from Italy. The buildings he erected here might externally differ from those in which he was reared, for they were sure to be adapted to the climate, but in the interior, and especially on the floors, he had much which recalled his native state. Certainly there is reason for the conservation by the State of what are left of those Romano-British pavements. Mr. Morgan's volume contains an ample description of each of them. He has given also elaborate plates of the principal examples. His book is entitled to be welcomed as a valuable addition to the literature of archæology.

IN THE COUNTRY OF THE FALISCANS.

[By a Correspondent.]

THE traveller who has journeyed from Rome to Florence, or *vice versâ*, will remember to have passed a roadside station about thirty miles from the former city, called Borghetto. Lying off from it is a small hamlet surmounted by a broken old castle, a conspicuous object in the valley of the Tiber, here spreading into an expansive plain, the river crossed by a serviceable stone bridge. It is here one enters the southern portion of that division of Italy formerly called Etruria, in this part the abode of the Faliscans, the formidable enemies of ancient Rome. A tour recently made in that region by the present writer in the companionship of a friend gives the opportunity of presenting a few notes of a country rarely travelled over by foreigners, rich in architectural and archæological interest, and offering to the artist many points of attraction.

Diverging from the railway at Borghetto, six or seven miles to the westward is reached the considerable town of Civita Castellana. It is entered by a fine stone viaduct, which carries the road over the deep ravine which almost surrounds it. The situation of the town is remarkable. It is in the midst of a volcanic country split into enormous rifts or gullies, sometimes extending for miles. On the borders of one of these, which almost environs it, the town stands, a position undoubtedly chosen in ancient times for its security. It is supposed to occupy the site of the most considerable of the twelve cities which constituted the stronghold of Etruscan power. It was brought into subjection to Rome soon after the conquest of Veii. It is most picturesquely situated, the houses looking down into the gorge of Plutonic origin, through which a small stream flows, turning several mills in its course. One side of the town is flanked by an enormous fortress built by Sangallo for Alexander VI. in 1500. The cathedral is Gothic in character, dating from 1210. The church has been altogether modified and restored, leaving nothing of the original structure but the portico, the doorway, the floor, and the crypt. The doorway is flanked by double columns supported by lions. The abutting portico is a charming specimen of the mosaic work of the Cosimati Brothers, those fine artists in mosaic work of the thirteenth century, whose name it bears, together with the date of the building. A mosaic frieze, with the head of the Saviour, is seen over the side door. The mosaics are now under repair. The floor of the church is perhaps one of the most beautiful existing in this kind of work, rivalling that of Santa Maria Maggiore, in Rome. Precious as jewellery, this fine work, which is worthy of the most careful preservation, is so covered with dirt that the designs are scarcely traceable on it. There is not much beyond a general picturesqueness to detain the traveller in the town, but around are to be seen many remarkable Etruscan remains. Many parts of the most ancient walls are still standing, built in enormous blocks of the volcanic peperino of the neighbourhood, without mortar, in alternate courses, lengthwise and endwise, as was the custom of the Etruscan people. Tombs and houses are to be seen in abundance cut into the rock, some supported with columns left in stone, some with recesses at their sides, as of a columbarium. The Italian Government is now occupied in making excavations from which important results may be expected.

Eight miles from Civita Castellana is the town of Nepi. It is reached by a road traversing a plain studded with chestnuts, always in sight of the Ciminian slopes. It was the Nepete of the ancient Romans, and in very early times was in alliance with the Roman power against its Etruscan neighbours. Many remains of the most ancient walls are still to be seen, which may very well be the same as those stormed by the Romans in the fourth century, B.C. Its bishopric is said to have been established in the early half of the first century. The first cathedral was built about the year 400, on an ancient temple of Jupiter, for the reception of the body of San Romano from the catacombs. In the thirteenth century the town was taken by Frederick II. It was burnt and almost destroyed by the French in 1799. So far, however, has modern civilisation and the interests of the time now forgotten it and its untravelled neighbourhood, that one wonders that anyone should at any time have thought it worth while to invade its insignificance. At one side of the town is a most picturesque group of objects. An old Mediæval castle arises, consisting of a tall round tower and a lower square one, with broken ruins beneath. Below these towers is the gate of the town, reached by a bridge spanning a stream of water which makes a picturesque cascade. In the ravine into which this falls an old-fashioned water-mill finds place, with its rumbling hoppers and mealy atmosphere. Such a scene lit by a weird half moon might have furnished a picture for one of Mrs. Radcliffe's romances.

At a distance of nine miles from Nepi, Sutri is reached. The neighbourhood of this little town abounds in Etruscan remains. It was the Sutrium of the Romans, being one of their early conquests in Etruria. It is approached by a road excavated in the tawny-coloured tufaceous rock, whose sides are excavated with tombs sometimes in single, sometimes in double file. Some of these have been converted into refuges or chapels of the Early Christians, and in one place is a considerable excavation, consisting probably of several of these tombs opened the one into the other, which has taken the form of a rude church or cathedral. It has a vaulted roof, a nave, aisles and an apse, the nave being separated from the aisles by rows of square columns left in the excavation. The interior was plastered and decorated in the fourteenth century. The most remarkable, however, of the remains of ancient times is that of a spacious amphitheatre cut out of the solid tufa. In a few places it is eked out by a little masonry, otherwise the whole amphitheatre is an excavation. It has been conjectured that it may have been adapted from a stone quarry, which is very possible. There are four vomitorii and a stairway up to the adjoining villa. Nibby believes the amphitheatre to be of the time of Augustus, but it may possibly have been much earlier. It is a very interesting relic of the past.

The cathedral of the town has lost the character of its earlier structure in subsequent restorations. It is a pity that the Catholic Church, so conservative in its forms of faith, should be so indifferent to the preservation of its monuments. Surely it must have been obvious at every age that stone is better than stucco, that sculpture and mosaic are a finer order of material than tawdry marble veneering and bad distemper painting. The mosaic floor, however, still remains of exquisite design and workmanship, but, as in the former case, so obscured by dirt as to be scarcely visible. The crypt of this church is remarkable. It consists of a vaulted roof supported by many columns, the capitals of which are sculptured in ornament or grotesque in varied design, some of them more highly finished than others. The same kind of substructure is found also beneath the cathedral church of Civita Castellana and that of Nepi.

From this place the road descends below the old brown houses of the town, and follows the bottom of one of the enormous fissures, the result of geologic disturbance, which is the distinctive feature of this part of Italy. A cineracious tufa is the prevailing formation, but sometimes an aqueous deposition is seen with breccias and marl, all extremely

friable when exposed to the action of the air. Travelling along this valley, we are met by the soft breath of spring breezes, accompanied by the songs of many birds—nightingales amongst the number. A little brook flows by the roadside, its sides prettily bordered by the yellow iris flag. The drive is an inspiriting one. Soon we emerge from the ravine, and there arises upon the left an old town, untouched since the Middle Ages, called Capranica, here and there supported on blind arches built against the rock. It is worth a visit. There are the remains of an old church in a fine portal of Lombard construction, the upper part sculptured with a kind of arabesque of a very quaint and interesting character. In a chapel of the cathedral there is also a noteworthy tomb of early fifteenth-century workmanship.

Journeying onwards we reach the somewhat important town Ronciglione. It consists of two parts—one modern, clean-looking, cheerful; the other grimy, with unglazed windows, forbidding, roof above roof, with the usual Mediæval castle frowning in the midst. It seems once to have appertained to the Farnesi. Some ironworks, in which ore brought from Bracciano is worked, give a little movement and energy to the place. Its romantic situation on the edge of one of the volcanic gorges, and a certain gloomy picturesqueness which appertains to the older portion of the town, afford interesting material for the artist's sketch book.

From this town the road takes us into the heart of the Ciminian range of hills, the mysterious region which had so many terrors for the ancient Roman and his foe. Still some part of the old forest remains. We skirt the lake, Ciminius of the ancients, now Lake Vico. It lies smooth and bright in the morning light, but the hills amongst which it is situated, as if to retain their ancient character of solemn mystery, are robed in folded clouds which brood almost upon the surface of the water. Winding by field and farm and wood we arrive at the small town of Caprarola, situated on a slope of Monte Cimino, hardly interesting in itself, only for an architectural curiosity which may well detain us a short while to examine its particular features. It is a mansion or castle—for it partakes also of the nature of a stronghold—built by Vignola, and accounted his masterpiece in construction. Interesting it certainly is, but it could hardly be said to furnish any suggestion, either architectural or decorative, for a residence in more northerly climes. The mansion was built for Alessandro Farnese, nephew of Paul III. It is of pentagonal form, surrounded with bastions and a fosse. The façade is imposing. Its two tiers of windows with a blank course above overlook the length of the main street of the town and the far Campagna of Rome. The view seen from the balcony of the second storey is one which the mind delights to dwell upon, and does not lightly forget. The area of the interior is circular, the building rising from a subterranean chamber hewn out of the solid rock. From this a spiral stone staircase with balustrades leads to the upper storeys, the suites of chambers giving off from it. The cortile is adorned with a good deal of decorative work in distemper, by Antonio Tempesta, consisting chiefly of birds and flowers supported by a trellis. On the first floor is the Chamber of Maps, with the constellations with their mythical forms substantially modelled out in colour by the Zuccheri Brothers. The Sala Regia is ornamented by a marble fountain at one end of it, embellished with a kind of encrusted mosaic work, adjoining which is a circular chapel with wall-paintings. Another chamber decorated by the above-named painters is the Camera della Storia Farnesiana, wherein the principal historical events in which this family was concerned are depicted upon the walls. These, together with the Room of the Council of Trent, embrace the principal features of the interior. Seen from the windows of one of these rooms an elaborately-kept Italian garden stretches away uphill.

Leaving this quaint out-of-the-world quarter, the road lies along quietly sloping hill-terraces, through what remains of the old forest, to a very remarkable locality. It is that of the old Roman city Fallerii, founded on the ancient Etruscan city of a similar name, and colonised by the Romans on its subjugation, as was their custom. The buildings of the city have almost vanished; but the walls, which are of semi-Etruscan construction in the volcanic stone of the district, are left standing in almost their whole circuit—everywhere traceable, and in some places nearly perfect. One of the gateways, called the Porta di Giove, from a head sculptured on the keystone, has received very little damage from the usage of time. Another, called the Porta del Bove, from the head of an ox on the keystone, still remains tolerably perfect. Here the walls reach a height of 54 feet, some of the stones of which they are built measuring 6 feet in length and 2 feet in depth. Square towers appear at intervals along these walls built for the purpose of defence. Near the Porta di Giove is the former abbey of Santa Maria, which is—what remains of it—a good example of twelfth-century workmanship in the Lombard style. Its nave and aisles are divided with columns taken from the vanished city of antique times, some of them very beautiful. The doorway is a delightful specimen of light and graceful architectural proportion. It is the work of the Brothers Cosimati, the celebrated architects and mosaic workers of the thirteenth century, above spoken of.

An ascent of Soracte, the famous mountain of ancient days—neither difficult nor laborious—fitly concluded an interesting journey, in the course of which were still to be seen so many traces of a vanished civilisation. It is now surmounted by a monastery and a chapel. The views from the top of this mountain which rises isolated from the plain like "a wave about to break," as Byron not unhappily says, are very fine. Thirty-five miles away the dome of St. Peter is faintly seen, though the whole city which it dignifies has vanished. Perhaps in the future all this may be opened up as a pleasant round for tourists. At present its want of the means of communication with the modern world, and the absence of decent accommodation for travellers, make its exploration inconvenient in some degree.

THE LATE ÉMILE PERRIN.

It is the custom for a newly-elected member of the French Academy of Fine Arts to deliver a discourse on his predecessor in the chair. In this way it fell to the lot of the Baron Alphonse de Rothschild to become the eulogist of the late Emile Perrin, the painter, who was almost universally known from his direction of the Opéra Comique, the Opéra, and the Comédie Française. The principal passages in the remarkable discourse have been printed in the *Courrier de l'Art*, and we give a translation of them. One circumstance deserves to be recorded. It will be seen that M. Perrin expressed his admiration of Cambon, the scene-painter, and he intended to have written an essay on the artist in *L'Art*, but he died before he was able to fulfil his promise.

Emile Perrin, said Baron Alphonse Rothschild, was born in Rouen on January 19th, 1814. His father being a councillor to the Court of Appeal at Caen, Emile would hardly seem to be destined to follow art as a career; but, once his early studies were completed, his taste led him to painting. On coming to Paris, he entered at first in the *atelier* of Gros, and subsequently into Paul Delaroche's. A water-colour by him was seen in the Salon of 1841. But even at that time the practice of art did not absorb all his faculties: Perrin was also an art critic. It was in this dual aspect of exhibitor and of critic that for some years he took a share in the artistic life of the time. His articles on the Salon which appeared in the *Moniteur Parisien*, the *Nouveau Correspondant*, and the *Union Catholique* are evidence of his rectitude of judgment and of his talent as a writer. His picture of Pierre Corneille and the cobbler received a great deal of attention. Théophile Gautier devoted an article to it in the *Presse*, praising the harmony of effect, the finish of the detail, and pointing out the qualities which announced that the author was a painter of a high value. The picture well merited the honour of being purchased by the State, and it is now in the Musée of Caen. M. Perrin made it a point of seeking dramatic subjects for his pictures, and the skill of the future director was indicated by his mode of arranging the figures and by his attention to costume and surroundings.

One is, however, never master of his destiny. The ambition of M. Perrin was to make a name among painters, and at the very moment when he seemed to be on the point of attaining that end, certain events occurred which turned his activity into a new course, and gave him an opportunity to display that versatility which characterises the intelligence of a select few. In February 1848 there was the Revolution, and in May the Opéra Comique was in a state of bankruptcy. M. Ledru Rollin was then Minister, and he was inspired with the idea of giving the direction to a painter. However original might be the idea, the office was not attractive. Perrin did not hesitate about accepting the appointment, and resolutely took possession of the director's chair. He had confidence in him-

self, and the result showed it was not misplaced. No one could so well render homage to the skill which he displayed in the delicate functions of his office, than the eminent artists with whom he was then brought into relation: some were associated with him, but all remained his friends. They alone could do justice to his tact and firmness, to the variety of his knowledge about artistic and literary matters, and, if the word is not over-ambitious, to the diplomatic qualities which are requisite for every successful director of a theatre. For more than forty years M. Perrin was administrator of the three greatest among Parisian theatres—the Opéra Comique, the Opéra, and the Théâtre Français. In each case it was plain that he was equal to the duty. During so long a period, with how many ministers, under-secretaries, and officials of every kind, of all shades of political opinion, must he have transacted business? with how many singers and actors, equally representative with the poets of the *genus irritabile vatum*, although they were the first artists in the world, was he obliged to deal? He faced all difficulties. He was slow in coming to a determination, but when once taken he never recoiled in face of any responsibility, and never faltered in any duty. He possessed a tender heart as well as a strong head. Under an exterior that seemed rather frigid he concealed a heart that was open to his friends as well as to his family. He knew how to make his authority beloved and respected.

When he entered on the Opéra Comique it was about to be closed. In the course of a few months he restored its fortunes. The stage which was deserted and abandoned regained its brilliancy with the aid of composers such as Victor Massé, Meyerbeer, Grisar, Halévy, Reber, Ambrose Thomas; interpreters like Mmes. Miolan, Ugalde, Lefebvre, MM. Bataille, Faure, and Puget; and pieces of the class of the "Val d'Andorre," the "Chanteuse Voilée," the "Songe d'une Nuit d'Eté," and the "Etoile du Nord." When in 1857 M. Perrin quitted the direction of the Opéra Comique, the theatre was in a prosperous state. From that time his reputation as a director was established.

He said he wanted repose, and he sought it in a new kind of work. From 1857 until 1862 he proved himself to be a writer with the happiest powers. He possessed a style that was at once sober, subtle, and elegant, while his thoughts were marked by precision and elevation. His articles on art and the theatre in the *Revue Européenne* were well appreciated. He was able to hail young composers who then started, and have since been recognised as masters. It was his good fortune to be one of the earliest to proclaim the success of "Faust" at the Théâtre Lyrique, that masterly work which is the result of a marvellous association of musical genius with literary genius. Literary work was not sufficient to absorb all his activity. He again turned to painting, and produced his *Messe de Plombières*; it is probably the best of his works, and now decorates the chapel at Plombières.

The retirement of M. Perrin had been fatal to the Opéra Comique, and he was solicited to resume the direction. He had only time to put the house in order, and to make it once more fashionable, for soon afterwards he accepted the administration of the Opéra. As a brave man he was fascinated by the peril. Where so many succumbed he was able to be successful, owing to his energy, and to that combination of qualities which made him eminent in many things. The task was, however, trying, but he went through it with honour.

Among the pieces which he brought out I can cite but a few in order to illustrate his tenure of the direction. One was "L'Africaine" of Meyerbeer, which has been wittily described as a phantom opera, for while it is spoken about it is never seen; another was the "Hamlet" of Ambrose Thomas, which is one of the masterpieces of the lyric stage of France; a third was the "Faust" of Gounod; and a fourth was the delightful ballet by M. Délèbes, "Coppelia."

His career as a director of theatres was crowned in 1871, when he was appointed to the Maison de Molière, the Théâtre Français. From the first he was at home in it, and the intimacy of his relations with our foremost dramatists suggests in what esteem he was held by them. The fortunes of the theatre had suffered from the trouble of the time. His intelligent authority was not long exercised before some effect was produced. An incomparable troupe of players seconded his efforts, and under his auspices the Théâtre Français became once more the first theatre of the world. He was also able to attract the highest classes of the public by offering a refined pleasure.

But art remained his dominant passion, and no pre-occupation could turn him from it. He wished to make art co-operate in the success of the plays he mounted, and therefore gave special attention to the accuracy of costume and the perfection of the scenery. In this way he excited an ardent controversy, which was long resounding in the journals. It is worthy to be recalled. The debate was not a mere dispute over words, it involved higher issues, and as it became a question of principle, the Académie des Beaux-Arts could not remain indifferent.

An eminent critic, who wielded an incontestable authority, attacked M. Perrin in a series of articles. I regret I cannot reproduce them in their entirety. He said that M. Perrin was an artist rather than a philosopher. Was that a reproach? It could not be better addressed than to a member of this Academy. "But," he continued, "it is not merely on the detail of things that I disagree with M. Perrin, it is upon the very foundation of them. The difference arises from the fact that the two of us have ideas of dramatic art that are unlike. M. Perrin upholds the school of naturalism, whilst I am an idealist."

The naturalist desires that nature be faithfully reproduced, even to the smallest details, by the aid of all the processes which modern science has put at the disposal of managers; he considers the perfection which is now possible in the art of decoration as a great gain for dramatic art, and he regrets that certain difficulties render impossible a more literal translation of realism.

The idealist, on the other hand, admits voluntarily that all decoration, all scenic display, is an inutility, that progress in the art of decoration means decline, and that in seeking perfection of that kind the theatre is oblivious of its destiny and is returning to barbarism. It is very evident, however, that the two opposing opinions, when pushed to the end, are equally false.

M. Perrin intellectually respected scale and measure, and he was above all a man of taste. It was most unlikely that he could fall into the exaggerations with which he was reproached. Under the form of a letter, which was a veritable treatise on the subject, and is his most remarkable literary essay, M. Perrin replied to his critics, and formulated the principles of the *mise-en-scène*.

"The *mise-en-scène*," he wrote, "is a question of tact and of measure. It is true they are rare and precious qualities, which are not out of place on other stages besides those illuminated by the footlights. Every theatre in proportion to its quality and size is bound to satisfy the taste of the public. Costume comes very close to art—or rather it is a special kind of art which has been greatly vulgarised during some years. The *mise-en-scène* should hold a secondary place; the law of harmony should be its rule and its limit. It should resemble those amiable hostesses whose hospitality is so sweet that one quits their houses with regret, and with the desire to return."

M. Perrin retraced the history of the Comédie Française from the time when, under the title of Comédiens de Monsieur, Molière's arrived in Paris, and obtained, through the royal munificence, the Salle du Petit Bourbon. He displayed the transformation which taste underwent since that time. What would the patrons of the Théâtre Français say if they saw to-day Cinna or Orestes enter on the stage wearing the long perruque that was the fashion under Louis XIV. or the powdered wig of the time of Louis XV.? Must the plays of the great Corneille or of Molière lose some of their interest when they are represented under favourable conditions, with costumes of the time, and surroundings that are appropriate to the place and circumstances in which the action is developed? M. Perrin did not think so, and the public agreed with him. He took the greatest pains in mounting his plays, occupied himself with the most trifling details, designed the dresses with his own hand, and aided the scene-painters with his counsels. The painters who acquired celebrity under him were Larmier, Thierry, Deplechin, and Cambon; he was able to appreciate them, and spoke of them with sincere admiration. What a combination of efforts, talents, studies from nature, invention, science, is needed to paint one of those scenes, which is destined to produce the illusion of a moment and then to disappear without leaving any trace except fleeting remembrance in the minds of the people who were present! It was this feeling which was expressed in the eulogium which M. Perrin delivered at the grave of Cambon.

"We lose in him," he said, "the last and the bravest of that pleiad of artists who imparted to scenic work so much vigour that it has reached a point where it seems to contend with nature in precision, justness, and relief, as well as in proportion. Like the old masters of the great schools of Italy, who neglected no branch of art, a scene painter must be an architect, a geometrician, and a landscapist. Cambon possessed those qualifications. Nobody could have more of sentiment, of a genius for everything, of the power of divining the character of different periods and different countries. To this science of realism he joined a fertility without parallel, and a surprising power of imagination. If we could bring together the work that Cambon produced, the drawings which came from his hand, the conceptions of his indefatigable imagination, we should find before us a mass that would excel all that was done by Lepaute, Bibiena, or Piranesi."

People said that M. Perrin was a lucky man, everything succeeded with him. But constant success is not a simple result of accident. It only comes to the able, to those who by their perseverance, labour, intelligence, can control fortune and retain her. He was fortunate, but his happiness was for a

time incomplete. The favour which was his highest ambition, that which he regarded as a crown of a life of labour, as the coveted recompense of services rendered to art under all its forms, was accorded to him by the Académie des Beaux-Arts. The day of his election was esteemed by him a day of glory. It does not belong to me to speak of the position he held in the Academy. His whole life had been consecrated to the arts; he was penetrated with that love of art which is one of the most powerful motives of humanity, elevating it to the heavens in the pursuit of an ideal perfection.

Nothing was wanting to his life, neither noble aspirations, nor dignity of character, nor merited honours. He will thus be for the young and ambitious an example and an encouragement. They can learn from his career that the future reserves its highest favours for the men whose talents are sustained by labour and a strong will. M. Perrin has merited much from the arts, and therefore a souvenir of him will always remain in the Académie des Beaux-Arts and be associated with the names of our dramatic and lyric worthies.

TESSERÆ.

William of Wykeham.

C. R. COCKERELL, R.A.

THE chief expression of Wykeham's architecture is its constructive character. Throughout we trace the sound builder, the able mason, the ingenious carpenter, whose well-designed operations, satisfying the mind, carry with it the fancy, by natural consequence, in harmonious consent; and an unsought felicity follows as a matter of course. He wrought out his design through the model, and an intimate knowledge of the materials and careful consideration of the wants and requirements on the spot. His cornices and labels and water-tables explain their purposes of carrying off the wet; the buttresses are never for ornament alone, but proportioned to the support and durability of the edifice. No parasitical excrescences obtrude themselves ostentatiously, no parts and prettinesses are indulged which may not be accounted for by a natural grace and logical fitness. He was one of the first to recognise the utility of the four-centred arch, and to employ its depressed form where a superincumbent floor made it convenient. It is probable that he did not encourage that fashionable adoption of it which introduced it (under Edgington, his predecessor in the see of Winchester) into the cathedral itself; for we find uniformly the two-centred arch in his halls and chapels, while the four-centred was confined to situations of limited elevation. He was one of the first to condemn the tenuity, elongation, and weakness, real and apparent, of the Lancet and Decorated style, and to introduce the so-called Perpendicular, which, fortified by its mullions or constructive subdivision of skeleton framing or network, the enormous openings then demanded by the growing fashion of fenestral decoration. He abandoned the high-pitched shingle roofs, excluding sun and air, and was one of the first to employ the low pediment, and roof covered with lead; and in his works we first discover the hammer-beam roof in all its varieties—a system of the highest ingenuity and constructive economy, both for space and material, as well as beauty and power, as exhibited in Westminster Hall, Eltham Palace, Windsor Hall, and our college chapels and halls.

Fresco Painting in Pompeii.

G. ABBATE.

After many careful investigations, I have arrived at the conclusion that the Pompeian paintings were executed in fresco-secco; but at the same time there was mixed with the colours some resin, or other material capable of giving them tenacity, and rendering the impasto of the tints glutinous. The plaster upon which the painting was executed consisted of seven coats, exactly as Vitruvius has described them; the first three were of sand, the other four of marble dust, reduced from a fine to a finer texture as each coat was laid on, so that the last coat consisted of the very finest powder. These several coatings were laid one upon another, without allowing anyone to dry; the painter then commenced by tracing with the style the principal lines for the ground tints; he then indicated with the same style the figures and arabesques, and then proceeded to paint them in. It will be easily understood that where the painter commenced he found the wall moist, and hence his colours would unite themselves chemically with the lime of the intonaco or plaster into the pores of which they would readily insinuate themselves. As, however, he proceeded in his work, the wall would continue drying, and hence the amalgamation of the colours with the surface would be less complete. Thus, in the present day, we may easily and clearly discern that certain parts of the wall-paintings of Pompeii have altogether detached themselves from the plaster, whilst in other parts the adhesion has been complete and perfect, although the colours may have been applied in the thinnest possible state. Those portions of the wall which have lost their colours furnish a strong argument in support of these conclusions, since the scratch of the style which served to indicate the grounds, and give the main outlines of the arabesques and figures, was evidently made upon the wall whilst it was yet wet, and whilst the plaster was consequently in a soft condition. Wherever the colour has flaked off, the strokes of the style appear clean, precise, and most exact. If, as has been alleged, the paintings of the ancients had been made on a dry wall, it is certain that the strokes of the style could never have left a clean line, but would rather have shown a jagged or broken one, unequal in the depth of the various parts of the incision: this must necessarily have been the case with plaster presenting so hard a surface as that composed of marble dust. I am supported in this opinion by observing that where the painter has desired to produce an extraordinary effect, he has cut out the plaster and inserted a new piece in the middle of the wall, and upon that has executed his picture. Had it been the custom of that period to paint on dry walls, there would have been no reason for such a renovation, nor should we have been enabled to account for so curious a process. The art, then, of fresco painting, as it is understood and practised by us, was known to the ancients, since they, not less frequently than ourselves, painted on moist walls. The only difference between our method and theirs consists in this: that the moderns add the plaster piece by piece, as the picture is executed, so as to preserve the coating constantly moist and fresh; whilst the ancients applied the plaster over the entire surface, and immediately commenced painting—the moisture necessarily diminishing as the painting proceeded.

St. Sophia, Constantinople.

J. FERGUSSON.

I may allude to one other dome, that of Sta. Sophia at Constantinople, of which at last some authentic particulars have been obtained in the work of Salzenburg of Berlin, who, taking advantage of the scaffoldings erected by Fossati for the repair of the building, measured carefully every part of it. From this it appears that the diameter of the drum of the dome is 100 Prussian feet, or 102 feet 11 inches English, but the dome itself is 4 feet more, or 107 feet in diameter. It is constructed of forty ribs, projecting each 2 feet, which die away towards the centre, leaving about one-third of the dome perfectly plain. The form is segmental, 45 feet 6 inches in height, and described consequently from a point about 8 feet below the springing. Round the base are forty windows, which throw in a flood of light; and altogether its appearance internally is as beautiful as any I know of. Originally it was even flatter than it now is; but being in that form beyond the constructive power of its architect, it fell in, and the present form was adopted; but even then the architect tried to keep it as low as possible, judging correctly that the flatter it was the greater would be its apparent size, and also that of the floor it covered, and of all the parts around it. To obtain these internal advantages, however, the architect sacrificed the exterior entirely, and it is on the outside perhaps the ugliest dome ever constructed. But the same remark applies to the whole church. No pains whatever seems to have been taken with the exterior, though every part of the interior is designed with the greatest care, and ornamented with the most profuse liberality.

Classic Influence on Mediæval Glass Painting.

C. WINSTON.

The most careless observer can hardly fail to be struck with the resemblance between the glass paintings of and towards the middle of the twelfth century, and the illuminations in the contemporary Greek MSS., or with the frequent recurrence in them of Greek ornaments; and the same general character may be traced in glass paintings until quite the middle of the second half of the thirteenth century, when it gradually died out, before the increasing influence of a new style, of which the sculptures in the choir of Lincoln may be said to be an early and a favourable type. But the glass paintings which, on the whole, most closely resemble the antique are those which were executed between 1170 and 1240, or thereabouts. I am not seeking to deny that these works were executed by native artists either in France or England, but I cannot ascribe, as some have done, their greater freedom and closer likeness to good models merely to the progressive improvement of a school. It seems more reasonable to suppose that the change was in a great measure caused by the influx of Greek artists, the greater aptitude on the part of their pupils to profit by instruction. The draperies, instead of being tightly wrapped about the limbs and scanty in their proportions as in the earlier examples, are more elegant and flowing, reminding one of the voluminous draperies of the antique, which they resemble not only in the set but the very form of the folds, betokening a material thin in texture, and, from its pliancy, allowing the action of the limbs to be easily seen beneath it. The heads,

too, more nearly resemble the antique in their contour. In one of the windows of Canterbury Cathedral, erected shortly after the fire in 1174 (the second window from the west, on the north aisle of the choir), are some heads which might have been copied from the old Roman. There are some similar ones at Lincoln in glass, of the same date as that of the north rose, and now worked into it, though not belonging to it. There is also a strong resemblance to the antique in the fashion of the garments. It is well known that the Romans had in a great measure ceased to be the *gens togata* (*Romanos rerum dominos, gentemque togatam*) even in the reign of the Emperor Augustus, and by degrees the toga was reserved for State occasions. After the removal of the seat of empire to Constantinople, a variety of additional dresses were used, many of them of Greek origin, the more stately of which were, with its usual tact, appropriated by the Church as it gathered power, and which are the foundation of the Mass vestments of the Roman clergy at this day. The most popular dress amongst those nations who possessed themselves of the territories of the empire, no doubt, was the tunic, with or without the lacerna, or a shorter cloak used by the private Legionaries, called the sagum; and this dress, with slight modifications, appears to have been in actual use in the thirteenth century. With the exception of the legs and arms being clothed, there is but little difference between an ordinary thirteenth-century figure copied from glass and a figure taken from the arch of Titus, or Trajan's column. The long tunic reaching to the feet, so common in the glass paintings of the thirteenth century, also had its prototype in imperial Rome. The figures on the arch of Titus show that it was at that time often worn beneath the toga. Indeed, startling as it may appear, representations of the toga itself are to be found in pictures on glass of the thirteenth century; and I have little doubt in my own mind that the mantle which, carelessly thrown over the long tunic, constituted the conventional dress of prophets and of saints, not being ecclesiastics, throughout the Middle Ages, was, in fact, but a corruption of the toga.

The Interior of the Parthenon.

T. L. DONALDSON.

Mr. Cockerell, in the seventh volume of the Museum publications, has restored the interior of the Parthenon with two orders of columns. The lower are Corinthian, the upper are Doric. All rules of art, all analogy, and all probability have run counter to this daring arrangement. In the temples of Pæstum we find a double tier of columns, one over the other, to support the roof of the hypæthrum, both Doric; but the casual statement of Mr. Inwood, that a portion of a Corinthian capital was brought by him from the Parthenon, and a similar fragment discovered in the temple of Apollo Epicurius, at Bassæ, near Phigalia, seem to have been considered sufficiently grave authority for the introduction of the Corinthian, as one of the inner orders of the Parthenon. Assuming at once that Mr. Inwood got it from the Parthenon—How did it get there? Was it there originally? Had any other traveller—the precise Spon and Wheeler, or the laborious Stuart and Revett—ever seen it? Among the strange metamorphoses by Venetian, Turk, and Greek, may it not have been converted to the purpose of construction from some stray fragment beyond the verge of the Parthenon, as being lighter and more easily applicable for their purpose than the ponderous blocks of the construction of Ictinus? May it not have been purposely placed there by some wily Greek to give it additional value in the eyes of one who was eager for any fragment of Attic art, and profusely liberal to everyone who contributed to his collection? The introduction of the Corinthian order into the Parthenon involves so many serious questions in art that its adoption must rest upon some more authentic proof than that which accompanied this questionable fragment. But let us assume that it came from the Parthenon, and was always there. Is it too much to require the restorer to pause and consider whether this may not have been a fragment from some object quite distinct from the architecture? for we know from Pausanius that all the Greek temples of any size and reputation were filled with statues, groups, pedestals, candelabra, cars, tazzæ, tripods, vases, seats, and other articles of wood, metal, and bronze; the votive offerings of the conqueror, the supplicant, and the superstitious.

The Philosophy of Architecture.

K. T. SCHINKEL.

I perceived when I began my architectural apprenticeship a great treasure of forms, which, for scores of centuries past, have guided nations in the various phases of their culture in the execution of their buildings and structures. But I saw at the same time that our use of this treasure was arbitrary, and that what produced a most pleasant effect in its primitive usage was quite inappropriate in its present application to structures of this age. Especially clear became the conviction to me that in the arbitraryism of form-giving the real cause of want of character and style in so many of our modern structures is to be sought for. It became a vital question with me to arrive at the bottom of these anomalies, but the deeper I penetrated on this topic the larger and more comprehensive it appeared to me. At first I fell into the error of pure fundamental abstraction, and developed the whole idea of any given structure from its nearest trivial object and scope, and the three laws of construction. In following this course dry and stiff works will result, wanting in freedom, and excluding the two grand elements of architecture—the historical and poetical. I further inquired in how far the mere rational principle be sufficient for fixing the mere mechanical and trivial basis of an edifice, and how much there be required of the higher influence of the historical and poetical to elevate it to the conception of an art-work. It became clear to me that I had arrived at that point in architecture where the real element of art is to be placed, which in every other respect was and would be but a trade with a scientific basis! At the same time it became clear to me that in this stage of thought (here as in any other art) the dogmas of a doctrine became difficult to be uttered, and were perhaps reducible to a culture of feeling and intuition—qualities of the mind which comprehend in architecture a very wide compass, and require to be much and most variedly developed if their products are to yield great results. It appears to me necessary to ascertain properly the different spheres in which the feelings and intuition of the architect are to be developed, which will also enable us properly to survey the extent of this art branch. We have, therefore, to consider, first, what are the desiderata of our time in architecture; secondly, a retrospect on previous periods will show what has been then used for similar purposes, and what of that (considered in its perfection) may be useful and adequate now. Next the modifications of approved expedients are to be properly weighed. It is, however, chiefly necessary that (fourth) we inquire how imagination has to act in the assimilation and modification of these expedients—how, thence, the new product is to be treated in form and essence. This, however, is to be done thus, that it may still possess some historical basis, and that the conception of the new may arise without taking away the impression of an architectural style—by which doing the combined feelings of style and something primitive, and even ingenious, will arise in the beholder.

Malachite Veneering.

D. T. ANSTED.

The working of malachite on a large scale is extremely tedious and laborious, and is understood to be thus conducted:—The fragments of the stone are first sawn into thin plates, the thickness of which for plane surfaces is about a line, and for curved parts a line and a half. This cutting is performed by means of vertical circular saws, the blocks of malachite being cemented on a carriage, which, by means of a counterpoise, is made to travel along a small railroad placed on rollers, and is so contrived as to present the malachite in such a way as to insure the required thickness and keep the mineral constantly pressed against the saw. Fine sand and water are continually supplied to the part in contact with the block, and the latter is thus slowly cut through, but retained in its position by means of the travelling-frame already described. As soon as a plate is cut off it is removed, the machine reset to cut another plate, and the work recommences. The portions intended for curved surfaces are cut by bent saws fitted to the required shape—an operation which requires a large number of saws and great care in cutting, as it would not be safe to trust to cement for filling up spaces, and some of the joints require to be very neat. The next process in the manufacture is the fitting together the different plates and cementing them. For this the first thing to be done is to determine the pattern which the markings of the malachite are to represent. When this is decided on the surfaces by which the separate fragments of the mineral are to be united are prepared by the aid of wheels of copper, in such manner that for each joint two wheels are required, the projecting parts of one fragment entering a corresponding recess in the other. Joints thus made are not easily noticed, being formed with great accuracy, and not presenting any break or straight line to the eye. Until the establishment of their present factory by MM. Demidoff, the joints were straight, having no reference to the natural veins or lines of the malachite, and thus surfaces were placed together, in which these lines were not continuous, and had no relation with each other, or with any regular pattern. The substance on which malachite is veneered is generally iron or copper, but may be stone or marble. When this is covered the surfaces require to be levelled, which is done by means of sand. The interstices, of which many are left during the work, are then filled with a cement mixed with fragments of malachite, and coloured with powder of the same material; but in this part of the process much care is required less fragments should be introduced which do not adapt themselves to the pattern, and which would therefore injure the harmony of the work. The surface is finally polished.

NOTES AND COMMENTS.

WHAT becomes of the pictures and statues which are bought every year by the Government is a question that is sometimes asked in France. Modern works of a high class are supposed to be hung in the Luxembourg, and, when it was resolved to construct new picture galleries, every one expected to see numerous gems which had been lying for years in retirement. But when the galleries were opened in the early part of the year, few novelties were to be seen. The familiar paintings were again exposed, for the wall space was found to be too limited to allow of many additions. The stock which is in the official stores increases every year. It is supposed that at the present time there must be about two hundred paintings stowed away. In order that space may be economised, the canvases are taken off the strainers and rolled up. A picture is, however, comparatively safe, and an artist may look forward with a peaceful mind to the time when his turn comes to be represented in a public gallery. But the sculptors have not been so kindly treated. In most cases what is bought from the Salon is not a work in bronze, marble, or terra-cotta, but a cast in plaster. The sculptor assumes that he is to receive the commission to execute his design in an enduring material, but as seventy-five works in plaster may be discovered in the Minister's repository, it is evident that many sculptors must have suffered the pain of hope deferred. Some of them may no longer be living. The sculpture is not completed owing to the lack of funds, the paintings are not hung because the walls of public buildings are fairly filled already, and to find room it would be necessary to utilise buildings of secondary importance. The provincial museums are fairly stocked. It requires the exercise of a good deal of veneration by the painters whose works are buried to prevent them from desiring that some of the "old masters" in the Louvre, which are interesting to few, might be treated to a short spell of oblivion, and their places taken by the works which are now in that state.

A SUM of 5,000*l.* is to be expended on the furniture and fittings of the new School of Music on the Thames Embankment, which is likely to be completed by September 27, when the new term begins. There are forty-two classrooms in the building, and each is to have a table, a pianoforte chair, six ordinary chairs, a looking-glass, a stove and set of fire-irons, a rug and linoleum for the floor. In the practice-room will be one hundred music-desks, and three hundred chairs for the performers and audience. The committee-room and administrative offices will also be furnished. In this way about one-half the grant is to be expended. Blinds will cost 200*l.*, and a similar sum will be needed to erect the orchestra. The classrooms are heated by open stoves, but hot-water pipes will be used in the corridors and practice-room, costing 250*l.* For gas pipes and fittings the estimate is 500*l.* A hand-lift is to be introduced at a cost of 65*l.* For the organ in the practice-room 500*l.* is put down, and harps, double-basses, and other instruments are estimated at 300*l.* The students are to be inspired to follow the example of the great musicians by means of portraits, on which, and their frames, the expenditure is to be 60*l.* There is to be a fireproof floor to the practice-room and an escape staircase to the roof, both being afterthoughts, and entailing a further outlay of 100*l.* The whole of the expenditure may not exceed 4,500*l.*, but the committee prudently ask for 5,000*l.*

EVERY one who passed through the Louvre during the last couple of months must have observed a great number of old plaster casts lying on the strip of grass in the great court at the back of the Assyrian gallery. Hardly one of them is perfect, and they are suggestive of the *débris* that might be found in a modeller's yard after a bankruptcy or a removal. Why they should be exposed in such a place is beyond comprehension, for they made the public feel that the Louvre must have strange sights for any one who was allowed to get behind the scenes. It appears the casts had been long lying in the cellars of the museum, and as those parts of the buildings were lately explored in order to report on the safety of the Louvre, it was considered wise to get rid of some rubbish. It is intended to send the few casts which may have interest to the Museum of Comparative Sculpture at the Trocadéro, but the question arises, what is to be done with the remainder? It would be contrary to precedent to wilfully smash anything which has borne an official character for several years. The fragments cannot be sold, for a chiffonnier would turn aside from the heap of rubbish. We suppose they can hardly be brought back to the cellars. The Minister could order their destruction; but it is risky to come into collision with the officers of the Louvre, who might describe the loss as irreparable. The casts form a strange spectacle in a place where there is so much order.

IT is apparently the mission of the chemical experts who report every month to Sir FRANCIS BOLTON on the water of London to take the most favourable view of the fluid. Dr. FRANKLAND, who is also an official investigator, somehow rarely agrees with them. This time the experts have gone into the question of microbes, that are supposed to possess a dangerous character. The living things which, when magnified, help to frighten people from drinking water are not all foes to metropolitan ratepayers, for swarms of them are not only innocuous, but are presumed to be beneficent. There is, however, one micro-organism known as the *Bacillus anthracis* which is a foe to society, and it revels in the waters of the Thames and Lea. But, fortunately for us, if it has a merry life, it has also a short one. Put some representatives into water, and in the course of a few hours it will be "found to possess the property of setting up a characteristic growth of *bacillus*." If, however, it is kept for a longer time, the infected water loses the undesirable property. This is good news for consumers, especially if they can satisfy themselves that only the ghosts of the *bacilli* reach their cisterns. It has yet to be ascertained whether Dr. FRANKLAND endorses so optimist a theory.

THE Scottish judges appear to be more lenient to employers than their English brethren when interpreting the Employers' Liability Act. In the north it is not supposed that workmen can dispense with ordinary prudence, nor is an employer supposed to watch over them as if he were a nurse and they were babies. A slater lately claimed 25*l.* from a master slater in Kilsyth, on the ground that he was injured by the collapse of a ladder of inadequate strength while he was ascending it. But it appeared the employer's orders were that no more than two men should use the ladder at the same time, and on the occasion in question there were three. The judge, therefore, decided in favour of the defendant. In another case, a labourer fell from a gangway in a railway cutting. He suffered slight injuries, but he was attacked by illness six months afterwards, which he alleged was an effect of the accident. In this case, also, the decision was against the claimant. If the actions could have been tried in England the issue in both cases would probably be the reverse.

THE Forth Bridge is making steady progress. According to the latest official report 320,953 cubic feet of granite have been delivered, and 299,217 cubic feet set. About 90,700 cubic yards of rubble masonry and concrete work have been built, and 18,350 tons of cement have been used. The four skewbacks for North Queensferry, and one at South Queensferry, are in place, and a second at South Queensferry is partially fixed; the remaining two for South Queensferry and the four for Inchgarvie are rapidly approaching completion in the yard. Including the horizontal and vertical tubes already in position at the North Queensferry and Inchgarvie piers, 3,050 lineal feet of tubes of 12 feet in diameter, and 3,500 of 8 feet diameter have been fitted and drilled. Of the lattice tension members and bracing girders about 7,400 lineal feet are ready for erection, and the top junctions for North Queensferry and South Queensferry piers are nearly completely fitted. In all about 24,460 tons of steel have been delivered. The average number of men employed on the works is now 2,180. The register of wind pressure during the greatest gale of this year does not exceed 31 lbs. to the square foot.

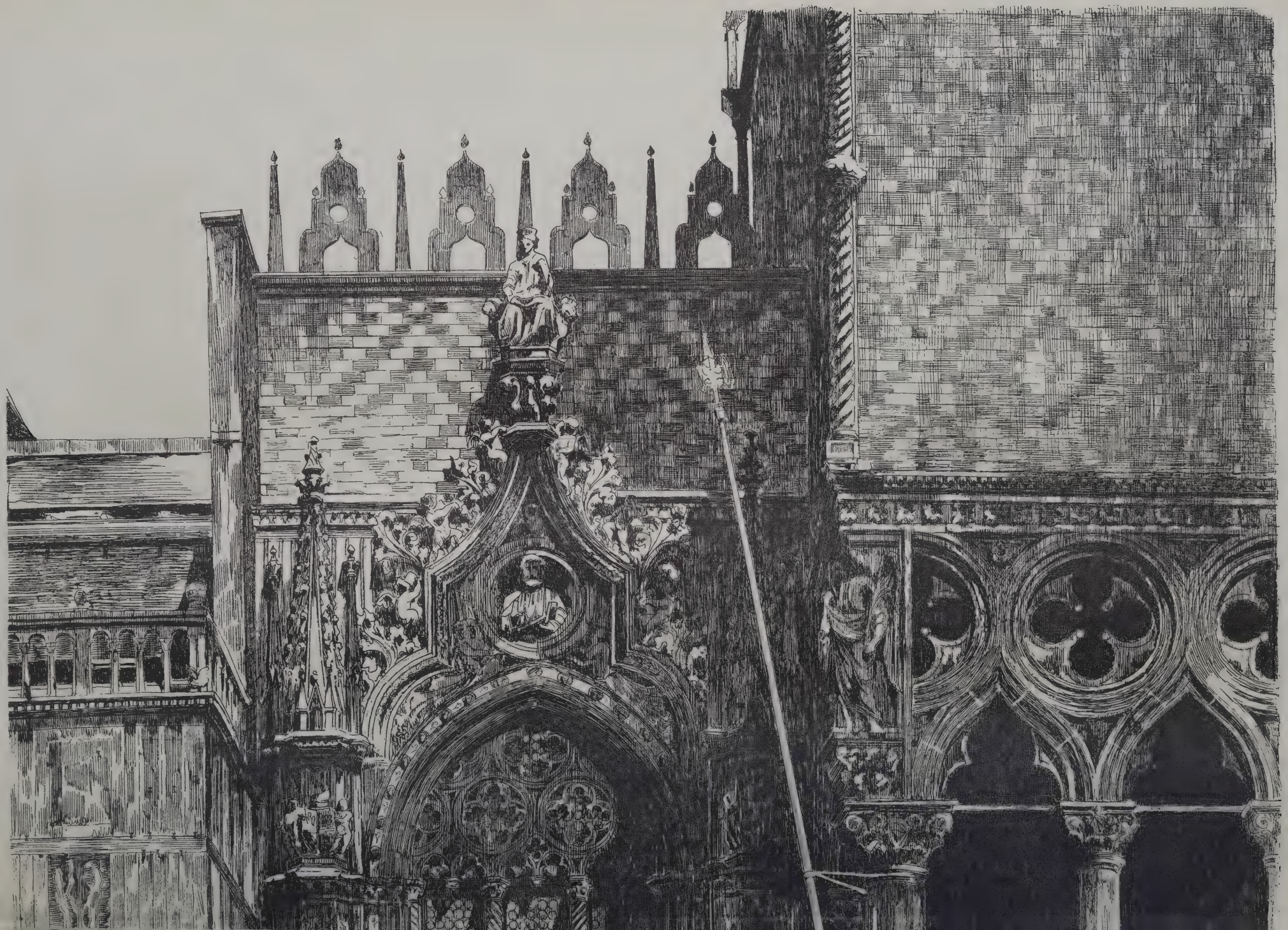


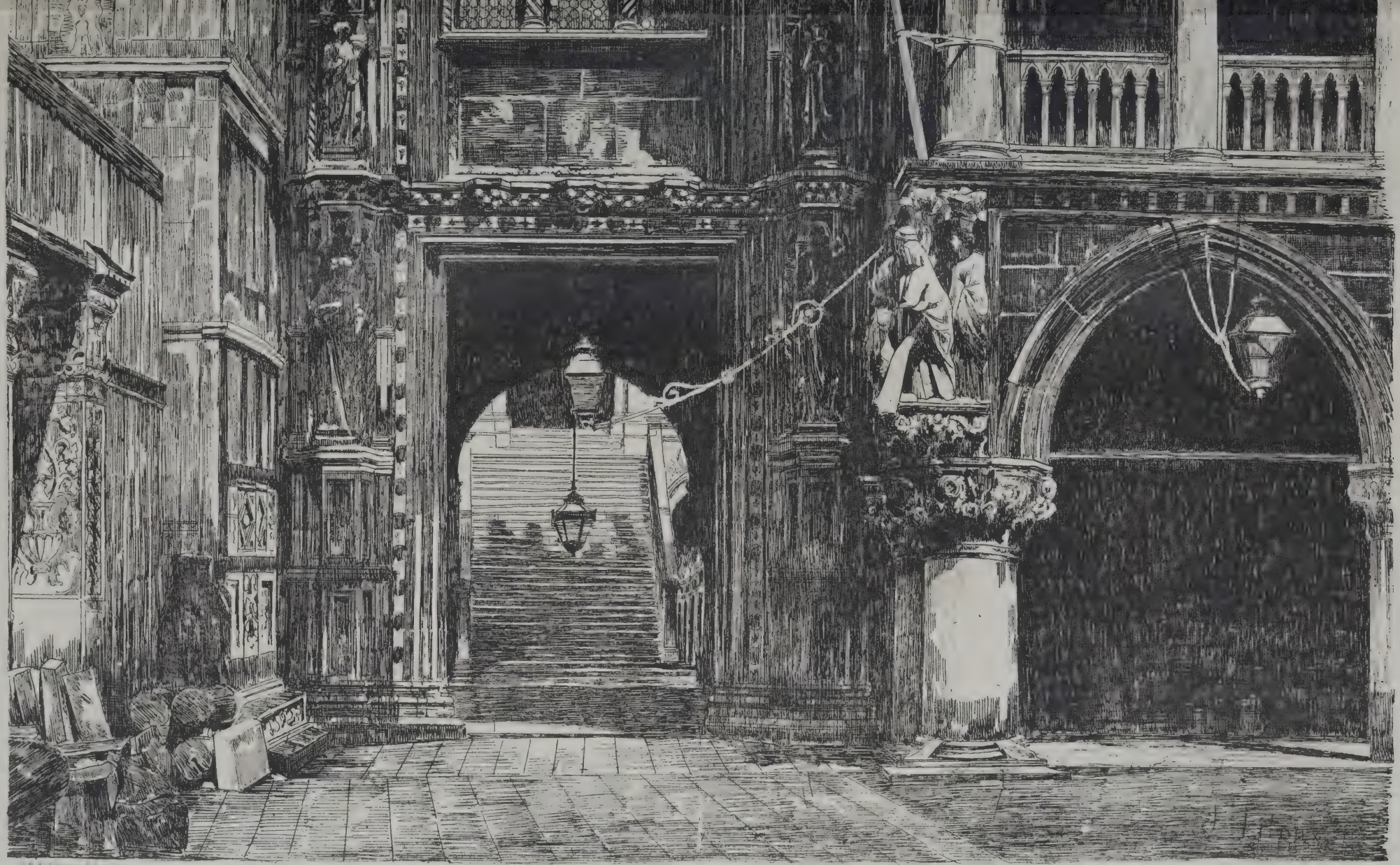


HALL OF COLUMNS.

TEMPLE OF KARNAC, THEBES.

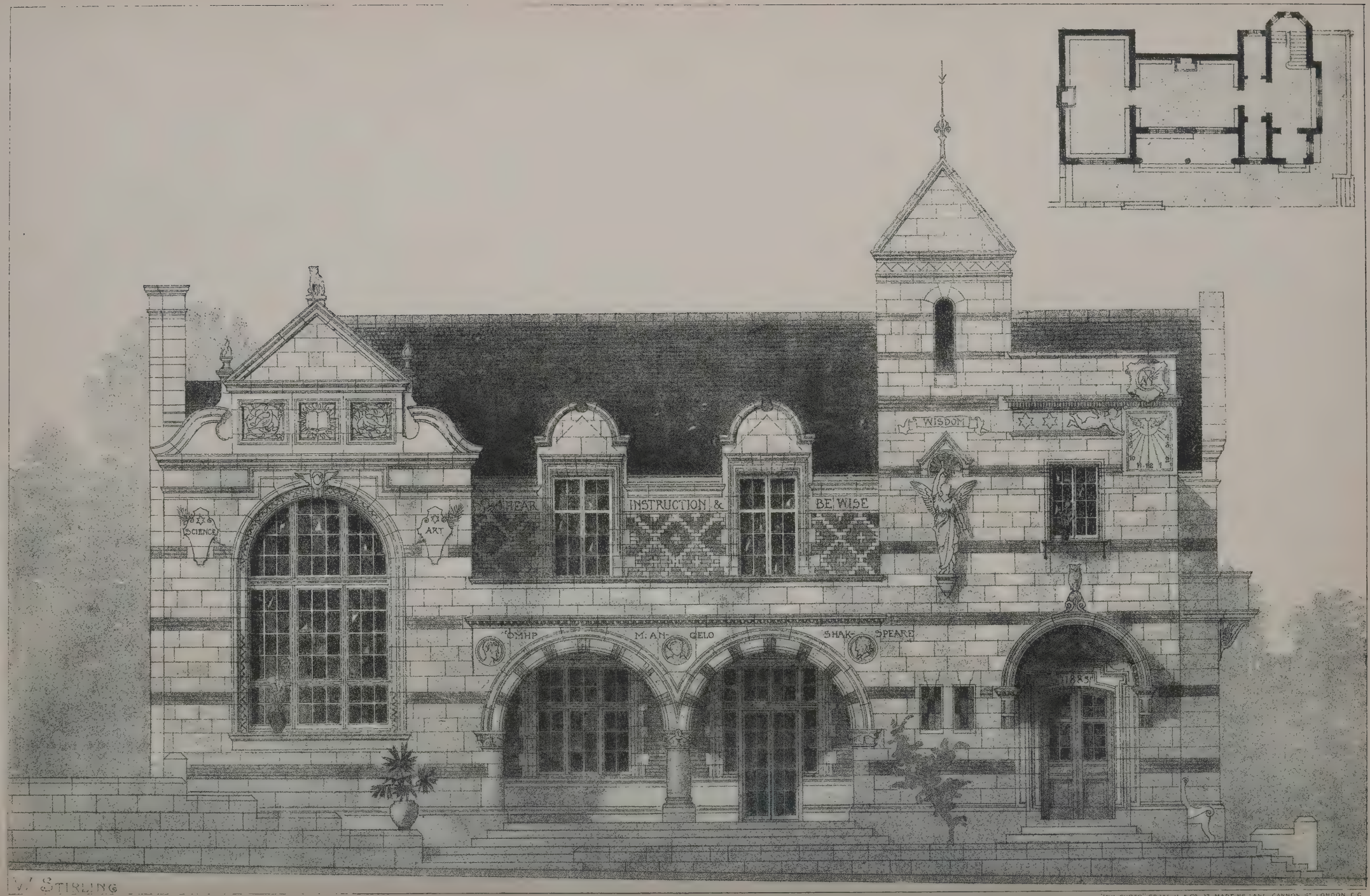
Architectural Illustration Society. Plate N° 8.





PORTAL OF DOGES PALACE. VENICE.

By J.R.P. Litoux



W. STIRLING

INK PHOTO. SPRAGUE & Co 22 MARTINS LANE CANNON ST. LONDON, E.C.

The Architect, July 23rd 1886.

The Architectural Illustration Society Plate N° 10.

DESIGN FOR A LIBRARY FOR A SMALL TOWN.

By W. STIRLING.



The Architectural Illustration Series. Fig. 179.

FOUNTAIN AT VITERBO.

Drawn By E.G.HARDY.

ILLUSTRATIONS.

PORTAL, DOGE'S PALACE, VENICE.

THIS illustration is an example of the etchings of architecture which appear in *L'Art*. It will be evident that the artist has done justice to the picturesqueness of the subject.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 8. GREAT HALL OF COLUMNS, KARNAC, THEBES.
NO. 9. FOUNTAIN AT VITERBO.
NO. 10. DESIGN FOR INSTITUTE.

THE ENDURANCE OF WATER-COLOUR DRAWINGS.

THE exhibition of old water-colour drawings has not convinced Mr. J. C. Robinson that the pigments can sustain constant exposure to light. He has received the following letter on the subject from Dr. John Percy, the chemist who has charge of the heating and lighting of the Houses of Parliament:—

"1 Gloucester Crescent, Paddington: July 7.

"My dear Mr. Robinson,—I have drawings made by myself about fifty-seven years ago in which the grey was made of indigo and Indian red. They have been kept in the dark ever since, and, so far as I can observe, no change has taken place. On the other hand, I have seen hundreds of drawings in which the greys used were the same, but from which the indigo has wholly disappeared in consequence of long-continued exposure to solar light. It would not be difficult to make a large exhibition of faded drawings of such men, for example, as Francis Nicholson, Copley Fielding, and De Wint. This subject of the durability of pigments with reference to water-colour drawing has engaged my special attention for more than twenty years, and some day, perhaps, I may communicate the results even at the risk of exciting the ire of some persons. Certain colours resist light, and others do not. My collection contains about 1,600 drawings, almost wholly of the early English school, and the work of about 700 different artists, so that I can speak with some experience on the subject. Facts as to the durability or non-durability of water-colour drawings are abundant and amply sufficient to settle the question. But, in order to explain the chemical changes induced by light, long and very accurate investigation will be required by men thoroughly competent for the work. I will mention one curious circumstance not so generally known, I think, as it deserves. It is imagined by some persons that in a hard, solid, compact substance, such as glass, chemical change under ordinary atmospheric conditions cannot occur. Now, you have probably noticed many years ago the pink colour of many windows in London. That colour was actually developed by the action of light upon the glass. Faraday, if I mistake not, first pointed out that where the glass had been protected from light by putty it remained colourless as at first. Oxide of manganese is used in the manufacture of window and some other kinds of glass to counteract the colour which would be produced by the ferrous oxide, which is always accidentally present in small proportion in the materials from which the glass is made. I will not here trouble you with the reason, which is well known. Is it not strange that the pink colour should result from the action of the light on the manganese compound in the glass? The manganese passes in consequence to a higher degree of oxidation, in which state it is pink or purple. If you take, as I have done, a piece of the window-glass coloured pink and heat it gently, it loses its colour and becomes quite colourless as it was at first. Thus we see that even in such a substance as glass chemical intermolecular movement may occur. If this be so, then we may expect a similar result in resins, of which varnishes are made. But I will not weary you longer.

"You may make any use you please of this letter; publish it wholly or in part if you think it worth while to do so.

"Yours very truly,
"JOHN PERCY."

Mr. Robinson says he learns from Sir Lyon Playfair that one of the results of the experiments undertaken at South Kensington is of a most unexpected and startling nature. Dr. Percy finds that a very fugacious water-colour pigment, indigo, has experienced no visible changes whatever from a direct exposure of 491½ hours to the most searching beams of the incandescent light. The South Kensington investigations, on the other hand, have revealed the fact that another of the evanescent colours, lake, which, indeed, fades away visibly in ordinary daylight, undergoes no change whatever when exposed *in vacuo*. If this fact be so, it seems to point to the nature of the causes, hitherto unsuspected, which, undoubtedly, induce greater permanency in pigments when "locked up" or protected by oils and varnishes than when employed as water-colours.

In regard to this particular pigment, lake (probably the ordinary crimson lake), a correspondent has just sent Mr. Robinson the result of his exposure of a washed tint of this colour for three days only in the varying light of a window casement. This gentleman improved upon the experiment recommended in the article in the *Nineteenth Century*, by covering alternate portions of the tint with strips of variously coloured glass. Three days' exposure only has sufficed to bleach this colour almost entirely off the paper in the unprotected portions; whereas, one of the coloured glasses, the ruby tint, has completely and entirely protected the pigment—this, again, is a significant fact. This pigment, crimson lake, and many others scarcely less evanescent, are, however, currently sold by colour merchants and continue to be used by water-colour artists. These fugacious colours were, indeed, more freely employed in former times than at present, and when it is considered that at the South Kensington Museum the water-colour drawings by Turner, De Wint, Copley Fielding, Barrett, and others, in which such pigments were freely and unsuspectingly employed have been exposed to strong light, sometimes, indeed, to the direct rays of the sun not for three days only, but for thirty years even, what must have been the inevitable result? Neither more nor less than what Mr. Ruskin has so explicitly shown, namely, that such drawings must have had these fugacious tints more or less completely "baked out of them" by the mere fact of such exposure.

The question in general has become one of serious public import, and it is time it should now be entirely removed from the heated atmosphere of controversy to that of precise and dispassionate scientific investigation. The South Kensington authorities, as it seems, have decided to refer the further consideration of the matter to a committee of professional artists. This, however, cannot be acquiesced in. Men of science rather than artists are the proper persons to investigate this matter; but all parties are entitled to a hearing.

Mr. Robinson hopes that as soon as Parliament meets again some member will move for a Select Committee of Inquiry into the entire question, but more particularly with reference to the conservation of the national art treasures; for the subject of the actinic influence of light vitally concerns many other categories of works of art besides water-colour drawings, especially so now that glass and iron construction is being everywhere introduced into our public museums and galleries, and that flooding with light from above, in great measure induced by such methods, has become the almost universal rule.

THE LATE G. E. STREET AS A RESTORER.*

THE truth seems to be that Street was no restorer by instinct or predilection. It may have suited his professional purposes to proclaim himself one, and a great following of church-restoring parsons may have taken him at his word. It is even possible that Street, with no lack of confidence in his own powers and accomplishments, believed himself to be England's only qualified restorer, holding in half contemptuous regard his more successful rival in that field, Sir George Gilbert Scott, as a mere manager of an ecclesiastical architecture factory run on a large, decorous, and highly remunerative scale. For this confidence in himself Street was not without some just assurance. His knowledge of all Mediæval architecture was immense and exhaustive, and in this respect there were grounds for comparison of his genius with that of the great contemporary Frenchman, Viollet-le-Duc, not greatly to the disadvantage of the Englishman. There, however, the comparison ended, for the Frenchman was analytical, patient, unegotistic, logical, and subservient to all circumstances of archæological evidence and the opinion of others—the Englishman, no less a student, but by temperament an active practical workman, aggressive, opinionated, and intolerant of weaker and more questioning minds than his own. It was, we can well believe, with an effort of self-restraint that Street bent his great powers to the mere reproduction of old architecture, believing in his heart that if it were not there to be restored in deference to a prevailing sentiment, a better architecture of original nineteenth-century Gothic, designed by George Edmund Street, R.A., 17 Cavendish Square, might have stood in its place.

About the time that Street undertook the restoration of Christ Church Cathedral his reputation as the first of living architects in every respect was on the wane among his brother architects. He had carried away the senses of younger contemporaries some twenty years before by his undeniably original and clever development of Gothic architecture in a style of his own. His was also the daring, among the first, to compass sea

* From an essay by Mr. Thomas Drew, R.H.A., in the *Dublin University Review*.

and all lands to import hints from the Gothic architecture of all Europe. Italian, Spanish, German, French were in turn his favourites, and influenced his un-English work. His style "took" at a period of new ritualistic activity, when a certain ascetic whimsicality, so to speak, was a fashion. As the glamour of novelty, however, passed by in following years, his once admirers and disciples began to return in restfulness and pleasure to dwell upon the loveliness of their own incomparable school of English architecture, and to see in the work of Street qualities of egotism, and an affectation of an ascetic simplicity and of force which were lacking somewhat in interest, grace, and picturesqueness for a new generation which began to hanker after these. When they recognised the hand of Street in his clever restorations of churches throughout the land, it was to chafe at his self-assertiveness as at a new cloth fretting an old garment. In a great competition among the foremost church architects of the day for the cathedral of St. Mary, Edinburgh, was perhaps heard the first whisper of doubt of the infallible capacity of the great champion Gothicist to compass a great design as a whole. Opinions began to be expressed that, after all, Street, with marvellous invention and constructive knowledge, with an exuberance of quaint details, and an alluring cleverness in the delineation of them, fell short somehow of the capacity to grasp the great central idea of a dignified building. His design for the cathedral, in which his utmost powers were pitted against those of his admitted rival, Scott, was pronounced to be, with a certain characteristic cleverness in parts, crude, unsatisfying, incomplete. The more commonplace, as it was called, design of Scott was preferred, as it rose more towards the familiar ideal of an English cathedral, and eschewed mere novelties and quaintnesses. It was about this time also that criticism of Street as a restorer began to be heard; and Street, combative and intolerant of criticism, was easily drawn into controversy. He professed to deliver discourses to students of the Royal Academy, but as we read them now they contain more of fiery and eloquent defence of himself—hurled at matured architects and the Society for the Protection of Ancient Buildings outside the Academy walls—than elementary instruction for architectural neotypes within them. That his touchiness at this period of his over-active life was extreme was evidenced in every utterance which he made. Whether in a Royal Academy lecture or a report on a village church, a short argument on a fragment of a "Fratry at Carlisle," or an elaborate account of his great restoration at Christ Church, Dublin, the occasion was seized for a fling at his persecutors, ostensibly in renewed protestations of the gospel of "reverent restoration," and by implication of his superior claim to be the first of restorers. In this he was perhaps not uninterested in the vast pile of fees accompanying such work, which was then passing over to that mere factory for church architecture at Spring Gardens, where architecture was turned out by an organised and "departmented" staff of "Scott's young men;" and not, as in the genuine establishment at Cavendish Square, where "everything is sketched, modelled, and corrected by my own hand."

To do this marvellously laborious architect no more than justice the comparison would be true, but whether an exuberant indulgence in multitudinous details is compatible with the work of a master-mind, ever strained by demands on it for the outline and composition of grand schemes, is open to question in art as in politics. It was at this time that two grand opportunities of vindicating his zeal and earnestness as a restorer came in Street's way—the completion of Bristol Cathedral and the restoration of Christ Church, Dublin. At Dublin, at all events, there was every evidence that he threw himself into the work with extraordinary enthusiasm. There he would be a restorer or nothing. "Previous failures in restorations of cathedrals," he preached, "had resulted from the restorers having too little reverence for antiquity, and from their having departed heedlessly from the old lines in which alone true safety was to be found." "The architect," he says, "who would even destroy the precious colour which age gives to a building with other evidences of its age, would be a barbarian whose conceit in his own taste leads him to set up his own choice of what is or what is not worthy to be preserved," &c. The result has been that in the exercise of his great resources of archæological knowledge and constructional skill, Street produced in his restoration of Christ Church Cathedral, so far as the interior went, one of the most remarkable and splendid works which the restoration movement of the nineteenth century has to show. It is a question whether any other living architect would have acquitted himself in this peculiar task so well. It may well be believed that the beauty of the old details which he discovered enlisted his genuine enthusiasm, and that he did not presume to think that he could invent better, and with this he combined the courage to advise the destruction of the hideous and uninteresting choir of fourteenth-century date, and the return to a wholesale rebuilding of the design of the eastern end as it might have been in its original thirteenth-century beauty. His raising and leaborating of the four great arches under the tower was also constructionally and artistically a bold and successful undertaking from which a more timid architect might have shrunk; and to the notable success of his treatment of this feature is due a main element of beauty of the building which possibly was wanting in the original design. In many instances, however, in the history of this work the contending forces in Street's temperament are curiously illustrated; at one time his desperate tenacity as an out-and-out restorer, and at another his self assertiveness, over-weening confidence and dogmatism.

At the very outset the choice of a stone to be used in the work was characteristic of the man. Looking at the old stone used in the wrought work, Street, without hesitation, pronounces it to be Caen stone brought from Normandy. "But Mr. Street," say local dissentients with all humility, "take a piece of the old stone in one hand and a piece of the Caen stone you would now use in the other and say if they do not widely differ; one a coarse gritty texture and good weather stone, the other a soft close-grained stone—and besides, Mr. Street, we know that the old stone has withstood the weather well for 600 years, whereas we know that Caen stone will not withstand our Irish climate for one year." "Don't talk to me," says Mr. Street in effect. "I know all about Caen stone. I have used quantities of Caen stone in my buildings in England. This is Caen stone. Under the circumstances I adhere to my original opinion. I am a restorer. I am not discussing the question of Irish weather. I am going to use Caen stone." In a testy footnote added to his account of the restoration, within a month or two of his death, he reasserts that he is right and others wrong about this stone at a time when advanced decay was already visible in the new work, and pieces of the moulding and carving were occasionally falling off.

The design of the exterior of the clerestory, as Mr. Street himself admits, is "certainly to my taste not beautiful." When the old wall was being examined, triplet windows were discovered in the clerestory which could not be described in their exterior aspect as being anything but hideously ugly. The label mouldings over the centre light did not appear to belong properly to it, the curves not being struck to the same radii, and the side ones were straight-sided and incongruous. Nothing like them had ever been seen in Gothic work before; the mouldings were petty and miserable. To any ordinary eye these suggested an unhappy patching and facing at some time subsequent to the original building, but "No!" says Mr. Street dogmatically. "It is simply impossible to doubt" that these are original. "I had laid down for myself," he says, "out of respect to the old building and its architect, the strict rule to restore absolutely and exactly whatever I knew or could discover to have originally existed. And that no one may hereafter assert (as has, indeed, already been done by some ill-informed persons) that there was no justification for such a restoration, one of the original windows in its decayed condition, just as it was found, has been erected in the crypt as evidence past contradiction." A testy footnote as before in reassertion of this would show that Mr. Street has been chaffed by brother architects about these windows of his. The "evidence past contradiction" set up in the crypt would, for those accustomed to the construction of masons' work, if anything, tend to prove the opposite of Mr. Street's dogmatic pronouncement.

In another marked feature of the restoration Mr. Street's inconsistency of theory and practice is strikingly illustrated. He was the first to broach the interesting theory, an undoubtedly sound one, that Christ Church Cathedral was the work of English builders—of the school of builders which had its rise at Glastonbury and Wells, and came towards Ireland, leaving traces at Llandaff, St. David's, and Cwm Hir Abbey. The church was the foundation of the English invaders. It was ever the church of the English colonists of the principal Pale city, as in fact it remains still of the community who are mainly of English origin. It was, as Mr. Street insisted, a characteristic English work built by skilled English hands in Ireland, and by inference had nothing in its original state characteristic of Irish peculiarity about it. Yet Street, the rigid restorer, would not be content without going afield to find out some peculiarly Irish feature to adopt in it, if for nothing else to show his familiarity with the architecture of all lands. When he came from Italy in earlier days he could not be restrained for some time from airing his Italian-Gothic experiences, congruously or not, in every work he touched, and when in later years he visited Spain, he imparted a Spanish flavour to his English work, in spite of himself, for some time. When he went to build an English church at Rome, he must needs "do at Rome as the Romans do," and build his church in the inferior and impure Italian Gothic manner according to Street, on Italian soil, rather than make it, as most people would say more consistently, an English church for people of English speech and descent in a foreign country, distinctly showing its origin in the noble and incomparable style of England. So at Dublin, Street went looking about among photographs and illustrated works for something very Irish, and came to the conclusion that Irish "stepped" battlements to his parapets were just the thing. The type he designed or adopted was not

a happy one or graceful in itself, and it is a matter for endless regret that for this architectural fad, joined with an austere whimsicality which he affected, he should have made the newly-designed features of the exterior so needlessly ugly and unlike what the old work doubtless was. In the matter also of the remains which he failed to discover, and which might be traced out by a more patient and less talented investigator, the characteristic impatience and dogmatism of Mr. Street again appear. All the essential clues to this discovery were in his hand. He says himself, "At the south side there had, doubtless, been a cloister; on the east side (in 1761) stood the Exchange, evidently standing on the site of the ancient chapter-house, and probably retaining its ancient walls. Between this and the south transept was the narrow passage or 'slype' so universal in large churches." Even in this he was impatiently wrong. The very evidence from which he was quoting (Reading's Map of 1761) if patiently looked at showed the slype not in this unusual position, but in the more universal one on the south side of the Exchange—and what he called the slype was the staircase and door, clearly shown, which led from the dormitories to the church. "It is interesting," he adds, with some self-satisfaction, speaking of this old plan, "to find these arrangements still visible to an eye accustomed to examine the plans of cathedral churches in the midst of what, to an ordinary eye, would appear to be the most confused jumble of walls and buildings." And yet he propounds no plan of what was so stated to be visible. He states that the buildings had been removed, and even with an excavation open before his eyes adjoining the recent discoveries, with the old staircase disclosed, and the massive masonry of the chapter-house wall visible, he is preoccupied with the theory he has laid down, and strangely indifferent to any signs which would vary it. He finds in the south aisle that doorway usual in the universal plan of cathedrals on the north or south side as the case may be, which leads to the eastern avenue of the cloisters, and steps descending from it. Even the most familiarly-remembered plan of Westminster might at once suggest this. All Mr. Street, however, had to say of this door was that it "led to a building outside the aisle, and thence by a flight of steps down to the crypt by another archway in the west wall of the transept." A remembrance of the universal plan might suggest that there was no such connection between these doors, but that the last-mentioned entrance to the crypt very naturally faced the northern cloister walk. Again, near the present south-west porch in the crypt is discovered a doorway built up, with its three foot-worn steps, probably trodden by great Laurence O'Toole himself, indicating the eastern walk of the cloister, and absolutely fixing its level. By it stood the upper part of the Abbey "parlour gateway" emerging from the ground, and yet it is characteristic of Mr. Street, most acute and instinctive in investigation, having preoccupied his mind with another theory as to levels, to shut his eyes to such evidences as these. The Abbey gateway he does not attempt to puzzle over, but restores it at a higher level as an entrance to the church in a corner.

In one (like the writer of these lines) coming after Mr. Street, with great humility and profound admiration of his great genius, and his, on the whole, marvellous and magnificent achievement at Christ Church, it was not a sign of profound erudition or second sight to ponder on these evidences, and having seen that the crypt level was near the cloister level, to surmise that under the 9-foot accumulation of *débris* there might still be remains of cloistral buildings, and so to state in a communication made (with an illustrative plan) to the Royal Irish Academy in 1882. The opportunity for investigation came when the Open Spaces Committee of the Mansion House Relief Fund of 1886 placed at disposal a large sum for laying out the cathedral precinct as a public garden. Then proceeding to the assumed position of the north-east corner of the chapter-house, a few hours' digging revealed some beautifully moulded angle wall-shafts still *in situ*. Following on the clue, the whole lower part of a grand eastern window, coeval in style with that of the nave, circa 1230–50, was revealed. Thereafter, by removal of many tons of rubbish, the whole area of a fine chapter-house, 42½ feet long by 27 feet wide, was cleared, and also the genuine "slype" (not according to Mr. Street), and a staircase leading to the crypt, between the chapter-house and transept, and the cloister walks, uniformly 7½ feet wide, on the eastern, northern, and western sides. On the southern side the railings and roadway of Christ Church Place, and the overhanging bank, precluded further digging in that direction. A calculation made from the old leasehold map, which gives the position of a narrow strip thereon, which "serves as a back-side to Mr. Silcock's house in Skinner's Row," shows that at a distance of 82 feet 4 inches from the south transept lies the southern precinct wall, and presumably some remains of the old refectory. On the western side of the cloister-garth have been disclosed the massive foundations of the Domus Conversorum; that "Commons House of Christ Church Cathedral" erroneously so written, in which sundry parliaments and convocations met.

THE LATE DAVID STEVENSON, C.E.

OUR obituary of yesterday (July 19), says the *Scotsman* contained the intimation of the death of Mr. David Stevenson, an eminent citizen, and long and widely known as one of the heads of the engineering profession. He was the senior member of the firm of D. & T. Stevenson, engineers to the Board of Northern Lighthouses and the Fishery Board of Scotland for harbours. He has been practically laid aside from work during the past three years, the business for some time having been conducted by the present firm, consisting of his brother Thomas, his two sons, and Mr. Alan Brebner. He had gone as usual to North Berwick at the beginning of last month, but on Thursday last he had a paralytic stroke, and passed peacefully away on Saturday evening.

Mr. Stevenson was the third son of the late Mr. Robert Stevenson, the engineer of the Bell Rock Lighthouse, and was born at Edinburgh in January 1815. Educated at the High School and University of Edinburgh, he, unlike his brother Alan, who was originally destined for the Church, elected from the first to follow his father's profession. Before entering on his apprenticeship he was for some time in the workshops of one of the best practical millwright engineers of his day, where he acquired manipulative skill and the proper methods of working in different materials—a course he always advocated for those who intended to follow the profession of civil engineering. In his presidential address of 1869 to the Royal Scottish Society of Arts, on "Altered Relations of British and Foreign Industries and Manufactures," he fully stated his views, urging the propriety of artisans improving their manipulative skill and their knowledge and management of the materials with which they had to do deal. After serving a regular pupilage as a civil engineer, he was for some time engaged with Mr. Mackenzie, contractor on the Liverpool and Manchester Railway, and he gave a description of this important railway scheme to the Society of Arts more than fifty years ago, and was awarded their medal for his exposition. He then returned to Edinburgh, and, in conjunction with his father and his brother Alan, began practice as an engineer. During the year 1837 he made a three months' tour in Canada and the United States, the result of the inspection of the engineering works of these countries being published in a volume under the title of "Sketch of the Civil Engineering of North America," which was subsequently republished as one of Weale's Series of Engineering Works, as peculiarly applicable to new countries where engineering works on an extensive scale, in which timber forms a chief element, would yet be in full operation. The views expressed and the drawings given in this book with reference to the fine lines and speed attained by American rivers steamers were received in this country by shipbuilders with distrust; but the bluff bows of British seagoing steamers soon gave way to finer lines, shipowners finding that great speed could only be attained by following the example of the American shipbuilders.

Along with his brother, his advice was much sought in regard to the improvement of rivers and harbour and dock works. There are, indeed, very few rivers or harbours in Scotland with which he was not in some way professionally connected. His practice was not, however, confined to Scotland, and he was called on to report on the improvement of the rivers Dee, Lune, Ribble, and Wear in England, the Erne and Foyle in Ireland, while the Forth, Tay, and Nith were improved under his advice, and extensive works are now in progress on the estuary of the Clyde from the designs of the firm. He was the first to enunciate the true theory of the origin of bars at the mouths of rivers, and also to define the different compartments of rivers and estuaries, and the proper treatment which each should receive for their improvement. His book on "Canal and River Engineering," giving the results of his experience in the treatment of rivers, will long remain the standard work on the difficult subject of which it treats. Originally written at the request of his old friend, Mr. Adam Black, about thirty years ago for the "Encyclopædia Britannica," it was shortly afterwards published as a separate treatise, and it is now in its third edition. In 1853, Mr. Stevenson succeeded his brother Alan as engineer to the Northern Lighthouse Board, and along with his brother Thomas he designed and executed no fewer than thirty lighthouses, two of which—on Dhuheartach and the Chicken Rock—are triumphs of engineering. In addition to the Scottish lighthouses, the advice of the deceased's firm was taken by the Governments of India, New Zealand, Japan, and Newfoundland on lighthouse matters, and under their direction schemes for the lighting of the whole coasts of Japan and New Zealand were matured, and are now being carried out. In connection with the lighting of the coasts of Japan, where earthquakes are frequent, Mr. Stevenson devised the aseismatic arrangement to mitigate the effects of earthquake shocks on the somewhat delicate optical apparatus used in lighthouses.

Mr. Stevenson frequently appeared before Parliamentary Committees, and also gave evidence before several Special

Committees and Royal Commissions on Harbours of Refuge, River Improvements, and Lighthouses. He was a most conscientious witness, never entering the box without being thoroughly satisfied as to the soundness of the cause he was supporting. In Edinburgh Mr. Stevenson was greatly respected, and his advice on many important matters connected with the city was eagerly sought and highly valued. His views on the city improvement scheme, as conveyed to Lord Provost Chambers and Mr. David Cousin, city architect, along with his letters which appeared in the *Scotsman* at the time, greatly facilitated the accomplishment of this great sanitary improvement. It may also be mentioned that his firm designed and carried out the Edinburgh and Leith sewerage scheme, and the widening of the North Bridge.

In addition to many papers, principally on engineering and cognate subjects, read before different societies, Mr. Stevenson found time, amid the exacting calls of his profession, to write several books which have taken a permanent place in engineering literature, such as "The Application of Marine Surveying and Hydrometry to the Practice of Civil Engineering," "Reclamation and Protection of Agricultural Land," "The Principles and Practice of Canal and River Engineering." He also wrote several articles for the last and present edition of the "Encyclopædia Britannica," among which may be noted "Canal," "Cofferdam," "Diving," and "Dredging." He was also the author of "Our Lighthouses," being two articles written for his old friend Dr. Norman Macleod, while editor of *Good Words*, and subsequently published by Messrs. Black; and of the "Life of Robert Stevenson," published in 1878.

Mr. Stevenson was elected a Fellow of the Royal Society in 1844, and he subsequently acted as a member of council and one of its vice-presidents. He was a member of the council of the Institution of Civil Engineers, and a member of the Society of Civil Engineers, Paris, and of other learned societies. He was consulting engineer to the Highland and Agricultural Society, and to the Convention of Royal Burghs. Mr. Stevenson took a deep interest in everything connected with the Church of Scotland, and was for many years an elder in Greenside, and afterwards in St. George's Church. He was a man of sound judgment, utterly devoid of ostentation, kind, open, and easily accessible. Mr. Stevenson leaves a family of two sons, as already noticed, and four daughters, one of whom is married to Mr. Napier, W.S., and another to the Dean of Faculty.

THE HARRISON MEMORIAL, EDINBURGH.

A PRIVATE meeting of the subscribers to the fund for providing a memorial of the late Sir George Harrison was held in the Council Chamber, Edinburgh, Lord Provost Clark in the chair. About thirty gentlemen were present. The business was to consider a report by the acting committee, which recommended that the form the memorial should take should be a stained-glass window in St. Giles's Cathedral. It was stated that the sum of 630*l.* had been subscribed, and that 150*l.* would be added if the memorial were a window in St. Giles's. In connection with this point, the following letter to the Lord Provost from Mr. J. R. Findlay was read by the Town Clerk:—

"Aberlour, July 17, 1886.

"My Lord,—I regret that I shall not be able to attend the meeting on Monday of subscribers to the fund for providing a memorial of the late Sir George Harrison; and also that I was not present at the meeting of the acting committee, at which it was resolved that the memorial should be a stained-glass window in St. Giles's Cathedral.

"From this resolution I should have respectfully dissented, and desire to do so now.

"It seems to me that it would be curiously inconsistent if the Harrison memorial should take this shape, when a like proposal has just been rejected with reference to Lord Provost Chambers, in whose case there would have been a fitness in that place and form which is entirely wanting in the present case. Sir George Harrison was in no way specially connected with St. Giles's; he was not even a member of the congregation. It may be admitted that St. Giles's is an edifice of an historical and monumental character, and that a stained-glass window there is a suitable tribute to the memory of any distinguished citizen, but I see no reason for haste in appropriating those windows to the memory of one generation, and I humbly submit that the appearance and effect of the present stained-glass windows in St. Giles's does not afford much encouragement for additions of a like kind.

"Another proposal has been made, and has, I believe, found favour with the members of Sir George's family, whose views are certainly entitled to some consideration in the matter. It is that the memorial should take the form of an ornamental gateway at one of the entrances to Blackford Hill. The idea recommends itself as being out of the ordinary and hackneyed line of busts, commemorative statues, and stained-glass windows, and the situation is appropriate as being connected with one of the last of the many important services which Sir George Harrison rendered to the city. It may be said that the fact that he was instrumental in securing the park for the city is not likely to be forgotten, and that the park itself is a lasting and sufficient memorial; but it will also be admitted that a monument on the spot would further perpetuate and emphasise the fact.

"Such a gateway would give scope for a certain display of architectural and artistic ingenuity in a fashion now somewhat unusual, though not altogether unknown in Scotland; and in a due combination of stone and ironwork a very striking and interesting addition to the amenities of the hill might be produced. At one of the entrances to the Meadows we have a gateway commemorative of the gratitude of the Messrs. Nelson for the temporary use of a piece of public ground, and more recently another has been added, which will perpetuate the interest taken by Scottish masons in the Edinburgh International Exhibition in 1886. Both of those gateways are pillars without gates; but I should expect that the ironwork of the proposed Harrison gateway should be one of its most striking features. That artistic work in wrought iron formerly flourished, to some extent at least, in Scotland, and as in most Continental countries, several examples still existing sufficiently testify. Notice was recently taken, at a meeting of the Society of Antiquaries, of an elegant iron railing on the staircase of the mid-steeple at Dumfries, now unfortunately neglected and falling into decay. There are several iron gateways of elegant design still existing in the neighbourhood of Edinburgh, notably one at Gogar House, and another at Hatton House. The railings at Holyrood House may also be cited, though of course they are, I believe, English, and comparatively modern; and if more ornate examples are desired, we have the Hampton Court railings, and one, if not two, elaborate and beautiful gates exhibited in the museum of science and art. By a suitable inscription, or, still more emphatically, by the introduction of a bust or medallion in connection either with the stone or the ironwork of the structure, its personal and commemorative significance could be distinctly accentuated; and were a fitting design obtained and adopted, the Harrison Gateway at Blackford Hill would remain 'a thing of beauty, and a joy,' if not 'for ever,' at least to many generations of interested and grateful citizens.—I am, my Lord, yours faithfully,

"J. R. Findlay.

"The Right Hon. the Lord Provost,
"City Chambers, Edinburgh."

Some discussion took place on Mr. Findlay's suggestion, several gentlemen approving of it; but the majority of those present seemed to be in favour of a memorial window.

It was, therefore, resolved that the memorial should take the shape of a stained-glass window in St. Giles's Cathedral, and a remit was made to the acting committee to carry the resolution into effect.

THE BIRMINGHAM ASSIZE COURTS.

A FINAL selection was made on Monday by the General Purposes Committee of the Birmingham Corporation of a plan of the proposed new Law Courts for recommendation to the Town Council at its meeting in August. It will be remembered, says the *Birmingham Post*, that out of the very large number of sketch-plans which were sent in some months ago by competing architects five were acknowledged to be of exceptional merit, and the gentlemen who had designed them were asked to send in completed plans. Two of the five sketches are believed to have been those of local architects. The completed plans have for the past few weeks been under examination by Mr. Waterhouse, whom the Council retained as consulting architect, and have also been privately inspected by representatives of the various classes of people for whose accommodation the new buildings will be principally erected. Yesterday the General Purposes Committee, after a sitting of three-quarters of an hour, found little difficulty in deciding to recommend the adoption of the design embodied in the set of plans marked "Terra-cotta." The design is for a terra-cotta and red brick structure in the Gothic style of architecture. Its leading feature is that through a central entrance access will first be gained to a main hall, which will run parallel with the street, and of which the roof will be visible behind the ornament of the frontal elevation. This is a somewhat important departure from the sketch-plans of Mr. Waterhouse, which showed a main hall one of whose ends was towards the street. Out of the main hall a corridor running in the direction of Lichfield Street will lead the visitor to the superior courts, and on each side of the corridor there are placed courts for the magistrates, the coroner, &c. The design will probably undergo some modification when the architect is brought into consulta-

tion with the committee. It is more particularly desired that the access to the minor courts shall not be such that the suitors who attend them will in any way block the passage to the superior courts. The plans will presently be laid open for public inspection.

ARCHÆOLOGY IN LINCOLNSHIRE.

A LARGE party of the members of the Lincoln and Nottingham Archæological Society lately had an excursion to Somerton Castle and several churches in the district south of the city of Lincoln. The following notes on the buildings were prepared for the occasion by the Right Rev. Dr. Trollope :—

All Saints, Canwick.

Externally this church has not a promising aspect for students of Gothic architecture, but after an inspection of its interior I feel sure that all will think it well worthy of inspection. Originally it was a small Norman structure, consisting of a nave, tower, north aisle, and chancel of the earlier part of the twelfth century, of which the aisle arcade and chancel arch are the principal remaining features. The first consists of a massive circular shafted pillar in the centre, having a scalloped cushion cap, and two corresponding responds, the second is the principal ornament of the fabric, and is a grand specimen of its date from its size and the richness of its carving. Its jambs are relieved by three pillars on either side, carrying a semicircular arch of three members, enriched by the chevron and billet moulds. On the east wall of the aisle is a fragment of a Norman abacus and a springer of an arch, probably once forming an arched recess over an altar below. The tower apparently stood on the space now occupied by a bay, added to the nave during the Decorated period, from the evidence of a small piece of early roll-moulding still remaining in the lower part of the western face of the present inner wall of the tower. Of the Early English period we have the arch, lately revealed in the north wall of the chancel, springing from corbels, made up with plaster below, formerly opening into a chantry chapel now represented by the vestry, within which is an Early English reredos, still remaining in its original position ornamented with shallow arcading below a small two-light window of later date. The font, also, is chiefly of this period, but seems to have been tampered with. Of the Decorated period are the two large three-light windows in the south wall of the nave, the westernmost one being apparently a later copy of the other, and also a small two-light window in the tower. The rest of the fabric is modern.

All Saints, Branston.

Remains of a venerable fabric are still incorporated in the present structure—namely, the lower part of the tower, the masonry of which, from its long and short work, is certainly very early Norman, if not of a prior date. The nave has good aisle arcades, supported by octagonal shafted pillars, and in 1876 an additional aisle was added to the fabric on the north side, through the medium of a new Perpendicular aisle. The clerestory and roof are Perpendicular. The chancel is a good specimen of the Early English style. The triplet at the east end, of the same character, is modern. In the south wall is a pair of lancets, now stopped up, a set of three sedilla, and a piscina. In the floor of the chancel is an old Purbeck marble stone, incised with a beautiful cross, and bearing this inscription in Lombardic letters, "Icy gist Sir Richard de Thiselton iadis person de ceste eglise." Near the west end of the north aisle is a fine monument, erected in memory of Sir Cecil Wray and his wife. He was the thirteenth baronet, of Glentworth, the builder of Fillingham Castle, M.P. for East Retford, and subsequently for Westminster, but was eventually ousted from that seat in the celebrated election of 1784 by Fox, chiefly through the help of the famous Duchess of Devonshire, and died in 1805. All the fine old bench ends of this church were carefully preserved at its restoration, and are still doing service. Here, also, are some memorials of the Bertie family.

All Saints, Nocton.

This is an entirely new church, built on a new site, partly by the late Countess of Ripon and partly by the present Earl de Grey, after plans provided by the late Sir Gilbert Scott, in the style of the close of the thirteenth century. Its most conspicuous feature is its tower, surmounted by an octagonal belfry stage and graceful spire, rising altogether to a height of 120 feet. This is attached to the south-western bay of the nave, and its lower stage serves as a porch to the church. The whole structure within and without clearly indicates that no cost was spared in its erection ; which is not surprising, as one portion of it was built as a memorial of a wealthy earl and the other of a countess. Hence sculpture and painting and marble have been lavishly bestowed upon the adornment of the fabric, raising it in this respect far above most churches, and indicating the unsparing liberality of its founders. Perhaps the clustered pillars of the aisle-arcades, with their square abaci, are rather too plain and massive to accord perfectly with the rest of the fabric, and their arches too wide and low, and although the profuse carving of the caps, corbels, and medallions of this church is admirably executed, we should have preferred the adoption of conventional rather than realistic designs for these; but nowhere else to-day shall we see a church anything like as richly adorned with painted glass and other ornamental work applied to such features as its reredos, pulpit, and font ; nor shall we see any modern monument elsewhere such as the one here commemorating the late Lord Ripon, through the skill in sculpture of the late Mr. Noble.

St. Peter's, Dunston.

Only a few ancient features now exist in this church, such as the arch of its porch, the tower, and a Decorated monument. The whole of the remainder was erected in 1876, chiefly at the cost of the Marquis of Ripon. It is a comely edifice, consisting of a nave with north and south aisles, chancel, organ-chamber, and vestry, besides the old tower. For the information of our visitors I may say that in this parish, although distant from its church, stands a pyramidal lofty shaft, commonly called Dunston Pillar, erected by Francis Dashwood, Esq., in the year 1751, to serve as a beacon or lighthouse to travellers crossing Lincoln Heath, which, from its size and roadless condition formerly, often led to loss of life. Originally the pillar was surmounted by a lantern chamber, which for a time doubtless proved a great boon to those who had occasion to travel between Lincoln and Sleaford in winter or in foggy weather. Eventually this was blown off, and not replaced; but in 1810 the pillar was crowned by a terra-cotta effigy of George III., commemorating his jubilee, or the fiftieth year of his reign; now suggesting the fitness of devising another local monument of some kind or another, to serve shortly as a memorial of our present Sovereign's jubilee, when her beneficent reign has reached the end of half a century, and then, as now, we may, in all loyalty and affection, say, "God bless her!"

St. Oswald's, Blankney.

The aisle arcades of this church, the arcade giving access to what was originally a chantry chapel, of late happily restored to use, the arch of the porch, and a sepulchral slab inserted in the pavement of the sacrarium, are the only ancient features. This last commemorates "John de Glori," a representation of whose bearded head is carved within a cusped recess of this slab, giving the idea of a partly open coffin. About sixty years ago the greater part of this church was rebuilt, and again, with the exception of the tower and its arcades, was almost rebuilt in 1880, as its predecessor had become unbearable through the extreme dulness and plainness of its character. Now, we see here a very comely structure, adorned with good painted glass in the windows, by Clayton & Bell, and very tasteful furniture. In it, and also in the churchyard, are costly monuments erected in memory of the late Lady Florence Chaplin, whose touching death created so much public regret, and will doubtless be viewed with general sympathy.

St. Peter's, Navenby.

This is the finest church we shall visit to-day, and its site is worthy of such a beautiful fabric as this is, notwithstanding the loss of its former tower and spire, now represented by the present tower. This occurred in the last century, and destroyed the porch, the west end of the south aisle, and two of the clerestory windows. Besides the tower, the fabric consists of a nave, north and south aisles, south porch, chancel, organ-chamber, and vestry. On entering, the eye will be at once attracted towards the oldest feature of the nave, viz., the extremely beautiful westernmost pillar of the north aisle, which, with the adjacent respond, are of the Early English period. This consists of four solid circular shafts, alternating with circular shaftlets, tied together in the middle by an encircling band, and having a beautifully moulded cap and base, which last unfortunately is not now wholly exposed to view. The whole of the remaining portions of the fine aisle arcades are Decorated. These are surmounted by a perpendicular clerestory, having five lights on either side, and a richly pannelled and embattled parapet above. The present roof is in part supported by the old corbels, on which are shields ; one of these bears the white hart couchant, gorged and chained, or badge, of Richard II. Another, Arg., a fesse vair Or and G between three waterbougets I, for Dethicke ; a third, Arg., a chief G on a bend Az., three escocheons of the first, for Allistree ; and a fourth, Arg., 10 Torteaux a label of three points Az., for Babington. In the south aisle wall are three intersecting lancet windows, the hood moulds of which end externally with the Cistercian mask ornament. This has been prolonged eastward, to serve as an organ chamber. The windows of the north aisle are poor two-light square-headed ones, only otherwise relieved by a now closed doorway. Its western window is new, and made to correspond with the one at its east end. The chancel arch is Early English, and remarkable from its very slender keel-shaped piers and its wide and lofty arch. On the south side of this arch is a bracket on which are carved two large leaves, such as those of a caladium,

and a female wimpled head and flower, probably required formerly to support some portion of the rood loft. It must have been a noble benefactor who rebuilt the grand chancel of this church, which is coeval with those of Heckington and Horton, and disproportionately large as compared with the nave; but although his remains lie beneath a beautiful monument on its northern side, unfortunately his name is lost. Without, the excellent base mouldings of this fine structure and those of its beautiful windows, so well designed, and so spacious, are simply admirable; and now that the great east window has been again supplied with its lost crown, it is, indeed, a pleasure to look upon the interior of such a church terminating in such a chancel and such an east window, sheltered by a high-pitched roof, serving as its canopy. Most beautiful is the memorial of the founder of this chancel, on its northern side, rich in delicate carving, ending in a bouquet of conventional leaves and pendent berries, serving as its finial. And most curious, as well as beautiful, is the receptacle for the Easter sepulchre eastward of it. On the left of this is the figure of an angel and another of the Virgin Mary, on the right one of Mary Magdalene, holding a box of ointment, and the other Mary. Below are the figures of three Roman soldiers, correctly standing on guard, in full coeval armour of the fourteenth century, instead of sleeping, which they did not do. On the south side are three sedilia and a piscina, effective in design, but far inferior to the founder's monument and the sepulchre opposite to these.

All Saints, Coleby.

This is a most interesting church, from the antiquity of some of its features and the beauty of others. At a distance the form of its tower and spire is both striking and pleasing, yet they were built at very different periods, and the architect of the spire deserves posthumous high praise for the manner in which he crowned the very old Norman placed in his hands, as he has done, with so graceful and so well proportioned a spire of his own Perpendicular period. We only regret to observe that this tower has, from necessity, lately been largely braced with iron bands to hold its masonry together. It is of about the same date as the one at Harmston, and is pierced with two of those peculiar little lights to which, from their shape, the term of "key-hole" has been given. The head of one of these is enriched with the billet-mould and the other with the loop-mould, seen in Stow Church and elsewhere. To this was added, in the Perpendicular period, an upper stage, surmounted by a varied parapet and pinnacles, and a very graceful and well-proportioned spire, having flying buttresses, connecting it with the tower. Within the outline of its original arch, giving access to the nave, may be seen around the head of smaller Perpendicular successors, probably erected when the spire was built. Of a later Norman period is the north aisle arcade. This consists of a central circular-shafted pillar, springing from a square base, and two corresponding responds, having scalloped cushion caps, supporting semicircular arches, on which the billet-mould is introduced. The south aisle is entered through a porch and beautiful doorway. Unfortunately, the proportion of this porch is marred by the after addition of a parvise or priest's chamber above it. The arcade of the south aisle is really lovely. Its pillars rise from bold octangular bases, originally serving as seats, and are octangular themselves, consisting of alternated plain and circular features, carefully moulded bases, and varied caps. The westernmost of these is plain, the central one most gracefully foliated, giving the idea of the actual springing forth of leaves from the stonework, and the easternmost enriched with similar ones, which, through a different treatment, seem to be yielding to the wind. The font also is a beautiful one, of rather an earlier period than that of the south aisle. It stands on a square base, and appears to be cut out of one large block. Its bowl is circular, and enriched with intersecting arcading and the nail-head ornament. From the angles of the square base spring up to the top of the bowl slender octagonal pillars, the foliation of whose caps trails over the surface of the bowl. Some of the old bench ends were brought from Hackthorn Church when that church was reseated. The chancel is entirely Early English. Its arch is very remarkable from the extreme slenderness of the pillars serving as its piers, and the width and height of its arch. The small window in the north wall near this arch represents the original means of access to the rood-loft. In the north wall of the chancel is an Early English arch that once opened into a chantry chapel, and in the opposite wall is the later arch of another chapel. In the east wall are three lancets, the central one having a cusped head, and in the south wall is a single lancet, then another, and a portion of a third, forming a couplet, part of which is now walled up. Here, also, are two sedilia and a piscina. Until the year 1864 this church was encumbered with a gallery at the west end, a plaster ceiling, and a variety of box-like pews, when it was greatly improved, out of respect for the memory of the Rev. Thomas Trevenen Penrose, the late honoured incumbent of this parish, as recorded on a brass plate in the chancel, inscribed by the late Sir John G. Coleridge.

(*To be continued.*)

CHURCH BUILDING AND RESTORATION.

Birmingham.—The Wesleyan Chapel in Cherry Street is about to be pulled down. The society, having obtained, after ten years' negotiations with the Improvement Committee, the freehold site at the corner of Corporation Street and the Lower Priory for the purpose of building a new chapel with schools and classrooms, invited several local architects to submit designs in competition, showing how suitable premises for their accommodation could be arranged, with shops for letting on the ground floor. The plans of Messrs. Osborn & Reading, of 13 Bennett's Hill, Birmingham, were selected. The buildings are now in course of erection, and include on the ground floor fronting Corporation Street two large shops, with basements under, and a smaller shop with basement in the Lower Priory. The inclination in the adjoining streets admits of a level entrance from Dalton Street to the basement of these shops. Mr. John Bowen is the contractor.

The Church of St. Saviour, for the Deaf and Dumb, Oxford Street.—The Bath stone dressings of this church are now being restored by the same process that was successful in the church of St. Peter's, Eaton Square, when restored two years ago. If this process is permanent—and there is not the least doubt from the appearance of the front at St. Peter's that it will be—a very valuable remedy has been discovered, especially in cases where the removing of the decayed stones would be dangerous to the structure, and in historic buildings, where the perfect portions can be retained instead of being wholly replaced by new stones. Mr. A. W. Blomfield, M.A., is the architect.

West Croydon.—A Congregational church was opened on July 6. It is Early Decorated in style, and consists of a nave with centre aisle, two side aisles, double transepts, and deeply recessed apse with choir stalls on either side, pulpit on the left, and organ chamber on the right. Externally the church is faced with Kentish rag, with dressings of "Monks' Park" Bath stone, while Farleigh Down stone, relieved with bands of blue Bath, is used on the inside. The nave columns are in Portland, and all the fittings in pitch pine. The building is ventilated by fresh air inlets in walls, and Boyle's extractor in roof. There are spacious vestries at the rear, as well as a large church parlour. The cost of the building has been 10,800*l.*, and great credit is due to Mr. Holloway, of Marmion Works, Lavender Hill, Wandsworth, for the way in which he has carried out his work, and also for finishing the building three months under his contract time. The architect of the building is Mr. W. D. Church, 12 South Place, Finsbury, E.C.

GENERAL.

The Designs by Mr. W. J. N. Millard and Mr. W. G. B. Lewis have been selected by the Committee for the East London Hospital Extension at Shadwell.

The Royal Institute of Painters in Water-Colours have selected Sir J. D. Linton and Mr. Frank Dillon to serve on the committee now being formed by the Lords of the Committee of Council on Education to consider, from an art point of view, the question of the action of light on paintings in water-colours.

M. Charles Garnier represented the Académie des Beaux-Arts at the funeral of the late Cardinal Guibert, Archbishop of Paris.

Captain Douglas Galton, C.B., has been elected chairman of the Council of the Society of Arts for the ensuing year.

A Project for holding a national exhibition of art, science, and industry in Glasgow in 1888 has been referred to a committee for consideration.

Plans for offices for the Edinburgh School Board, prepared by Mr. Wilson, have been finally approved of. The estimated cost is 10,000*l.*

The New Street in Dublin leading from Cork Hill to Christ Church Cathedral will be opened on Tuesday next.

Plans are being prepared by the local architects for a town hall in Stourbridge which is to cost 3,500*l.*

The Renfrewshire Commissioners of Supply have purchased a site for the erection of a police station for Kilmalcolm.

An Exhibition of motors and machine tools, tools and models for small industries, was opened at Stockholm on July 12, and will be kept open until September 12.

A Cottage Home for Girls is about to be erected at Cooden, Sussex, for Lady Clinton, containing twenty-four beds, from plans and under the superintendence of Mr. J. B. Wall, A.R.I.B.A., architect, London.

Messrs. Hawksley & Bateman, the engineers to whom the Leeds Corporation referred the schemes for the Blackmoor Water Tunnel scheme, the original estimate for which was 90,000*l.*, have disapproved of the whole of the schemes proposed, and propounded a plan for a new tunnel to cost from 30,000*l.* to 40,000*l.*, exclusive of compensation to landowners.

The Architect.

THE WEEK.

The sale of the Blenheim collection on Saturday did not approach the anticipated prices. The best pictures had been sold beforehand, and, in truth, it must be said that some of the works which appeared in King Street were more suggestive of the "Slaughter House" than of Christie's. "Blenheim," "presents to the Great Duke," "exhibited at Burlington House," phrases which were supposed to be associated with the humblest work, had more influence than the quality of the painting, and there was something factitious about the smallest sum that was given. Another cause of the low prices was indicated by the *Times* when it was said "there was no M. Gauchez, the great dealer of Paris, and *procuratore* for the American millionaires," at the sale. The average price was therefore only 450 guineas, instead of five times that sum. In many cases the prices were excessive. The most admired picture of the lot was Rubens's *Venus and Adonis*, but it was not worth 7,560*l.*, at which sum it was bought in. It took probably two days to paint. Far finer was the same artist's *Distribution of the Rosary*, a finished study for a larger work which was never painted, and it was sold for 1,585*l.* 10*s.*, that is, about one-fifth the price sought for the *Venus and Adonis*. The extra price was to be paid for size, not for quality. The small copies of pictures which were made by Teniers were curious, as evidence that a painter cannot abandon his own style when he becomes a copyist. Many of them were ignoble translations, and marked the difference in spirit between Italian and Dutch art.

M. Lockroy made some arrangements on Tuesday respecting the Paris Exhibition of 1889. There will be a commission consisting of three hundred members, and which will be divided into twelve sub-commissions. The commission of control will be composed of the representatives of the Municipal Council, the Society of Guarantors, and the Government. M. Lockroy will reserve to himself the functions of Commissioner-General. The direction of works, comprising the erection of the building in the Champ de Mars, the annexes, &c., will be presided over by M. Alphand. The financial department will have M. Grison at its head. The allotment of space and organisation of the interior will be under M. Berger. The commencement of the works on September 1 is to be celebrated by a *fête* at the Champ de Mars and the Trocadéro, for which M. Alphand is to prepare a programme.

The exhibition of the works by the ten competitors for the Prix de Rome in sculpture was opened in the Ecole des Beaux-Arts on Saturday last. The subject is Scriptural, and represents the fright of Tobias when he saw the great fish approaching him as he bathed his feet. The Prix de Rome for painting has been awarded to M. Charles Lebayle, a pupil of M. Cabanel. The subject was *The Proclamation of the Emperor Claudius*. The première second prix was gained by M. Lavaley, a pupil of MM. Cabanel and Maillot; and the deuxième second by M. Sinibaldi, also a pupil of M. Cabanel, whose *atelier* has thus sent forth the three prizemen of this year.

There was only one dissentient to the resolution which was proposed on Tuesday in the Birmingham Town Council, in virtue of which the design marked "Terra-cotta" was to be approved, the authors, Messrs. Aston Webb and Ingress Bell, were to be instructed to make any modification the General Purposes Committee might suggest, and tenders for the erection of the building were to be sought. The fellow-competitors with the successful architects were announced to be as follows:—Messrs. John Burnet & Son, Glasgow (Law and Order); Messrs. Dunn & Hipkiss, Birmingham (Sincerity); Messrs. J. J. Bateman & Hunt, Birmingham and London (Via Una); Messrs. Maxwell & Tuke, Manchester (Two Judges of Assize). It was mentioned by the Mayor that when Mr. Pearson saw Mr. Waterhouse's plans, he said they could not be improved upon, and declined to compete, but they were not adopted. Mr. Waterhouse gave his aid generously, and throughout the business has acted in a manner that was worthy of his position in the profession.

The Building Committee of the Edinburgh Exhibition some time since instituted a competition for plans of workmen's houses, and, to assist them in judging, obtained the aid of Mr. James Sellars, architect, of Glasgow, and of the President of the Edinburgh Architectural Association. For tenement houses the diploma has been adjudged to Mr. J. A. Russell Inglis, of Edinburgh, and for continuous tenements Mr. Alexander Hay is the prize-winner. Mr. William Menzies, of Egham, Surrey, obtained the diploma for double tenements. As there was no financial reward and no certainty of a commission from the competition, very few designs were submitted.

The removal of the galleries in the parish church of Stratford-on-Avon was commenced on Monday. They were erected about fifty years ago, and were of oak, with carved fronts. Several of the townspeople were in favour of their retention, but the vicar considered they interfered with the appearance of the church, and he was supported by the Society for the Preservation of Ancient Buildings. The restoration, which will cost 12,000*l.*, is directed by Messrs. Bodley & Garner.

The failure to obtain a sufficient number of subscribers for shares in the proposed Manchester Ship Canal is another instance of the want of enterprise which is paralysing English industry in most of its forms. The projectors of the canal had succeeded in obtaining their Act after one of the stiffest contests recorded in the annals of Parliamentary Committees. But the opposition of the powerful railway interest was not abated. All sorts of suspicions about the success of the scheme were kept afloat. It must be admitted that Manchester did not appear to show its old energy in supporting the canal, and it was easy to say there was no belief in the City or in Lancashire that the works would be ever completed, or that they would pay. The tactics of allowing only a short time to obtain subscribers hardly seemed prudent with so large an undertaking. Whether there is an end to the canal, or no more than a delay of a year in starting, has yet to be discovered. The arrangements with railways do not appear to be satisfactory, and temporary concessions may be made which will remove the complaints of Lancashire manufacturers. If so, there will be difficulty in reviving the scheme. At one time it was supposed to be impracticable: that allegation was disproved. It is now said to be unremunerative, and that is more difficult to refute than all other charges combined.

At the last meeting of the French Academy of Sciences, some photographs were presented which were taken at great heights by MM. Tessandier and Nadar. On one occasion they operated when their balloon had reached a height of 800 mètres, or about half an English mile; another time the height was 1,150 mètres. The district over which they sailed extended from Paris to Mans. The views of Versailles, Sèvres, and some other towns were on an exceedingly small scale, but could be recognised.

The Benchers of Lincoln's Inn have granted the use of Lincoln's Inn Hall for the meetings in connection with the Royal Historical Society's commemoration of the 800th anniversary of the completion of Domesday Survey. The meetings will be held from October 26 to 30 next. At the same time there will be an exhibition of manuscripts relating to the subject at the British Museum, and another at the Public Record Office. It is hoped that the owners of all suitable manuscripts will follow the example of the Dean and Chapter of Canterbury and the Society of Antiquaries, by agreeing to lend their treasures for exhibition at the British Museum, the Principal Librarian having consented to take charge of any documents that may be sent to him for the purpose.

THE NATIONAL COMPETITION PRIZE WORKS.

WE suppose it was no more than just that the schools of the Science and Art Department should, like the French Salon and the Royal Academy, have a year marked by a dearth of remarkable works. Whatever is the cause, the exhibition which is now open hardly comes up to the average standard. Whether the judges have selected the best of the works submitted by the schools it is impossible to determine, but since it must be evident to every impartial observer that the prizes have been distributed in a haphazard way, it is allowable to imagine that the selection was determined in a similar fashion. If the relative merit of a few works could not be decided so as to give general satisfaction, how much greater was the difficulty when some hundreds of thousands had to be considered?

It is characteristic of the foresight of the authorities that when it was resolved to exhibit the works of the National Competition no provision was made for a place to hang them. This year they appear in the old Patent Museum. The shed is badly lighted; from want of space the drawings have to be hung on screens a few feet apart, so that it is impossible to judge of the paintings, and as some officials are engaged close by, the visitor will find (unless an alteration is made) that he has to make his examination with an accompaniment of snatches of comic songs, whistling, jokes, and laughter. It is apparently necessary to allow a good deal of relaxation during office-hours in the museum, but there is no advantage in an ostentatious display of the enjoyment.

This year more latitude is allowed to the students who contribute architectural drawings, and in consequence several ambitious works are to be seen. The gold medal is gained by F. W. WHITWELL, of York, for designs for a cathedral church. The drawings are all executed in a workmanlike style, and with uniformity of line throughout. The crockets are indefinite, and this is the more remarkable, as the same student has elsewhere a frieze which is a good specimen of free-hand drawing. The style of the cathedral drawings would serve in an office, but as much cannot be said for the drawings of a college by H. TOOLEY, of Great Yarmouth, which are suggestive of the amateur in the attempt to make the lines as fine as engraving. But we suppose in this case it was the painstaking of the designer which was rewarded. A builder would not approve of the drawings. PERCY ADAMS deserved the silver medal for his set of measured drawings of St. Margaret's, Ipswich. They are much better in style than those of the Bute Chapel, Cardiff, by D. CAPLE, which obtained an equal reward. J. E. BYGATE has a carefully tinted drawing of a bay of Durham Cathedral. The design for law courts, by A. ERSKINE, of Manchester, shows, as commonly happens, better draughtsmanship in the exterior than in the sections. It is Gothic; but the premiated designs for a school of art, by J. A. PEARCE and F. STEAD, are both Italian. The South Kensington School appears to be tested in all sections by a more severe standard than is applied to the other schools. The drawings of a part of the museum, by A. C. JAHN and C. STOLLE, were deserving of a better recompense than bronze medals, for the colours as well as the details of the original are suggested without any of the garishness that is so often found in tinted views. There are not many prize drawings representative of the style that now prevails. M. BUCKMASTER'S building in red brick wants repose, and the good parts suffer from the attempt to introduce a variety of quaint forms. E. C. MAIDMAN has a fair country vicarage. The gates by J. TREGO, of Coventry, are deserving of commendation.

It is evident from the drawings that while there is an attempt to attain a common character in the painting, drawings of the figure and modelling, a student can follow his own inclination when he works at architecture. This is the consequence of the training received by the teachers. The masters in general cannot claim to be architectural draughtsmen, and all they are able to do is to offer occasional suggestions or criticisms to the students. The majority of the architectural drawings are therefore less representative of the Departmental teaching than of practice of some kind in an office. The student may work in a school during the evening, but his instruction has to be obtained elsewhere. It is useless, therefore, to attempt any general observations on the architectural drawings, for we can only find two which have any similarity in style.

The number of examples of modelling appears to increase every year. One of the gold medals was awarded to W. PARKER, of Lambeth, for a panel having a good deal of Renaissance character. The subject is VENUS rising from the sea. The goddess stands in a shell; her hands are raised to her head, and she is surrounded by mermaids and dolphins. She has a more doleful look than becomes VENUS, and the limbs are not well modelled. It might also be objected that the attendant figures are more conventionalised than is requisite. But a Classical subject is so difficult that shortcomings may be excused. Another student of the Lambeth School, W. ROLLINS, obtained a gold medal for a draped *Venus*. It is a pity the figure has not been cast in bronze, for the drapery has the character that is adapted for the material. This is, in our opinion, the most complete figure in the exhibition. A copy of the figure of a boy extracting a thorn from his foot, by H. GAMLEY, of Edinburgh, wins the highest prize for that class of work, and it is a very close copy of a difficult subject. A fourth medal is awarded to D. TONELLI, for his vigorous and realistic figure of a martyr. The Plasterers' prize was never to our knowledge more fairly won than by the relief, *Commerce*, of which J. CASSIDY, of Manchester, is the author. In this case Enterprise is at the prow of a raft and Capital at the helm. The cupids who sail upon the bosom of the air may stand for patrons of Enterprise. Commerce, with her attendant nymphs, are the passengers. The composition has the charm of one of STOTHARD'S designs. Over it is a large frieze or cornice, by J. CROMPTON, of South Kensington, which is worthy of a better prize than a book. It is made up of grapes, squirrels, and birds, all treated in a masterly way. On the same wall is a well-modelled reclining figure above an arch by ANNA DABIS, of the South Kensington School; a companion figure, but not quite as successful, is by W. H. GATES. They are both creditable works. On one of the screens are some designs for the Plasterers' prize. The silver medal was awarded to ETHEL ELLERLY, of which the subject is children bringing home wood in winter. R. A. MILLER'S *Dance of Shepherds* shows more power, but was rewarded with a bronze medal. Lambeth School, in addition to gold medals, carried off two in silver for figures by W. TAYLOR and C. ALLEN.

In what may be called industrial sculpture, the lock furniture by W. FREETH, of Birmingham, takes first place and the gold medal. The wax model appears to have suffered in transit, for the faces of the figures have not the expression that is needed. Much fancy is seen in the little figure near the keyhole and in the boy on the top of the door-handle. The ornament is kept rather flat, and is well adapted to the space it occupies. F. TURNER, of Sheffield, gains a silver medal for two plaques, with flowers in low relief, which show great facility in execution. J. BAILEY, of Hanley, has two excellent vases, which would seem to be adapted equally well for wine-coolers or flower-pots, according to the material. The three handles are formed of figures, and a band of figures in relief runs around beneath the brim. They are also examples of works which are inadequately rewarded. The candlestick, by H. S. PEPPER, has a good contour, and the ornamented and plain portions are carefully balanced.

A concession is made to English susceptibilities by enclosing the studies from life with red curtains. West London has been fortunate in the studies in oils. The gold medal is bestowed on E. TAYLOR'S figure of a woman, although the lower parts of the legs seem out of proportion; and a silver medal on W. DODSON'S study. Liverpool takes two bronze medals and Leicester one. The South Kensington School has only a bronze; why is not clear.

The gold medal for a chalk study is obtained by H. FRIPP, of Bristol. The figure is well drawn, but as it is shown in profile there was much less difficulty in the representation than in those from South Kensington, by J. M. DUNLOP and A. FISHER, for which silver medals were received. The figure by E. ANDERSON, of St. Martin's, is also better, and it gains a book. There is a good deal of style about some of the studies by female students from

South Kensington, such as M. Clarkson's in the enclosure. The portrait in oils, by W. H. Knight, of Birmingham, in spite of its merit wins only a silver medal—the unfinished hand was probably detrimental to him. He also receives a bronze medal for his study of drapery. We are inclined to place the two in the foremost place of their division. Jeannie Moore, of Croydon, is rewarded by a silver medal; but her portraits of women are not equal to those of Indian men or models in Indian costumes. Attention should be given to the fine portrait in chalk of a girl, by L. Muckley, of Birmingham, which is entitled to the silver medal awarded, and to the two heads by M. Lazarus, of the West London School. There is a very good head by A. Inglefield, of South Kensington. *The Wrestlers*, by G. Graham, of Glasgow, is the best of the monochromes from the cast, but it is not served in its position by the lighting of the room.

The paintings of still life this year form an interesting series. A. Baker, of Northampton, obtains a silver medal for a group which is composed of a geranium in pot, standing in front of a canvas strainer which rests against a slab of the Parthenon frieze. The two paintings of game, by Janetta Pitman, of Nottingham, are freely treated, and have none of the stiffness of posing generally seen in works of the class. J. M. Comley, of Coventry, deserved a better reward than he received for his group, which is rather original. It is made up of a butcher's block, on which rest a blown bladder and some hooks, and against the wall hangs a blue smock. Anything that might appear repulsive is avoided. A French student would not miss the opportunity of gaining colour by sprinkling the block with blood. The ornament by M. Rollason, of Birmingham, is painted in a careful style. The Chiswick School has been exceptionally successful this year in gaining several prizes for still life, although the subjects selected seem rather difficult. Japanese cabinets with aventurine doors and inlay, fans, ribbons, vases, books, daggers, damask, &c., are elements that afford rather hard tests for students. A. Rickman, R. Hammond, M. Dickson, and F. Mackenzie are among the students rewarded.

Flower painting should receive much attention in the schools, and this year that class of work is fairly well represented. E. Birks, of the Stoke School, carries off the gold medal with his four fine water-colours, but the colour is in one at least not equal to the drawing. F. Shindler, of the Bloomsbury School, runs him close, with drawings of birds and flowers. J. Phillips, of Nottingham, has a good painting of chrysanthemums against a delicate blue background.

The landscapes are interesting, and most of them seem out-of-doors work. A bronze medal is gained by G. Henton, of Leicester, for two sketches, but one of the subjects is not well chosen. H. Baynton's sketches in oil are carefully finished, but the subjects are comparatively easy. The clearest indication of possible power as a landscapist is seen in the drawings of J. Inskip, of Scarborough. He is one of the few students who should be advised to follow art as a profession. His group of still life, a skull and books under lamplight, is rather sensational, but also proves skill.

The designs for applied ornament are better than usual, and the influence of Indian work is seen in many among them. In the competition for the Owen Jones prize a silver medal is gained by J. Fletch for a textile pattern. The most ambitious work of this class is by S. Mawson, of Manchester, in which animal as well as plant forms are utilised. There is a good design for a carpet by M. Jones, also of Manchester. Among the designs for pottery the design of F. Drake, of Hanley, should be remarked. The figures forming the handles are excessively elongated, and there is a want of finish in some of the painted figures, but there is spirit in the work. Near it are some sketches from "Hiawatha," by A. Fisher, of South Kensington, which are marked by pictorial power.

The drawings suffer from the character of the building in which they are hung, and justice could hardly be done if the works were examined there. As the exhibitions are the best evidence of what is being done in the art schools under the Department, it is indispensable that arrangements should be made for seeing the works under a sufficient light. In a fitting gallery the drawings might appear much better than they do now.

JEAN LAMOUR, BLACKSMITH.*

EVERY man and woman who was taught French in the days when the "Charles XII." of Voltaire was supposed to be a better model of the language than cuttings from newspapers, can recall the name of Stanislas Leczinsky, the young palatin of Posnanie. What was a palatin and where was Posnanie were not perhaps very clear, nor were matters mended by saying he was woywode of Posen, but there was little difficulty in forming a mental picture of the young prince as he appeared as a deputy before the young conqueror who could place the crown of Poland on any head he selected. In Poland, according to the historian, the people were in the happy position of being able to speak Latin without undergoing a course of bodily suffering, and it was in that language Stanislas addressed the king. Charles after the interview declared that the palatin was henceforth his friend, and the Poles naturally interpreted the words to mean, "Behold your future king." An attempt was made to alter the resolution of the Swedish monarch on the ground that Stanislas was too young for the office, but Charles cut short all cavils of that kind by replying that the palatin was about the same age as himself. In less than a week Stanislas was formally elected king of Poland.

Augustus, who possessed the crown before the Swedish invasion, was not disposed to peaceably recognise the new monarch. As soon as Charles left Warsaw he attacked his rival, and Stanislas fled to his protector. In a short time the Swedes prevailed, and eventually Augustus was compelled to write a letter of congratulation to the woywode who dispossessed him.

The strange history of Stanislas cannot well be condensed into a paragraph or two. He held on by Charles until fortune turned against his protector. Then he had to give up his throne to the pertinacious Augustus, and settled down in Weissenberg, where he led the life of a country gentleman, and, having abundance of money, was a good deal happier than he had been in Warsaw. In course of time a wife was needed for the young King Louis XV., and the people in the French Court who managed affairs of that kind selected the daughter of Stanislas for the dignity. This brought him again into notice, and when the King Augustus died it was not unnatural that Stanislas should once more seek to ascend, or be forced to seek, the Polish throne. But the world had greatly changed between 1704 and 1733. He was opposed by a Russian army, and was compelled to fly to Dantzic. He was besieged, and when there seemed no hope—for a price had been placed on his head, and the promised troops from France did not appear—he was compelled to escape in the guise of a cattle-dealer.

If Stanislas had been master of his fate he would probably go back to his quiet life and build pleasant country houses for himself. But hitherto he was a puppet in the hands of abler men, and it was necessary to use him once more in that capacity. The siege of Dantzic was considered by France to mean mischief. A league between Russia and Austria was suspected, and as the Duke of Lorraine was supposed to be friendly with Austria, his province was seized. Stanislas was selected to be the ruler, but with no more than a life tenancy in it; for after his death Lorraine was to be united with France. It was also agreed that he was to retain the title of King of Poland.

It may be asked what all this has to do with Jean Lamour. History makes odd combinations, bringing great men and humble men together, and if it were not for Stanislas and the vicissitudes which wafted him to Lorraine, the honest blacksmith of Nancy must have remained unknown, like a great many thousands of his craft, in all ages.

Stanislas acted on the belief that the king was the father of his people, and he resolved that his subjects in Lorraine should have no reason to regret the coming of a stranger among them. He was by nature possessed of a kindly disposition, and, like the Vicar of Wakefield, took pleasure in seeing happy human faces about him. Being a wise man, he thought that one of the best ways to make the

* *Les Artistes Célèbres: Jean Lamour, Serrurier du Roi Stanislas à Nancy.* Par Charles Cournault, Conservateur du Musée Historique Lorrain, à Nancy. Paris: J. Rouam. London: Gilbert Wood & Co.

people happy was by giving them a pleasant capital to live in, and he therefore set about improving Nancy. JEAN LAMOUR was one of his instruments.

Like his father, JEAN LAMOUR was the *serrurier*, or smith, of Nancy, receiving as a retainer about two shillings a year. He was not content with the training he received in his father's forge, and, to gain wider experience, he worked in Metz and even in Paris. When his father died JEAN was twenty-two, but he was considered qualified to obtain the post of *serrurier*, with its retainer of 2 francs 60 centimes. There are records which show that he was entrusted soon afterwards with municipal works, such as making lamps and screens. He was also charged with preparations for the fireworks to celebrate the entry of FRANCIS III., who was the last of the native Dukes of Lorraine. The smith was a man of about forty years when King STANISLAS came into possession of Nancy.

In the documents by which the province was leased it was stipulated—so strong was etiquette in those days—that neither the king nor his wife was to be interred in the mortuary chapel of the august Dukes of Lorraine, which is in the Church of the Cordeliers. In the beginning of his reign STANISLAS, therefore, had to make provision for some place to be buried. He selected the chapel of Nôtre Dame de Bon Secours. It was a memorial of a victory gained in 1477, by which the independence of Lorraine was secured; but in 1737 it was a ruin. STANISLAS rebuilt the chapel, and his first commission to JEAN LAMOUR was for a screen to be placed in it. This work has disappeared. It was sold to a broker during the first Revolution, and, although the smith published engravings of his works, the screen is not included among them. M. COURNAULT suggests that it may have resembled the communion rails and balcony of the organ-loft which still remain in the church. They bear the arms and ciphers of the king and the queen. The style is, however, more simple than is found in the later works of LAMOUR. Like all artists he did not reach perfection in his early efforts.

The example of LOUIS XIV., who preferred a palace in the country to one in town, was not lost on STANISLAS. He began with a house in the village of Chanteheux, which no longer exists. It was designed by an architect named HERÉ, who also designed the palace for the king, which is now utilised as a cavalry barrack, at Luneville. The iron work that remains in the latter building reveals to us that LAMOUR was then an out and out representative of the style of Louis XV. He avoided straight lines and introduced as many curves and as sudden changes in them as the material would allow. We can understand the courtiers from Paris expressing admiration for the work which might have been wrought by an artificer in the city. Subsequently he seems to have had the benefit of wise counsel, for he introduces straight lines, and in addition to the contrast an expression of strength is imparted to the work which otherwise would be impossible. In the Georgian gateways that are still to be seen here and there in the suburbs of London, we have iron work that bears some resemblance to LAMOUR's, but the English work is not so elaborate as the screens, staircase railings, and lamp brackets of Nancy. It is remarkable that in some cases LAMOUR's engravings represent work that is even more elaborate than the executed examples.

In the town, according to M. COURNAULT, several examples from LAMOUR's forge still survive, in addition to the great screen in the Place Royale known to all tourists. In the Maison des Missions, where the king used to lodge occasionally, there is a great balcony on the garden front, and a staircase railing. There is also a screen in the bishop's palace. The museum contains a screen that was taken from a barrack after a fire in which it suffered. The Tribunal de Commerce and the theatre, which was formerly the Collège des Médecins, have work by LAMOUR.

It is remarkable that STANISLAS paid for ironwork which was intended for private houses. M. COURNAULT quotes an entry from the treasurer's records, showing how 3,508 livres had been paid to LAMOUR for "ouvrages en araignées" for houses in the Place Carrière, and evidently referring to screens of a delicate character. There are many of them in Nancy. The best is one which belonged to an hospital gate, but the owner has had it framed as an ornament for his apartment.

The work on which LAMOUR's fame mainly depends is the series of screens in the Place Royale of Nancy, now the Place Stanislas. This is an architectural composition, and M. COURNAULT is of opinion that the entire credit for it should not be given to the smith. HERÉ, the architect and director of works to the ex-king of Poland, must have prepared the design, although his name is not associated with the screens. This, however, is not an exceptional case, for in every country in Europe there are buildings which testify to the transitory nature of an architect's fame, and a good many French architects therefore wisely have their names inscribed on their buildings.

The Place Stanislas is a rectangle, measuring about 410 feet by 345 feet, with an approach at each angle. There are three other streets leading to it. On one side is the Hôtel de Ville, and the two openings at the ends have screens with pilasters, capitals, cornices, vases, lamps, &c., of iron. The angles which are opposite have screens with three openings in which are fountains. The figures of NEPTUNE, nymphs, cupids, &c., were sculptured by BARTHÉLEMY GUIBAL, who also modelled the bronze statue of LOUIS XV. which stood in the Place Stanislas prior to the Revolution. It may be said that the Place is unique in suggesting how much may be made of ironwork as a means of architectural decoration. Trees were planted behind some of the screens, and the dark green is an effective background to the gilded ornamentation. The work is throughout executed with precision, and we fancy many tourists set little value on it, believing that the gates are no more than examples of casting. LAMOUR was a true craftsman, and he was as anxious about the joints of the pieces constituting one of his works as about the general design. In ornamental ironwork of the period shakiness is not uncommon, but it appears to be absent from the examples produced by LAMOUR.

STANISLAS must have derived much pleasure from the work. The title-page to the book, "Recueil des Ouvrages de Serrurerie de Jean Lamour," contains a representation, after a picture by BÉNARD, of a visit by the old king to LAMOUR's forge. As the smiths have not suspended their operations we may assume that the visits were so common as to excite no surprise. The people of that time were fond of making titles for their rulers. The son-in-law of STANISLAS was known as LOUIS LE BIEN-AIMÉ; the ex-king in Nancy was called STANISLAS LE BIENFAISANT. That title was probably inspired by some member of the building trade, for STANISLAS transformed Nancy. Archæologists have since deplored his demolitions of old buildings, but the inhabitants of the town seem to have thought only of the money which he expended, and apparently without laying a heavy burden on them. He was a philosopher of the eighteenth-century species; but with him projects for universal amelioration were more than graceful literary essays, and, during his reign of nearly thirty years, he did his best for the people about him. One cannot help regretting that the old patron of the arts had not had an easier death. His dressing-gown caught fire on a February night, and the injuries he sustained were too much for the constitution of a man of eighty-six.

With his death Nancy ceased to be a capital, and, under French rule, there were no commissions for big screens. Fortunately for himself JEAN LAMOUR was wealthy, and he was able to amuse himself by having ironwork made for his own houses, which would be worthy of a palace. It was also a satisfaction to produce a volume of his designs. He was a notability in Nancy. The lawyers were proud to elect the honest smith to be a member of their confraternity of St. Yves, and a man who wore the costume of a gentleman of the court—"habit et veste de velours bleu de ciel, galonnés d'or"—was not likely to be a discredit to the meetings. He died in his seventy-third year, and the tomb of the maker of memorials was so humble that it cannot be discovered. His name has been given to one of the streets in Nancy; but, as long as his own screens, balconies, and railings last, the memory of JEAN LAMOUR must survive among his townsmen.

The collection of engravings of LAMOUR's ironwork, which appeared in 1767, has long been scarce. Some of the plates may now and then be picked up in the portfolios on the Paris quays. In 1857 a lithographed copy was published in Nancy. M. COURNAULT's biography contains

reproductions of twenty-four subjects from the original engravings. His book, therefore, will give students an excellent idea of Lamour's work, which was one of the most characteristic types of the style in vogue in his time. It is a style which still finds favour, especially in French ironwork. We are glad to see a biography of the kind among the series of "Artistes Célèbres." The caste principle is too generally accepted by the writers and publishers of artists' lives. A painter or sculptor who produces mediocre works is recognised; a metal-worker like Lamour is treated as if he were no better than the man who blew the bellows in the forge. The catholicity which inspires the series issued by the Librairie de l'Art is seen in the selection of subjects. Artists of all nations are included, and the biography of Lamour suggests that niches also await the artist craftsmen of Europe.

PENSHURST PLACE.*

By S. W. Kershaw, F.S.A.

AMONG the many houses for which Kent is so famous, Penshurst claims one of the foremost rank. Its situation in a noble park, with fine timber, and near a village possessing some interesting remains of domestic work, attracts many an art lover, and certainly forms a most suitable visit for an architectural society.

We may first notice that in these inland houses there was always an idea of defence; in those buildings nearer the coast, as at Saltwood Castle, Lymne, and Westenhanger in this county, stronger fortifications appear.

Penshurst has been so frequently connected with the Crown that its annals form a part of the history of England, and as an example of the connection of history and architecture, it has a vivid and general interest for us all. A house of importance is said to have been here in the time of the Conqueror, and I understand there are a few remains in the outer walls of that period. The family of Penchester inhabited the domain for two centuries after the Conquest.

In the time of Edward III., Sir John de Pulteney became possessed of Penshurst. The church of St. Laurence Pountney in London is said to have been founded by him. We read in the 15th Edward III. of the first license to crenellate or fortify this house. This method of defence is seen at Hever Castle, Cowling, &c., and was a common way of adding to the security of a Mediæval abode. To "crenellate" is a technical term to embattle, and the records or licenses to crenellate are generally found among the papers of the Public Record Office.

The estate of Penshurst reverted to the Crown in the time of Henry VI., who granted it to the Duke of Buckingham. It was again forfeited, and subsequently given by Edward VI. to the Sidneys. While in their possession, Penshurst entered on its most eventful annals, for Sir Philip Sidney, the hero of Zutphen, who was killed at that battle in 1597, was born here. Sir Philip's sister, Mary, is commemorated in the following well-known lines attributed to Ben Jonson:—

> Underneath this marble hearse,
> Lies the subject of all verse,
> Sidney's sister, Pembroke's mother.
> Death, ere thou hast slain another,
> Learned, good, and fair as she,
> Time may throw his dart at thee.

The long avenue walk in the park, still known as "Sacharissa's Walk," commemorates the name of Dorothy Sidney, the "Sacharissa" of Waller's poems. Her brother, the celebrated Algernon Sidney, was beheaded in 1683. The present noble owner of Penshurst, Lord de l'Isle, is descended collaterally from this family.

Having passed in rapid review the manorial history of this place, I now touch on some of its architectural features, and remark that most antiquaries and critics have agreed in classing Penshurst as a nearly perfect example of a gentleman's house about 1491, and valuable as illustrating the manners and customs of that period. The plan of the building is an irregular square. The principal entrance is on the north front in the park, and this approach has some resemblance to its neighbouring rival, Knole. The buildings are very extensive, surrounding an irregular court or quadrangle, and of different dates and styles. Entering this court we come to the hall, the most unaltered part of the house, having an open timber roof of much beauty.

I may here remark on the wealth of timber roofs, both of churches and houses; of the former especially in Norfolk, and of the latter in almost every county in our land. While we rarely, if ever, find this roof in France, it is abundant in England, a study of itself alone, and one of the chief characteristics of our island architecture.

The windows of this hall, with decorative tracery—technically known as "Kentish"—are worthy of much notice, and should be compared with those at Leeds Castle, Kent, and Mayfield, Sussex. The music gallery is perfect. This, one of the features of every Mediæval house, has formed the theme for the pages of an historical romance,* of which the hero of the story (one of the Sidneys) speaks as follows:—"'Tis a fine old hall, is it not?' he said, looking around the white walls, with their groups of armour. 'Yonder, in that black gallery, the minstrels played on high days and holidays, and through those archways beneath I can well remember seeing the mummers on a winter's night.'" Thus we perceive the use and realisation of these homes of our ancestors, their quaint memories making them a picture of much interest, recalled to us in the illustrated works of Nash, Richardson, Neale, and others. Under the music gallery was the passage called the "screens," and at the opposite end of the screens another doorway with a panel of later date. There are the usual doorways leading to the buttery, pantry, &c.

One special feature of the hall is the original hearth and fire-dogs, and the louvre for the smoke to ascend. The fashion of having fires in the centre of the hall remained long after chimneys and fireplaces had been introduced. This, like many other such customs, are forcibly illustrated in our Mediæval houses, which really became the exponent of life, manners, and habits of the sixteenth century.

At two angles of the hall, at one end externally, were probably towers, one of which remains; they were useful for defence, and were also at times inhabited. The daïs, or raised platform, was used in this hall. The domestic chapel cannot be traced, which is always such a noted feature in these houses, and is well exemplified in the neighbouring structures of Ightham Mote, Knole, Groombridge, &c. So much alteration has taken place at Penshurst, that this—the chapel—is one of the parts which has unfortunately been involved in the change.

Several portions have been built or added by the respective owners. Thus John de Pulteney, to whom I have made reference before, built a great part of Penshurst about 1350; a large wing was added about 1390, agreeing in architectural character with the work of the time of Richard II. Sir Philip Sidney also enlarged Penshurst, in building wings and the gate-house, also the portion called the Long Gallery. The age of the existing work is, in many cases, to be traced by the arms of the Sidneys, which are visible in many places.

Leaving the hall, we find rooms of great interest and beauty, ornamented with tapestry, paintings, and rare china. One room is entirely hung with tapestry, which represents the triumphs of Ceres, Æolus and the Winds, &c. The main apartments are six in number, and Horace Walpole said, in 1752, "they are the grandest I have seen in any of these old palaces." The Great Gallery has portraits of John Dudley, Duke of Northumberland, by Holbein; Mary Sidney, Countess of Pembroke, by Marc Gerrard; Sir Philip Sidney, by Zucchero; Archbishop Abbot, by Holbein; others of Milton, Lady Jane Grey, &c. Disposed throughout the rooms are pieces of rare furniture, old Venetian glass, and a work-table, said to have been embroidered by Queen Elizabeth, whose portrait is also here. There are several other historical treasures associated with royalty and the successive owners of Penshurst—the chandeliers, said to have been brought from Leicester House in London, and used when Elizabeth visited Penshurst.

In every part of this mansion, history, architecture, and art play their part, recalling incidents and making an *ensemble* not easily forgotten. These artistic surroundings have been made the vehicle for literary notice more than once in the pages of the charming romance I have before quoted, but I cannot forbear to add the writer's description of the gallery, "as filled with mellow sunset light, gilding the polished floor and the wainscotted walls, lighting up the portraits, the high-backed chairs, and carved tables laden with great China vases."

You will now have formed some idea of the extent and beauty of Penshurst, its different portions offering many points for the study of domestic architecture, which, though having general defined principles, always retains local and county differences, so valuable for criticism.† While examining such a building by the eye, or making sketches, all very important in their way, we cannot forget to engraft on our studies the close perusal of such a work as Parker's "Domestic Architecture of the Middle Ages," which treats exhaustively on the subject.

In leaving the classic ground of Penshurst (for truly such it may be called), which has afforded description for the "Arcadia" of Sir Philip Sidney, and in hastening away under the noble avenues of its park, we too can find a response in

* Read at a meeting of the Architectural Association at Penshurst, July 17, 1886.

* *In the Golden Days.* By Edna Lyall. 1885.

† Some of these notes have appeared in my pamphlet, *Famous Kentish Houses.* 1880.

the words of the writer before quoted by me :—"One more look at that noble front, those battlemented towers; one more look at the great doorway visible between the beech-trees."

TESSERÆ.

Pugin as an Architect.

B. FERREY.

HIS best works, perhaps, are the church at Cheadle, which he built for Lord Shrewsbury, and the church in St. George's Fields, London. The former, however, though a beautiful design, is over-decorated in proportion to its scale; and the latter, with several grave faults, has never been finished externally, while its interior has been fitted up in a manner quite opposed to all its designer's principles of church arrangement. Both these buildings—and it is the same with all his other works—show Pugin's chief weakness: the design is on too great a scale for the actual dimensions. We could point to modern churches which, though insignificant in area, give an effect of height and breadth which approaches the sublime. This is the touchstone of the highest architectural art; it is quite otherwise with Pugin's churches. The actual structures require to be magnified at least 50 per cent. to give the proper effect to the design. As a mere architectural draughtsman, Pugin was unrivalled, but the glorious visions which he delineated on paper dwindled into mean proportions when they were translated into brick and mortar. No doubt this was owing partly to his peculiar training as a scene-painter for the theatres; but he never forgave the friendly criticism which pointed out the difference between the promise and the performance of his designs. Any one may test for himself our present criticism of his style of drawing who will try with a pair of compasses the very beautiful perspective of the St. George's Fields Church, as originally proposed by Pugin. Allowing the moderate tallness of 5 feet 8 inches for the priest at mass, the height of the central boss of the apse groining will be more than 75 feet from the raised steps of the altar. So that, we repeat, the genius of Pugin will not be fairly judged by the actual buildings which he has left behind—unless, indeed, by the unpretending, and therefore much more satisfactory little church which he built at his own cost, adjoining his own house on the West Cliff at Ramsgate.

Rules for Restoration.

SIR G. G. SCOTT.

1. I have found it in some degree useful to have a code of rules and suggestions drawn out and lithographed for the guidance of clerks of the works and builders who are engaged in restorations. But they are of little use, unless constantly pressed personally upon the attention of the parties concerned. 2. The great enemies to careful restoration are contracts. The best course would be to carry them out by day-work, feeling one's way in the most timid and careful manner, and always striving to do as little as is practicable. When contracts are necessary, a series of small contracts is better than one general one. 3. It is highly desirable to avoid uncovering a roof all at once. When re-roofing or re-covering the roofs is necessary, it is best to do it in small parts, and keep the rain out by temporary expedients as you go on. 4. It is often the case that the exterior of window tracery is hopelessly destroyed, while the internal half remains sound. In such cases I hold the proper course to be the renewal of the outer half alone, attaching the new work by plugs and cement. We thus retain one-half in its original form, and insure the correctness of the other half. 5. Patching and piecing, if done carefully, are infinitely preferable to more wholesale renewal. The various cements which we have at our command enable us to introduce the smallest pieces into decayed or mutilated mouldings, which was formerly impracticable. Where the injury, however, is unimportant, it is better to leave it untouched. 6. Never trust a clerk of the works or any unpractised hand to obtain the sections of mouldings, or the forms of other features to be restored. It is often difficult enough to persons whose eyes and whose instincts have been sharpened by the habit of studying ancient features through a long series of years; to those who have had no such advantage it is simply impossible, and one need not be astonished to find them, even with nearly perfect copies before them, producing forms scarcely resembling the original at all. I have often known them, even when they have passed a saw-curf (according to their somewhat barbarous custom) through a moulding, and ruled off its section, produce a result totally at variance with the old moulding. 7. Where an ancient feature has been destroyed, never attempt its restoration till the parts round where the original existed have been thoroughly opened out and explored, and, where possible, in your own presence. Old fragments are in such cases nearly always discovered, and usually in great abundance and near their proper sites. Thus, fragments of a destroyed window are usually found in the wall which blocks up or surrounds the old opening. Blocked up niches, sedilіæ, or piscinæ commonly contain each their own *débris*. Often, however, these are not quite sufficient to perfect a design, and the skill of the architect is taxed to the very utmost to judge what the rest would be. This resembles the labours of the palæontologist, who reconstructs the skeleton and the animal from a few broken bones, and, as in his case, the work is impossible to any but one thoroughly acquainted with his subject.

Tests of Iron.

D. KIRKALDY.

The breaking strain does not indicate the quality, as hitherto assumed. A high breaking strain may be due to the iron being of superior quality, dense, fine, and moderately soft, or simply to its being very hard and unyielding. A low breaking strain may be due to looseness and coarseness in the texture, or to extreme softness, although very close and fine in quality. The contraction of area at fracture, previously overlooked, forms an essential element in estimating the quality of specimens. The respective merits of various specimens can be correctly ascertained by comparing the breaking strain jointly with the contraction of area. Inferior qualities show a much greater variation in the breaking strain than superior. Greater differences exist between small and large bars in coarse than in fine varieties. The prevailing opinion of a rough bar being stronger than a turned one is erroneous. The breaking strain and contraction of area of iron plates are greater in the direction in which they are rolled than in a transverse direction. The breaking strain of steel, when taken alone, gives no clue to the real qualities of various kinds of that metal. The contraction of area at fracture of specimens of steel must be ascertained as well as in those of iron. The breaking strain, jointly with the contraction of area, affords the means of comparing the peculiarities in various lots of specimens. The breaking strain and contraction of area of puddled-steel plates, as in iron plates, are greater in the direction in which they are rolled; whereas in cast steel they are less. Iron, when fractured suddenly, presents invariably a crystalline appearance; when fractured slowly, its appearance is invariably fibrous. The appearance may be changed from fibrous to crystalline by merely altering the shape of specimen so as to render it more liable to snap. The appearance may be changed by varying the treatment so as to render the iron harder and more liable to snap. The appearance may be changed by applying the strain so suddenly as to render the specimen more liable to snap, from having less time to stretch. Iron is less liable to snap the more it is worked and rolled. The "skin" or outer part of the iron is somewhat harder than the inner part, as shown by appearance of fracture in rough and turned bars. In the fibrous fractures the threads are drawn out, and are viewed externally, whilst in the crystalline fractures the threads are snapped across in clusters, and are viewed internally or sectionally. In the latter cases the fracture of the specimen is always at right angles to the length; in the former it is more or less irregular.

English Mediæval Altars.

T. E. BRIDGETT.

In his description of the consecration of Ripon by St. Wilfrid, Eddi gives special prominence to the high altar—"the altar together with its supports was consecrated to the Lord, and then decked with a purple covering interwoven with gold," before the holy mass was offered. Here Eddi distinguishes between the altar-table itself and the substructure on which it was laid. The latter could be a solid mass of stone or wood, or the altar-slab might be made to rest on one or more pillars, or on brackets. The side altars, built against pillars or in oratories and recesses, were often very small. The shape was sometimes square, but more generally an oblong parallelogram, as at the present day. Superaltars, *i.e.*, the step or steps at the back of the altar (*gradini*), were not in use; and the name superaltar in Mediæval documents is to be understood of a portable altar-stone. Whether movable or fixed, the altar-slab, or altar properly so called, was regularly of stone, and, unless it were such, it was forbidden to consecrate it with holy chrism. "Altaria nisi lapidea chrismatis unguine non consecrentur." But these words show that wooden or metal altars at that period were still occasionally used. The altar was called in Anglo-Saxon *weofod*, in old English *weuede* or *weved*. "Godes table is the woyeued," says Dan Michel in the "Ayenbite of Inwyt." The altar is also sometimes called God's board. The substructure of the altar was plain, not carved or decorated, and it was covered with a frontal. Hence, when stripped on Good Friday, it did not by its splendour contrast with the mournful appearance of the church, but well symbolised our Lord's body as it hung naked on the cross. As the frontals could be changed, the altar was capable of great adornment on the festivals; and not only rich stuffs, but also embossed plates of gold and silver, were hung around it. According to St. Theodore there were no steps before the altar. This pro-

hibition was derived from the Old Testament, and, as it had in reality no reference to the circumstances of the Christian sacrifice, was in course of time disregarded. There were often many altars in a church. A poem, written about the year 725, mentions fourteen, and another of the same century by Alcuin tells us there were thirty in the cathedral church of York—

Quæ triginta tenet variis ornatibus aras.

Beneath the present church of Ripon are still to be seen chambers and passages which once formed part of the crypt of St. Wilfrid's abbey church, and which illustrate what is said by an old writer in describing the ancient cathedral of Hexham, that many priests and separate groups of worshippers could offer and assist at mass without being visible to each other. "Besides the undercroft, the triforium or gallery running all around the church over the aisles or 'porticus' had many small chapels with an altar in each of them, built in the upper part of the church." There was, however, always one principal or high altar standing towards the east end of the church, and this was distinguished not only by size, position, and splendour, but also by two other peculiarities. It stood in a part of the church reserved for the clergy and separated from the body of the building by a low rail, called cancelli; and it was surmounted by a ciborium, or dome resting on pillars. It appears that in the early Saxon monastery of Abingdon the monks, twelve in number, had each his own chapel, and only on Sundays and festivals was the mass celebrated at the high altar.

James Wyatt, R.A.

J. ELMES.

James Wyatt received and educated many pupils, some of whom obtained eminence, and not a few are enrolled in the list of gold and silver medallists, emblazoned originally by that elegant penman, Tomkins, that hangs framed and glazed among the records of the Royal Academy. The portrait of this eminent penman, who surpassed all his predecessors in this line of art, and has been equalled by none since, was the last that Reynolds ever painted. Mr. Wyatt was never knighted, whether it was ever offered is unknown; but it may have been declined on account of his being a widower. He was elected a Fellow of the Royal Society, much to the annoyance of Sir Joseph Banks, its then president, who preferred twaddlers and titled nonentities to men of genius, whom he feared would discover his shallow pretensions to fill the chair, so gloriously occupied in bygone days by Brouncker, Wren, and Newton. Wyatt was one year, during a misunderstanding among the Royal Academicians, as to which of their important selves should supersede Benjamin West, who was then growing aged, in the presidential chair, elected president without his knowledge. It was upon this or a similar occasion that Fuseli, who wanted a younger and more effective president than the aged painter of the death of Wolfe, wrote in his balloting paper the name of Mary Lloyd. One of West's supporters, asking the sarcastic Swiss why he voted for an old woman, he replied, "Why should I not vote for one old woman as well as anoder?" Wyatt proved a perfect King Log during his reign, for he never troubled either himself or them, and on the few nights that he ever took the chair at a lecture, he fell asleep during its delivery, to the great amusement of the students, who laughed at every oscillation of the presidential cocked hat from shoulder to shoulder. This propensity to doze after dinner was unconquerable in poor Wyatt, who indulged it even at Beckford's table, the most entertaining man of his day, when Nelson was present, interesting the whole party by the recital of his hair-breadth 'scapes and gallant deeds performed by himself and his valiant brothers in arms in the then recently-fought battle of the Nile. "Honor est á Nilo;" not so thought the lethargic architect, for he dozed, and dozed, and dozed again. This eminent man was unfortunately overthrown in his carriage, on a return from Windsor, from the effects of which he never recovered. The office of Surveyor-general of the Board of Works, as held under the crown from Inigo Jones and other eminent architects to his death, has never since been filled up, some of its duties having devolved upon the office of Woods and Forests, and others being filled up by special appointment of the crown, or Acts of Parliament, as in the cases of Sir Jeffery Wyatville and Messrs. Nash, Blore, and Barry.

The Baldachino in English Churches.

G. E. STREET, R.A.

Can a canopy constructed over an altar be designed without damage to the character of a Gothic church? To this I should unhesitatingly say "yes," and I should maintain also that the scale of the church has but little to do with the question. If, however, it is to be regarded from the religious side, I would ask whether the church which can tolerate and admire the rich and gorgeous reredoses now so common, is not straining at a gnat and swallowing a camel if it accepts them and refuses the baldachino, whose sole character is of necessity simple and comparatively unadorned. Loving hands are allowed to decorate our altars in happy antagonism to the old spirit of carelessness which left them dirty, neglected, and repulsive in their appearance; and it is sad that, whilst the carelessness is too often more than tolerated in high places, only too great readiness is shown to thwart its reform when, as in this case, it is possible to make capital out of the use of a word which, to most people, even to those of fair education, is so meaningless as the terrible word "baldachino." Were there less prejudice to contend with I should say that many of our square-ended churches would be more satisfactorily treated if their altars were under canopies than if they were adorned in any other way. I have myself had the satisfaction of restoring to its old use, with the Bishop's consent, an altar under a wooden tester under an arch on the north side of the nave of Burford Church, Oxfordshire. This is really a baldachino supported on oak posts, almost every part of it being old. And every one who has looked closely into the question knows that in very many square-ended chancels or choirs in England the altar was never intended to be put against the east wall. Carlisle Cathedral is a good example of this, and Ripon was until the recent unfortunately destructive alteration of its choir arrangements. Furness Abbey, Arundel Church, Stone Church, Kent, and Warfield Church, Berks, are other examples, and in all of them the buildings are square-ended, without chapels, to the east of the choir, and in my judgment it would not unfrequently cause less interference with old work behind the altar to erect such a canopy as I proposed for St. Barnabas, than it would be to erect the usual reredos. It is self-contained, does not necessarily touch or interfere with the wall, and consequently never need conceal any old feature, aumbry, arcade, or whatever it may be. As to the comparative innocence, in the eyes of a suspicious or extreme Protestant, of a baldachino founded on any old model, and a reredos such as has been erected in churches and cathedrals without end, with full legal and episcopal consent, I cannot conceive of any question being raised. The one is of necessity confined in the scope it affords for decoration, is pure and simple in its form, and has little if any space for colour or sculpture. The latter may be, and often is, gorgeous in colour, covered with sculpture which to some eyes is more or less objectionable, and altogether much more demonstrative. A man may object to the latter because he may think it is attended with some risk of image worship; but I conceive if he objects to the former he may as well object to the canopy over the font, the canopy over the bishop or over the preacher, and finally to the dome at St. Paul's itself, which (as has been well pointed out) is in itself the supreme example of a baldachino.

Rich and Poor Limes.

D. ARAGO.

Lime, whether in a state of purity or (as is more usual) mixed with other substances, is the material used from the remotest times to bind together stones and all the constituent parts of buildings. If lime be not found in any part of the globe pure, the rocks from which it may be extracted—the calcareous rocks—exist almost everywhere. No mineral is so widely distributed by nature. It is rare that calcareous stones are entirely pure, or exclusively composed of lime and carbonic acid. Their substance is usually made up of silex, aluminum, magnesia, oxide of iron, manganese, &c. Thence the terms adopted by mineralogists of argillaceous, magnesian, ferruginous, or manganesian limestones. These limestones furnish by roasting very different limes. Builders distinguish many kinds of them—rich lime, poor lime, hydraulic lime. Rich lime increases greatly in bulk when slaked; its weight is then more than doubled. This property would be very valuable in respect of economy did not rich limes remain a long time without hardening, especially in the centre of masonry, and particularly where they are kept from the action of the air. Rich limes, moreover, are dissolved to their last particles in water frequently renewed. This solubility of the lime in time converts masonry into mere heaps of stones—quay walls, for instance, which have been supposed to have been built of strong masonry and with the greatest solidity. Is it necessary to site examples to show that the rich limes will not harden without the action of the air? We may point to the fact that M. Treussart, having had to reconstruct in 1822, at Strasburg, the foundations of a bastion built in 1666, found there the mortar as fresh as if the masons had laid it some few hours before. A similar circumstance was observed at Berlin by the architects who took down one of the pillars of the tower of St. Peter, built about eighty years ago. Are we required to show that the constant action of water dissolves rich limes in masonry? We choose among a thousand examples the demolition of the remains of the ancient sluices of the Vilaine. During this operation it was found that, by the dissolving of the rich lime, there remained behind the revêtement walls nothing but masses without cohesion—simple heaps of loose stones. Poor or thin lime has all the defects of rich lime, and moreover, as its name indicates, but slightly increases in bulk. The use of it is, therefore, as much as possible avoided.

NOTES AND COMMENTS.

The foreign policy of Russia and its inevitable embroilments in the future do not monopolise the attention of the Russian Government. Like the steam hammer which can crush steel into dust and crack a nutshell, the Imperial power is occupied with the establishment of an academy of art in Rome as well as with the fortifying of Batoum. For some time past young painters, sculptors, and architects have been sent from the North to study in Rome at the expense of the Treasury, but there is no official residence for them resembling the Villa Medicis, which is open to the French students. The Russian artists are allowed a choice in selecting their lodgings. Some check is exercised over them by the superintendence of the Ambassador, and it is expected that every year examples of their work will be sent to St. Petersburg. A few years ago an offer was made for the Barberini Palace, but the purchase money demanded by the owners was so high that the Government recoiled. It is now understood that the negotiations for the Villa Patrizi have been more successful, and that the building will be transformed into an academy and placed in charge of M. Bogolubof. Whether it is wise to keep students for three or more years in Rome is a question about which there is less unanimity now than formerly. The French students are of late allowed a good deal of latitude, and part of their time can be spent in one of the other cities of Italy.

The Lords of the Committee of Council on Education have appointed a committee consisting of Sir F. Leighton (chairman), Mr. Poynter, Mr. Alma-Tadema; Mr. Carl Haag and Mr. Henry Wallis, named by the Royal Society of Painters in Water-Colours; Sir J. D. Linton and Mr. F. Dillon, by the Royal Institute of Painters in Water-Colours; together with Mr. Sidney Colvin, of the British Museum, and Mr. Armstrong, of the Science and Art Department, to consider the question of the action of light on paintings in water-colours. Captain Abney and Dr. Russell, who have for some time past been making a scientific investigation of the action of light on the various pigments used in painting, will inform the Committee of Artists of the method and nature of their inquiry. With this information before them the committee will be in a position to judge whether there are any further points which they would desire to suggest to Captain Abney and Dr. Russell for investigation, or whether there is any inquiry which they would themselves wish to carry on.

The report of the Association for the Promotion of Fine Arts in Scotland states that during the past year a sum of 3,424*l.* 1*s.* has been subscribed. Twenty-five oil paintings and ten water-colour drawings were purchased from exhibitions in Edinburgh, at a cost of 741*l.* 15*s.* In addition, Mr. George Reid, R.S.A., was paid 262*l.* 10*s.* for a series of water-colours illustrative of the Clyde. It is proposed to present to the subscribers a photogravure measuring 32 inches by 22 inches, after Sir Noel Paton's picture, *The Quarrel of Oberon and Titania*, in the Scottish National Gallery. The plate will be produced by Mr. Annan and Mr. Appleton. Since its formation the Association has obtained upwards of 240,000*l.* In the balloting for pictures which took place after the annual meeting, a great many subscribers living at a distance were successful. Pictures will find their way to Brisbane, Sydney, Adelaide, Toronto, Bombay, Calcutta, Demerara, Coromandel, Sumatra, Valparaiso, &c.

The forgeries of Bank of England notes, which are circulated abroad as well as in England, have become a serious grievance. The advertisement from Scotland Yard, which appeared on Monday, reveals that London is not exempt from them. Hitherto the authorities in Threadneedle Street supposed that protection was insured by the paper, water-mark, and style of printing. It is now found that all three can be imitated. The question should be asked whether much could not be done by introducing more art in the notes? The figure which Maclise designed, and that is engraved, is on too small a scale to be inimitable. The late Paul Baudry was commissioned by the Bank of France, and the allegorical figures which now appear on the back and front of the notes are in so good a style as to be beyond the power of ordinary engravers. Supposing the Directors of the Bank of England employed the President of the Royal Academy and the best line engraver in the preparation of a new design, would not more security follow? Beautiful contours being difficult to copy are certainly worth the attention of bank directors. At present the English notes cannot compare in beauty with foreign notes.

Some months ago the collection of Japanese enamels belonging to Mr. W. J. Muckley, the flower painter, and formerly head-master of the Manchester School of Art, was purchased by Mrs. Abel Heywood. That lady has now presented it to the Corporation of the city, for the benefit of the citizens of Manchester.

The sum of 10,000*l.* is about to be expended by the Congress of the United States upon a statue or group which will be commemorative of the services rendered to the United States by Lafayette and his companions during the War of Independence. The French sculptors, MM. Bartholdi and Falguière, have already sent in models. Apparently they have not been considered entirely satisfactory, since M. Mercié is now preparing a model by request.

An Institution of Permanent Way Inspectors has been formed, and the first general meeting was held in Birmingham on Saturday, under the presidency of Mr. G. W. Keeling, C.E. It was suggested that, when formally established, the new society should be recognised by the Institution of Civil Engineers. The railways in Great Britain, according to the President, are now nearly 19,000 miles in length, and the rails, which originally weighed 40 lbs. per yard, now weigh 90 lbs. Among the subjects recommended for investigation was the "creeping" of steel rails on single lines. The right-hand rails creep in a contrary direction to the left-hand, although the one rail has frequently to creep uphill. The cause of this has never yet been satisfactorily explained. In Germany to check the "creep" angle fish-plates are sometimes used, the projecting flanges at their base abutting against spikes on the sleepers.

The parish church of Hythe is now being restored under the direction of Mr. Pearson, R.A. A shaft having been sunk in the churchyard, the crown of an arch was revealed, and at a depth of 14 feet below the surface the footings were found of a very fine Early English doorway communicating with the crypt. The marble column on the left-hand side was in its place, and the stonework in an excellent state of preservation. The mouldings are of the same character as those of the main entrance to the crypt, though not so rich, and the capital and shaft, which have been already unearthed, are almost identical with those of the existing doorway. If, as is conjectured, the adjoining garden is the site of the old monastery, it is probable that on high festivals the monks marched in procession through the crypt, passed out through the newly-discovered doorway, and re-entered the church by a door on the east wall of the north transept, the jambs of which may still be seen. Soon after the suppression of monasteries in the time of Henry VIII. this entrance was probably disused and the soil allowed to accrete until in time it became completely covered up.

The Isle of Man is not a region in which there is much building, and the laying of the foundation-stone of a new hospital and dispensary, on Monday, was an event of some importance. The site and 5,000*l.* have been given by Mr. and Mrs. Noble. The building will be called "Noble's Isle of Man Hospital." Accommodation will be provided for fourteen male and fourteen female patients in the general wards, and for four patients in smaller wards. Private wards will be likewise provided. The building will be faced with red pressed bricks and terra-cotta dressings. The contract is being carried out by the executors of the late William Gradwell, of Barrow-in-Furness, for the sum of 4,038*l.*, from plans by Messrs. Bleakley & Cubbon, architects, Birkenhead.



Gonzales pinx.

THE WEDD

An Etching from "L'Art.

Printed by Sprague & Co

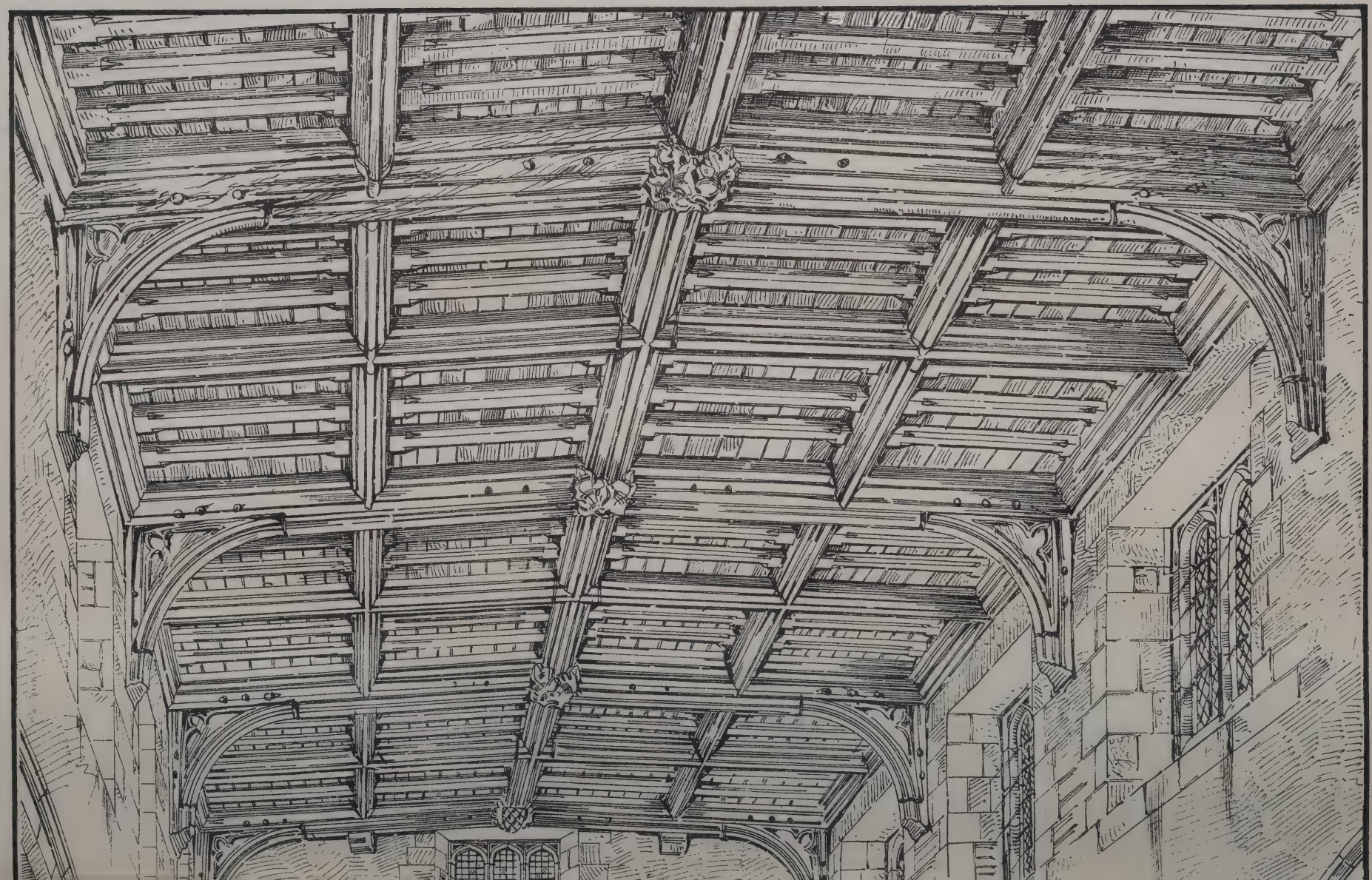
ly 30th 1886.

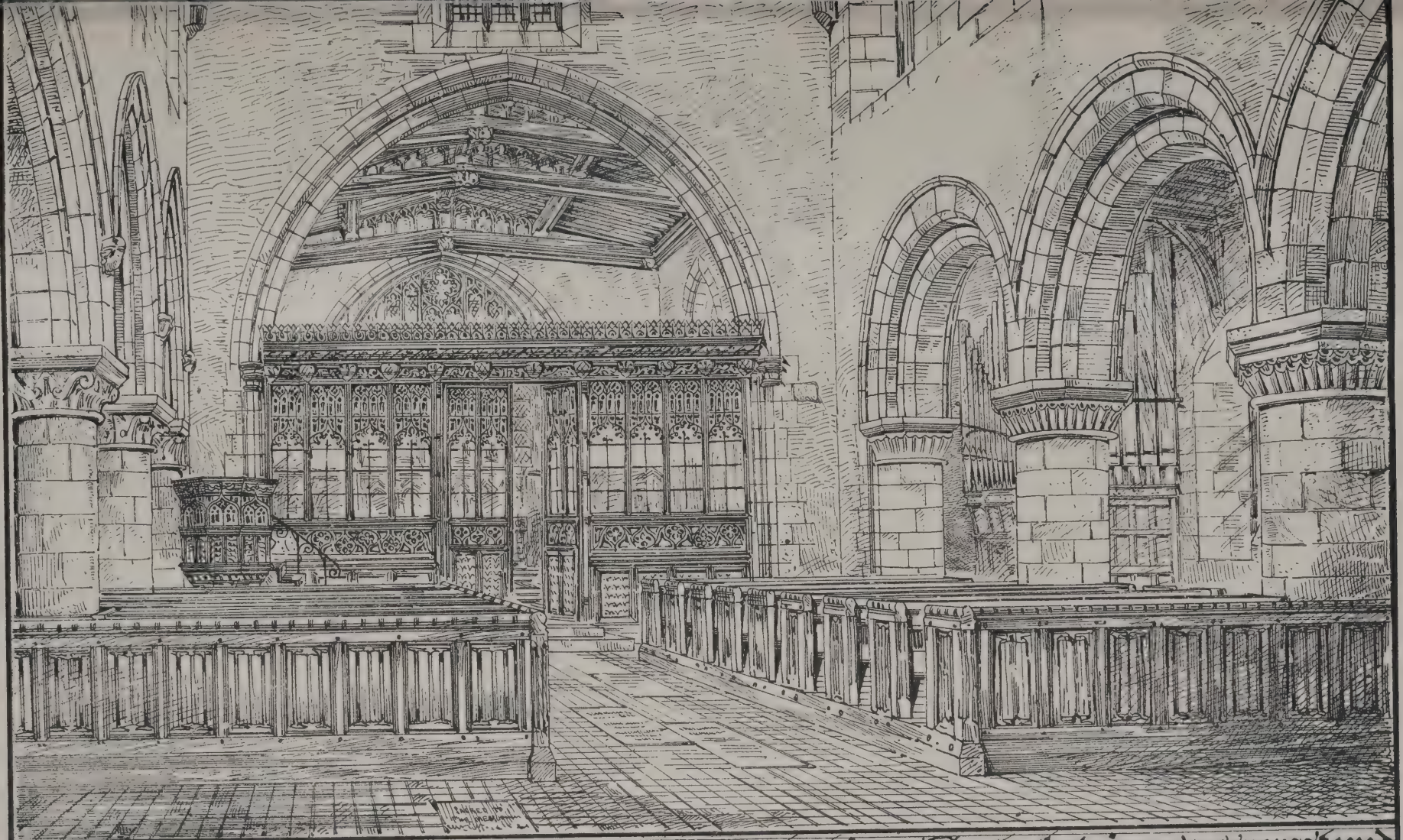


A. Lalauze sculp

G PRESENTS.

ns Lane Cannon St EC.



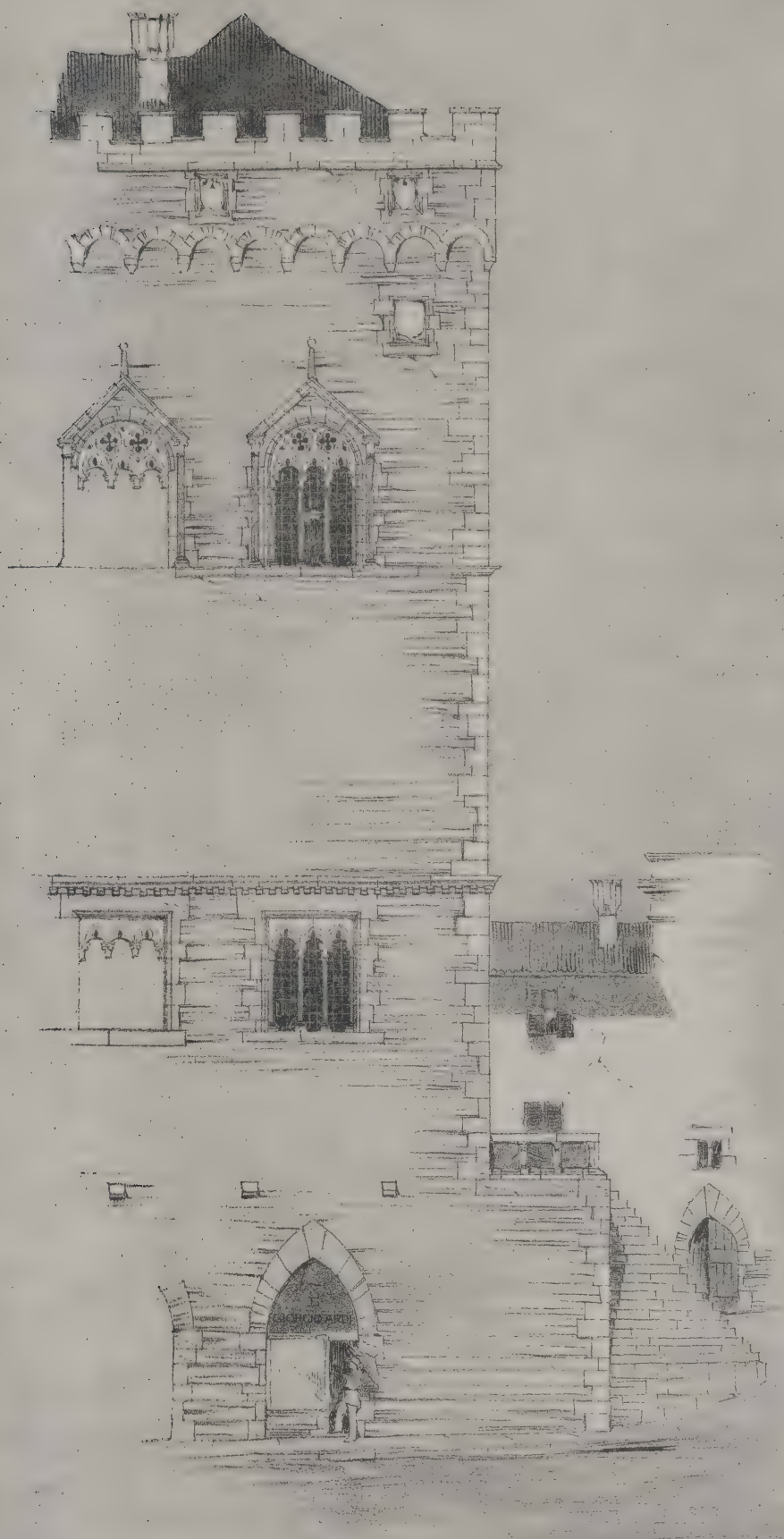


All. Saints. Youlgrave. View. of. Nave. looking. East. shewing. screen. restored



SANTA FOSCA, VENICE.

Drawn By R. BARRATT.



INK PHOTO SPRAGUE & Co LONDON

PALAZZO MUNICIPALE, PERUGIA.

Drawn By E.G.HARDY.

ILLUSTRATIONS.

THE WEDDING GIFTS.

THIS etching, which is taken from *L'Art*, shows the influence of FORTUNY upon his countrymen. It will be remembered that in his works the backgrounds are utilised to an almost unprecedented extent, and however fantastic the ornament may be, it does not seem out of place. M. GONZALES has taken great care in painting the room, but if a plainer background were substituted the composition must suffer. The etching is by one of the celebrities in the art.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 11. INTERIOR OF YOVLGRAVE CHURCH.
NO. 12. CAMPANILE OF ST. FOSCA, VENICE.
NO. 13. PALAZZO MUNICIPALE, PERUGIA.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

ON Monday last the forty-third Congress of the British Archæological Association was opened in Darlington under the presidency of the Bishop of Durham.

The President, in his opening address, said that archæology was every day assuming a more scientific attitude. He knew no part of the country where there were more objects of interest for the archæologist than the county of Durham and its immediate neighbourhood—the area which they had undertaken to explore this year. Moreover, it had a special attraction for the antiquarian in the fact that the earliest ages yielded the richest harvest. These northern counties had no small hand in the making of England. The ancient kingdom of Northumbria was for some generations the focus of light and learning; the centre of civilisation and of order in this island. The present county and diocese of Durham is the nucleus of the old Northumbrian kingdom. Following the practice of several of his predecessors, he should adopt a rough chronological order in the few remarks which he had to make. It was a recognised maxim in political economy that the most valuable legends of economic science were to be learnt on the frontier of cultivation. The corresponding rule seemed to hold good with the history of races and empires. If they would appreciate the true greatness of England, and of the English race, they should go not to Manchester, or Liverpool, or Glasgow, not even the great metropolis itself, but to India, Australia, and America for its most striking manifestations. In like manner Roman greatness was best measured and appreciated on the Roman frontier. When they considered what recent scientific discovery and invention had done for themselves, how largely they were indebted to steam and electricity, and how crippled they would feel themselves if they were restricted once more to the means of travel and communication which satisfied their great grandfathers—they would be filled with admiration at the achievements of the Romans seventeen centuries earlier in the remote provinces of the empire, distant hundreds and even thousands of miles from the centre of government. Hadrian's Wall, through great tracts, traversed very sparsely inhabited country districts with only here and there a homestead at wide intervals. But the remains showed that in the time of the Roman occupation it must have gathered about it, throughout its whole length, a large and varied population, very much larger than had inhabited the district at any time since, and that this population was furnished with all the chief appliances of Roman civilisation. Again, how suggestive was the inscription found but a few years ago at South Shields! The husband, a Syrian from the far East—perhaps a legionary, perhaps a merchant—inscribed a memorial stone, partly in the acquired official language of Rome, partly in his native Palmyrene tongue and character, to his lost wife, a woman of British birth. The extreme north-west and the extreme south-east of this vast empire were thus linked together by the binding power of the Roman ascendency. A great ideal led to great results. Her most famous poet fixed the ideal for Rome in the charge "Tu regere imperio populos, Romane, memento," and splendid achievements followed on the recognition of this mission. They claimed it not the least merit of archæology that it counterbalanced the vagaries and redressed the injustices of literature. Probably there were no two sovereigns to whom Rome owed so great obligations, none who did so much to preserve her from early decay, as Hadrian and Antoninus Pius. To both those great emperors literature had been cruelly unjust. The historical record of these two long and illustrious reigns—of the former more especially—was miserably scanty. Yet their fame was written across this island from sea to sea in imperishable characters of stone; and elsewhere likewise the monuments relating to this period were eloquent, where the voice of history had been gagged. The Roman Wall is a speaking monument to the policy of Hadrian. The proximity of the Roman wall had scored Durham with roads and dotted it with stations. Thus, Watling Street—our Watling Street—entered Durham at Pierce Bridge, where it was traceable in the modern road for miles straight as an arrow, and traversed the whole county from south to north in three giant strides, each footprint being marked by a Roman camp—Binchester, Lanchester, Ebchester. Another great road, beginning at St. David's and passing through Birmingham and York, entered the county of Durham (probably at Pounteys Bridge), and, crossing the Wear, terminated in the north at the Tyne. But these two main arteries by no means exhausted the road system of the Romans in this county. Local names in abundance testified to this fact. Chester-le-Street, Stainton, Leamside, might serve as examples of many such names which indicated the Roman occupation. The Roman occupation ceased early in the fifth century. The native British were not permitted to build unmolested on the foundations of Roman civilisation. A whirlwind and a deluge of foreign invasion swept over the land, carrying everything before it. Hence there was an absolute discontinuity between the Roman and the Saxon era. It was in this second—the Saxon—epoch they boasted their possession of antiquarian treasures such as no other county in England could show. The light which afterwards spread over Europe through Alcuin, and ushered in the dawn of a new civilisation, was kindled in Northumbria by Hilda and Benedict Biscop and Bede from the spark transmitted from Iona. The remains of the twin monasteries of Benedict Biscop, St. Peter, Monkwearmouth, and St. Paul's, Jarrow, still existed "plain for all folk to see." The scepticism as to any genuine remains of Saxon architecture, by which former generations of archæologists sought to compensate for hasty and over-sanguine theories in other directions had passed away. Few, if any, would doubt that we now had at both these places remains of the original structures, and, happily, these were dated edifices. The actual dedication-stone of Jarrow, the younger of the two by about ten years, was extant. It declared that this was the church of St. Paul, on 9th of the Calends of May (April 24), in the fifteenth year of Eefrid the King, and in the fourth of Ceolfrid the Abbot, and under God's guidance, the founder of the said church, *i.e.*, in the year A.D. 684. The remarkable fact was that, though the Romans were such eminent builders, they left no disciples behind them in these parts. The twin churches of St. Peter and St. Paul were modest and humble structures indeed compared with the mighty piles reared for civil and military purposes by the Romans. Yet Benedict Biscop was obliged to import masons from the Continent to erect them, as he afterwards imported glaziers to fill the windows. The churches hitherto built in these parts were wooden structures, as was the case with the earliest Lindisfarne Church, built by St. Finan about twenty years earlier. These were the words of Bede—"entirely of hewn oak, and thatched with reeds." This earlier style Bede called the Scottish—*i.e.*, the Irish, which was thus distinguished from the Roman. The twin monasteries of St. Peter and St. Paul were named after the two great Basilicas of the city of Rome. Benedict Biscop paid several visits to Rome in connection with their building. He summoned an instructor in chanting from Rome. The style of architecture was Roman. This was the first intermingling—momentous in its consequences—of two separate streams of Christian teaching and influence in the Northumbrian Church. Hitherto the Northumbrian Church had derived everything from the Irish Christianity of Iona. From this time forward the power of Roman Christendom made itself felt with ever-increasing force. He had now arrived at the Norman period, and how could he do otherwise than take them at once to Durham? If Monkwearmouth and Jarrow and Escomb had shown the beginnings of English Romanesque, here, at a distance of a few miles, they had its climax and its latest efforts. Durham exhibited a complete series of Norman work in its most typical and splendid forms. The series commenced with the chapel in the castle, and it ended with the Galilee of Pudsey. The first reminded them in its rude sculptures of Saxon work; the last was already on the very verge of Early Pointed. Of Durham Cathedral he ventured to think that it had no rival at home or abroad—a splendid architectural jewel in a perfect natural setting. Before leaving Durham he might call attention to three broad facts which stood out in the inspection of the buildings—the cathedral, monastery, and castle. In the first place, they were brought face to face with the *cultus* of St. Cuthbert—a phenomenon unique, at least, in England, in its strange character and in its far-reaching issues, for the case of St. Thomas at Canterbury was hardly a parallel. The Danes proved the greatest benefactors to the Northumbrian monks when they expelled them from Lindisfarne. To these wanderings St. Cuthbert owed his exceptional fame; and out of this fame sprung the "patrimony of St. Cuthbert," with all its ulterior consequences. In the next place, they found themselves confronted with another great and far-reaching fact, intimately connected with and flowing out of the "patrimony of St. Cuthbert." This was the Palatine jurisdiction of the Bishops

of Durham. The princely coronet by right encircled the mitre of the Bishop of Durham alone among English prelates. The sword was the accompaniment of the pastoral staff in the arms of the Bishop of Durham. He was glad to see that this Palatine power—this *imperium in imperio*—which grew up gradually and mysteriously in the early centuries of the Northumbrian episcopate and was swept away by one stroke exactly fifty years ago, would be the subject of a special paper at this congress. There was a third and last point to which he desired to direct attention. The cathedrals of the old foundation were the homes of corporations of secular priests. The cathedrals of the new or Henry VIII.'s foundation were monastic institutions, the homes of regular clergy. It seemed to him that the most perfect type of the former for the study of the archæologist was Wells, where the ancient buildings were so largely preserved; while the most perfect type of the latter was Durham. No old monastic buildings in England, so far as he was aware, were so complete. Almost all the principal elements of the monastery remained substantially as they were of old. The ancient churches in the rural districts of Durham were not thickly scattered over the ground, as they were, for instance, in the eastern counties. The population in ancient times must have been sparse, and the parishes were consequently very extensive. Six or seven parishes would have spanned the whole county from north to south or from east to west. There were now some 240 parishes in Durham. Of these, about two-thirds had been constituted during the present century, and (with few exceptions) during the last forty years. But while the old churches were comparatively few, it was quite the exception to find one which had not features of real interest for the antiquarian. Time would fail him to trace the development of Pointed architecture as exemplified in the churches of this county. He would only say generally that they had a much richer series of examples in the earlier stages than in the later, and that the decline was gradual as time advanced. Their finest examples belonged to the Early English or first Pointed; while the Perpendicular was the worst represented of all. They had not, so far as he remembered, a single purely Perpendicular church of any considerable pretensions. The great outburst of Perpendicular architecture, which had so lavishly studded many southern parts of England with large and imposing structures, made only a feeble impression upon Durham. Of castles, they could boast several striking examples—Raby and Brancepeth, Lumley and Hylton, and Barnards, not to mention Durham. He had been obliged to confine himself to the county of Durham, and even within this limit he was painfully sensible how very slight and inadequate his sketch has been, but he threw himself confidently on their good nature and indulgence.

During the day the churches of Aycliffe and Haughton-le-Skerne and St. Cuthbert's, Darlington, were visited.

At the annual dinner held at the Trevelyan Hotel, the Bishop of Durham presided, supported by the Mayor of Darlington. After the usual loyal toasts, Mr. Wright proposed the toast of "The President of the British Archæological Society," associating the toast with the president, the Bishop of Durham, whom he congratulated on his learned and excellent address that afternoon. The Bishop replied, and remarked upon the privilege and the honour he felt in occupying that position. He alluded to the richness of the archæological remains of Durham, and cordially welcomed the members of that association. The Bishop having to leave, Sir James Picton took the chair.

ARCHÆOLOGY IN ITALY.

THE splendid revival of archæological research in Italy which has been among the consequences of the removal of the capital to Rome has been during the past year, says a correspondent of the *Times*, fruitful in discovery, and promises an advance in archæological science such as has not been known since the Renaissance. There are circumstances connected with some of them whose interest is rather romantic than critical, of which the chief are the discovery of a Mithraic shrine and apparent place of meeting of a mystic association at Ostia, with curious indications of a kind of classical Freemasonry, fecund source of speculation to come; the great tomb out of the Porta Salaria, discovered many months ago, but of which the central chamber has only lately been found; the uncovering of a Pelasgic wall at Tusculum, the first evidence of Pelasgic occupation of the Alban range; the discovery of the site of Vetulonia, with most interesting historical (or rather prehistorical) indications; and the recent finding of a statue of Antinous in the excavations for the National Bank. This last, I learn from Professor Lanciani, was found under circumstances which induce him to sum up a romantic history for it, as read in the circumstantial evidence disclosed by it and its state. It would appear that it had been, at a distant epoch, thrown into a stream highly charged with carbonate of lime—probably the Aniene—and that in the Middle Ages it had been discovered and rescued, and after attempts to remove the deposit of carbonate of lime it had been hidden in a small chamber of some structure which was buried in the destruction of that part of the city. The statue is of Greek marble, and was evidently treasured, though slightly mutilated, previous to concealment, so that the Mediæval amateur who hid it was clearly one who appreciated the antique. This is not the first case of antique statues carefully concealed and brought to light in modern times, as all students of archæology will recall the *Venus of Melos* and the colossal *Hercules* now in the Vatican, which twenty-five years ago I had the pleasure of seeing raised from its grave in a drain, where it had been carefully arched over; but both these were probably pagan concealments due to reverence; that of the Antinous is as clearly due to æsthetic as the others to religious respect. The great tomb of the Via Salaria has a still more remarkable history—always following Lanciani's reading, and one could hardly have a safer—for it had evidently in early times been levelled as to its upper portion and buried in accumulation of *débris* and soil; then, or possibly before, used as quarry, so that only the side carrying the inscription remains entire to the cornice; then burrowed into as a Christian burial-place, the passage to the great chamber being dug into on both sides by *loculi*, and these again opened within the past two or three centuries, and then completely tunnelled under by a catacomb which traverses the entire foundation. This latter is not yet altogether cleared out, and a portion of the circle of the tomb is not yet disengaged from the surrounding tombs and columbarian-like structure which were built against or around it. The work on it is now suspended, I presume until next winter. The discovery of Pelasgic walls on the Alban formation of hills is interesting, as, while abundant on the Sabine and Volscian hills in sight of Rome, the fact of nothing attributable to that epoch of civilisation being found on this group of hills was the basis of a theory, taken in conjunction with the primitive cemetery on Monte Albano under volcanic deposits, that this range, with the whole tufa formation of the Agro Romano, was possibly thrown up since the period of Pelasgic civilisation commenced. If this newly-found wall shall be decided to be genuine and not archaistic, it of course throws discredit on this theory, always a hazardous one, but not absolutely incredible.

Our ambassador, Sir J. Savile Lumley, has also added one to the list of remarkable discoveries, that of the site and ruins of the almost mythical temple of Diana at Nemi, made familiar of late by Renan's use of it as a parable on French history, and the priest of which was always obliged to be on his defence against any aspirant to his succession, every new-come priest being obliged to create the vacancy he desired to fill. The find in these excavations has been most bountiful, including one of the most remarkable and perfectly preserved Roman female portrait figures I have ever seen, though the body is represented by a draped herma to which arms, now lost, appear to have been fastened by iron bolts. Sir John's excavations in this most interesting site were cut short by the most absurdly exaggerated pretensions on the part of the proprietor, Prince Orsini, who insisted that Sir John should engage to clear the entire site, above a quarter of a mile square, carry all the *débris* to fill up a marsh on the shore of the lake, involving an expense of above 7,000*l.*, besides permitting Orsini to select from the find whatever pleased him without restriction, failing acceptance of which Sir John was compelled to fill up whatever had been excavated—so that now the locality is restored to the *status quo.* Orsini indeed!

Similar abuses of proprietary rights over sites of historical interest and the want of a common law for the regulation of excavations throughout the kingdom have induced Senator Fiorelli, the head of the Archæological Department, to address to the Minister of Public Instruction a relation on the laws concerning the excavation and possession of objects of archæological value or artistic interest. This relation reviews all the laws now in vigour or promulgated by defunct Governments in Italy, beginning with the States of the Church in 1244, when Innocent IV. revoked the cession of half the Flavian amphitheatre to the Emperor Frederick II., and covering the subsequent history of every province in Italy, where laws on the subject have been enacted. Deducing from these the inherited right to control the possession of antiquities, the relator lays down a complete system of prevision, uniform for the entire kingdom, for the regulations of excavations under State supervision and by official permission only.

The importance of this legislation is shown by the instances of valuable historical indications discovered by intelligent record of the circumstances attending finds, as well as by cases of what might have been such, becoming worthless from concealment or ignorance of the *provenance*; and in another way by the mass of counterfeits of all kinds of antique objects which flood the market, purporting to come from Greece, from Asia Minor, &c., when a well-regulated system of supervision and registration or stamping officially would have thrown them at

once in the category of detected frauds. Fiorelli says on this subject:—"It is this want of localisation which most harms research, since false indications contaminate permanently the sacred patrimony of science, and investigation is turned from the most sure and profitable paths. We have lately seen objects attributed to Lucania which came from Latium; to Campania, others from Etruria; and to Attica things found in Tarentum." It is in the interest of science that this enormous trade in falsely attributed objects should be stopped; but still more, both in that of science and honest collectors, that the greater commerce in absolute forgeries should be suppressed by regulation of research. The number of forged terra-cotta figurines sold every year purporting to come from Tangara, Corinth, Attica, Megara, Myrina, Kyme, &c., is incredible, and probably three times as great as that of the total number found. They are mostly made in Smyrna or, haply, by Italian artists, and so perfect are the imitations, even to breaking a statuette into twenty pieces to add plausibility to it, that there are said to be only three people in Athens who are competent to determine their genuineness. All the recently-found large groups from Asia Minor are denounced by Reinach as forgeries, and there are few judges so competent as he, being an experienced excavator and archæologist of the widest education. Then, a new trade is springing up in bronze mirrors. One was offered me the other day which was evidently antique, but the engraving on which was of the subject of David and Goliath. The artist knew more of Bible history than of mythology. A long chapter might be written on the ingenious forgeries I have seen and known the history of—they would include objects ranging from portraits by Rembrandt to archaic Etruscan gems, and all of which have deceived recognised experts.

It is to be hoped that Fiorelli's proposed law will obtain not only in Italy, but in Greece, and, if it were possible to enforce law, in Asia Minor; for, if not, the multitude of forged *objets de Musée* will soon confound all archæological science. All these are made possible by the necessity of keeping excavation secret or of not supervising it efficiently. If Greece and Turkey will adopt Fiorelli's law they can, within certain limits, stop clandestine commerce by leaving no inducement for it, and nobody will be the worse for it except the counterfeiters. The project of the Department of Antiquities will offer especial facilities for excavations and acquisitions to foreign societies and museums, while guarding strictly the interests of science.

THE BIRMINGHAM ASSIZE COURTS.

THE General Purposes Committee of the Birmingham Town Council in their report state that, in accordance with instructions given to them by the Council, they invited architects to send in designs for the proposed new Law Courts. The committee were enabled to make arrangements with Mr. Waterhouse, R.A., for the purchase of his sketch plans, which were subsequently lithographed and sent to each competitor, on payment of a charge of one guinea. Full instructions were prepared by the town clerk, in conference with Mr. Waterhouse, and sent to the competing architects. No less than 571 applications were received for copies of the instructions, and 144 firms or individuals also applied for the sketch plans. On February 1, 126 separate sets of designs were received, and the committee were engaged for several days afterwards, in conference with Mr. Waterhouse, in selecting from this number five designs which appeared to them best worthy to compete in the final competition. Mr. Waterhouse in his report said:—"I have carefully examined the designs sent in in the first competition, under 126 separate mottoes. Many of these are of unusual excellence, and it has been a work of impossibility to select from among them five for the final competition without excluding some which appear to me in every way worthy of such distinction. In this difficulty I have been aided by the opinion of the sub-committee, who have discussed with me the merits of the designs from a practical point of view, and especially of those from among which, in my opinion, the first five ought to be selected. The result of this conference is that, out of the seven designs from which I concluded the final selection would have to be made, the following are chosen:—(14) 'Two Judges of Assize,' (86) 'Law and Order' (design A), (88) 'Via Una,' (103) 'Terra-cotta,' (121) 'Sincerity' (elevation No. 2)." Mr. Waterhouse made several suggestions with reference to the preparation of further detail drawings for the final competition, one of the principal ones being that the attention of competitors be called to the importance of abundant light everywhere, not only in the several courts and offices, but in the corridors also. The sketch plans were defective in this particular in one or two points, and it was essential that in the finished designs such defects should be remedied. A further point to which attention was directed was the requirement that the elevations towards the passage and Steelhouse Lane should be of an inexpensive character, as the condition limiting the outlay to 78,000*l.* would be rigidly enforced, involving the rejection of any design, whatever its other merits, which in the opinion of the assessor was likely to transgress this limit. In returning the selected designs to their respective authors for the preparation of further enlarged and detail drawings for the final competition, further instructions were prepared by the town clerk, in accordance with Mr. Waterhouse's suggestions, and sent to the successful competitors on March 11 last. On June 2 the five sets of further plans were duly received from the selected competitors, and were inspected by the committee and the consulting architect. On June 19 the committee received the following report from Mr. Waterhouse:—

"20 New Cavendish Street, Portland Place, W., June 18, 1886.—I have carefully examined the five designs sent in for the final and limited competition, namely (1), 'Law and Order'; (2), 'Terra-cotta'; (3), 'Sincerity'; (4), 'Via Una'; (5), 'Two Judges of Assize.' I find that, while the authors of these designs have all adhered to their original conceptions, some of them have introduced minor changes into their plans, such as giving better light to corridors and greater convenience of arrangement. All have supplied the extra drawings asked for, and have prepared them in compliance with the requirements of your second instructions. I may observe that in 'Law and Order' your assessor's plan is rigidly adhered to; and in 'Sincerity,' 'Via Una,' and 'Two Judges of Assize' its general features are retained, whilst changes have been made in some of the details which, without doubt, are for the most part improvements. 'Terra-cotta,' on the other hand, makes great changes, principally in that portion of the building facing Corporation Street. This departure from the sketch-plans has not been done recklessly, but is the result of a bold and original treatment of the question. After very anxious consideration I have come to the conclusion that, notwithstanding the obvious merits of some of the other designs, 'Terra-cotta' is the one which I ought to recommend for your adoption. The charms of this design are in its thorough mastery of details, their delicacy, and in its general picturesqueness. This picturesqueness is secured in great measure by the plan being kept rectangular with itself throughout, and so not conforming with the line of Corporation Street. It is the work of a master in his art, and the general arrangements seem to me to be without defect, unless it be considered that the public hall is placed too near the entrance; an inconvenience which the author has met by a wide witnesses' corridor running transversely across the building. This design is described as being faced throughout of terra-cotta and brick, undoubtedly in my opinion the best materials for Birmingham, and obviously more satisfactory than a treatment which would give a stone front to Corporation Street, and use an inferior material towards the passage and Steelhouse Lane. I have no doubt that this design can be erected for the 78,000*l.*, the limit of your expenditure."

Before finally arriving at their decision the committee invited the members of the Council, the magistrates and their clerks, the coroner for the borough, the members of the local bar, and the Committee of the Birmingham Law Society to inspect the five selected sets of designs, and the committee have further had the advantage of meeting a deputation appointed by the magistrates, and receiving certain suggestions from them which appear to the committee well worthy of consideration. Ultimately, and after further consultation with Mr. Waterhouse, the committee have resolved, "That this committee, agreeing with Mr. Waterhouse as to the general merits of the design marked 'Terra-cotta,' recommend the Council to select the author of that design as the architect of the new Law Courts; and they further recommend that the architect be instructed in conference with the committee to make such modifications in the plans of the building as in their opinion may seem desirable."

The *Birmingham Post*, in describing the design marked "Terra-cotta," says:—The Corporation Street frontage will be strikingly bold and picturesque, and will yet be worked out with all the delicacy and richness of ornament to which a red brick and terra-cotta structure lends itself. Of the three portions into which it is divided, the central one is 80 feet in length, and is flanked by two turrets, rising each to a height of 105 feet, and setting off, as one looks up from the street, the crested ridge of the public hall, 75 feet in height. The upper portion of this central piece of frontage is set back some 12 feet from the lower, and the design is further broken by buttresses, which are carried up 50 feet high to the leads, and have terra-cotta terminals. Between the buttresses are five broad three-light mullioned windows, which on the ground floor have square heads, and on the first floor elliptical. They will be filled in with tinted glass. A fine central entrance stands out from the façade, is furnished with an iron gate of a richly-embellished character, and has a turreted gable surmounted by an ornate clock tower and an open belfry, which are crowned with a sculptured figure of Justice. The left wing of the façade projects about 30 feet beyond the central portion of it, and the right wing falls back a shorter distance. In each the mullioned windows are continued, and each has a handsome gable with a

flèche. Behind the public hall and the wings, the building is a clear storey lower till the Steelhouse Lane frontage is reached, but this elevation has not been elaborately wrought out like the other. The main entrance to the building is by a wide double flight of stone steps and a vestibule, left and right of which are arranged a post and telegraph office, and a retiring-room for ladies. From the vestibule the public hall is directly entered—a fine apartment, 80 feet long by 40 feet wide, and fully 60 feet in height. The design does not touch the embellishment of this hall, which at first will only be relieved by the coloured rays streaming down from the clerestory windows in the front, and by a small drinking fountain; but it will afford some day, as the architect suggests, an ample field for decorative work in fresco and sculpture. The arrangement of the interior places the magistrates' courts and the inquest rooms, which are most often used, nearest the entrance, and the assize courts in the rear. The former extend across the building, and are four in number—three for the magistrates, measuring 40 feet by 30 feet each, and one for the coroner, measuring 30 feet by 24 feet. Of the three corridors by which they are separated, the central and the widest will be known as the judges' corridor; that on the left is for the use of persons attending the coroner's court, and that on the right for the magistrates, &c. The judges' corridor runs the entire length of the building, and terminates in a hexagonal vestibule, from which the judges' retiring rooms, each 17 feet by 16 feet, are entered on either side. These, with two retiring rooms for the juries, are behind the judges' benches. Each court of assize measures 56 feet by 40 feet. The plan upon which the interiors of the courts are arranged is uniform throughout, and was suggested to the various architects after long consideration. It combines many merits. The bench extends across the court at one end, and the witness-box is just under it on the right hand side of the magistrates' clerk's desk. On the left-hand side are seats for reporters. Rows of seats for solicitors and members of the bar face the bench, and behind them stands the dock, except in the civil court, where it is dispensed with. At the other end of the court there are two rooms for witnesses in waiting, and the floor slopes upwards from the solicitors' seats to a public gallery above these waiting-rooms. Special attention has been given to the desideratum of so arranging the ingress and egress of the general public that it shall not interfere with the business of the courts. Not only, therefore, is there no means whereby the public can invade the courts from their galleries, but people who are not actually concerned in cases under hearing must come into the building by a separate entrance in Newton Street. This leads by a direct staircase to a transverse corridor on the floor above, whence alone the galleries are reached, and from which none but witnesses may descend to the ground floor. It will be understood that in order to cause the galleries to be thus easily and securely approached, the magistrates' and coroner's courts are placed, so to speak, feet to feet; but it is precisely on this point that, as we understand, the General Purposes Committee has been asked to confer with the architect with a view to some modification of the plans.

It is stated that the magistrates would look with great favour upon an arrangement which would admit the public at the opposite end of their three courts. Added to the difficulty of making this change on the plan at present proposed, there is the fact that one of the magistrates' courts is to be used for overflow cases at a busy assize; but no doubt is entertained that if the change commends itself to the architect, his ingenuity will be equal to the task of contriving it. The purpose of the change is to avoid any clashing between the suitors at the assize courts and the witnesses at the magistrates' courts, when judges and justices are sitting at one time.

In connection with the magistrates' courts there is a large suite of accessory rooms. That court which will occasionally be used for assizes has a judge's retiring-room behind the bench, measuring 22 feet by 15 feet. What will be termed the first court has in a similar position a retiring-room for the justices and a room for the summoning officer, while the other magistrates' court has attached to it a much larger retiring-room, the dimensions of which are 34 feet by 21 feet. Near to this room, and looking out into Corporation Street from the right wing of the façade, there are rooms for the magistrates' clerk and his clerks. The coroner's court has also its retiring-room, and its room for witnesses in waiting.

A very fine suite of rooms surrounds the two assize courts. Behind them, lighted and entered from Steelhouse Lane, are the barristers' rooms—a large robing-room in the basement, a reading-room, 60 feet 6 inches by 25 feet, on the ground floor, and numerous consultation-rooms on the ground floor and the first floor. Down the outer side of each court runs a solicitors' corridor, with rooms for defendants' and plaintiffs' witnesses to be heard in the civil court, and for the witnesses of prosecution and defence to be examined in the criminal court. The High Sheriff's room is close by the advocates' entrance—*i.e.*, on the same side as the civil court; the rooms of the Clerk of Indictments and Clerk of the Crown are on the opposite side. There are rooms and lockers for solicitors and a room for solicitors' clerks. The grand jury will be accommodated in a spacious room situated above the largest of the magistrates' retiring-rooms, sufficiently removed from the bustle of the corridor, yet within easy access of the criminal court. Refreshment buffets take up the right wing of the façade, and there is an elaborate provision of lavatories, &c., for all the departments. The basement does not extend over the whole site, but it comprises, nevertheless, large beer and wine cellars, a boiler-house, living rooms for the curator, provision for heating and ventilation, a number of cells for prisoners in waiting, and in connection with them an apartment for the governor of the borough gaol, as well as the barristers' robing-room. It need hardly be said that with uses so varied the basement is not a place over which one may wander from one part to another. It is, in fact, a collection of separate basements, inaccessible for the most part one from the other. There is a second floor in the right and left wings of the façade; the left wing containing kitchen, scullery, larder, &c., and sitting and bedrooms for the restaurant-keeper; the right wing two bedrooms and a living room for servants. A good deal of intelligent attention has been paid to the matters of light and heating. For heating purposes fresh air will be warmed in chambers underneath the courts, and run through a number of coils. Fresh air for ventilation will be drawn down a shaft in one of the towers, screened and "washed" in its passage to the basement, and issued into the courts through a network of air ducts. As it is vitiated by use, it will be withdrawn through extracting flues by means of a steam-driven fan in the basement, and discharged by another upright shaft. With a view to preclude draughts, the entrances to the courts will be furnished with lobbies and double doors. The scheme of lighting seems to be admirable. The three parallel corridors which separate the various courts have glass roofs at the height of the first floor, while the roofs of the courts themselves are carried higher, so that light may be admitted through clerestory windows at the level of the public galleries. A dynamo machine will, moreover, find a bed in the boiler-house, and will generate electricity when it is necessary to provide artificial light.

The police force will have quite as much reason as the public to congratulate themselves on the abandonment of the Moor Street premises, and we are not sure that their jubilation will not be shared by that class of the population which is best acquainted with the old cells. The police-station soon to be quitted was unworthy of the town; of that which is to take its place the town might almost be proud. It will be a building 125 feet long, about 42 feet in mean width, and containing four storeys. Between it and the assize courts will run a new street 20 feet wide, indispensable to these latter for lighting purposes. The new building will have a frontage in Steelhouse Lane, and its interior will be divided into a section for offices and a prison. All who enter it must first pass into a spacious charge-office, measuring 27 feet by 20 feet, on the ground floor. In the basement, beneath this office, there will be a reserve room; in the upper storeys four rooms for the detective police, two of them 27 feet by 20 feet, and the other two 19 feet by 19 feet, together with two consulting-rooms. The cells will be eighty in number. Twenty of them will open on to a gallery on each floor, over the banisters of which one may look into a shaft giving light and ventilation to the whole prison. A circular staircase will connect the various floors, and an underground passage will cross the new street, whereby prisoners may be conveyed to the courts without being taken into the open air.

ARCHÆOLOGY IN LINCOLNSHIRE.

(*Concluded from page* 56.)

Somerton Castle.

IN looking upon the remains of the ancient castle before you three questions will naturally be asked?—1. Who was the builder? This was Anthony Bec, second son of Walter Bec, Baron of Eresby, born about the middle of the thirteenth century, and brother of Thomas Bec, consecrated as Bishop of St. David's, at Lincoln, in the presence of Edward I., his queen, Court, and eight bishops, on the occasion of the translation of St. Hugh's body, October 6, 1280, the whole cost of which ceremonial he defrayed. Three years later Anthony Bec was consecrated Bishop of Durham by his brother of St. David's. He was perhaps the greatest of the old magnificent bishops of Durham, and enjoyed the high-sounding titles of Count or Prince Palatine, Patriarch of Jerusalem, and King of Man. He took a prominent part in the Scotch wars of Edward I., and, at the head of 500 horse and 1,500 foot-soldiers, led the van of the royal army of invasion in person, when he was wounded in the king's service. Yet on three occasions he was severely taxed, perhaps we may say fleeced, by him, and once, when viewed with some jealousy, wisely propitiated the king with the gift of

this castle of Somerton, or one of his strongholds, as a proof of his loyalty. 2. Why was this castle erected, and what was its character? No doubt to serve as a stronghold for national and personal defence, when every man, as far as he could, sought to make his house his castle, and thus to provide means of defence for himself, his family, his tenants, and property. Very possibly a Saxon stronghold, or defended house, existed here in Saxon times, as suggested by the name "Toothill," given to a close near the castle, and the existence of a mound, or watching elevation, on the western side of the castle site, which may have been actually the Toothill. But of this we are quite certain, that the castle, of which we now see the site and its remains, was built by Anthony Bec in the year 1281, or two years before his elevation to the See of Durham, when he obtained a royal license to "crenellate," or fortify, his house at Somerton, which seems to indicate that he had an "aula," or mansion, here, before he erected this castle. It consisted of an area of 330 feet long from north to south, and 180 feet from east to west, defended at each angle by a circular tower three storeys high, rising from an outspreading foundation, and surmounted by a plain parapet and conical roof. The curtain walls were of the same height as the angle towers, and enclosed a central court. Portions of two more of these towers remain, and the site of the fourth is well defined still. The basement storey of the north-eastern tower is polygonal in plan, lighted by five small slits, and beautifully vaulted by means of a central pillar and wall-corbels carrying twelve vaulting ribs, and happily the south-eastern tower remains quite perfect. This is 45 feet high, and contains a vaulted polygonal room on the ground floor, and two others above it, each having a small lobby attached to it. It has two chimneys, each containing two flues, which are early examples of such luxuries, as they were then considered. 3. For what was this castle famous? In answer to which I will say, we have all heard of the romantic imprisonment of Richard Cœur de Lion in the Istrian stronghold of Ténébreuse, but very few, comparatively speaking, have heard of the remarkable imprisonment of John, King of France, in Somerton Castle, and indeed so little was known of this until of late that Somerton, in Somersetshire, claimed to be the place of his captivity, instead of our Lincolnshire Somerton, which claim was actually allowed by some, but can now never be repeated. After the famous battle of Poictiers, fought September 20, 1356, and the capture of the great Suzerain of France by the Black Prince, he was brought to England in the spring of the following year, and lodged in the palace of the Savoy; but in 1359, when there was some danger of a French invasion, King Edward thought it prudent to remove the French king to a remote and central spot, and chose Somerton Castle for his residence, and Lord D'Eyncourt to be his custodian. Accordingly that nobleman conducted him from Hertford, and arrived at Somerton on August 4. He was accompanied by his son Philip, and forty-two attendants, amongst whom were two chaplains, a clerk of the chapel, secretary, a physician, a minstrel, three furriers, three wardrobe men, two cooks, a fruiterer, spicemen, barber, and washer, and, above most of these, "Master John, the fool." Here he remained until February 14 of the following year, when, after his captivity at Somerton Castle for six months and two days, and fresh fear of a French invasion arose, he was conveyed to the Tower of London, where he arrived on March 28. Eventually, on the payment of a large ransom, it will be remembered, he was allowed to return to France, whence he nobly returned on the flight of his hostages from his high sense of honour, which led him to say, "If justice and good faith should be banished from all the rest of the world, these virtues ought still to be found in the word and in the heart of kings," and he died in London in the spring of 1364. I am reminded by the Rev. H. T. Cordeaux, the present rector of Boothby Graffoe, that one of the bells of his church is an ancient one, dedicated in honour of St. Cuthbert, and hence may not improbably have been presented by Anthony Bec after he was Bishop of Durham, because St. Cuthbert is the patron saint of Durham, and as the manor of Somerton forms part of the parish of Boothby; and there are several references of gifts made in King John's account book to Boothby—spelt Boby by his secretary—such as 3 montons, or 12*s.*, given to the Curé of Boby for Masses offered for him at Christmas, 8*s.* at the Epiphany, and 4*s.* 4*d.* at Candlemas. The builder of the castle may in like manner have made the offering of one or more bells to the parish church of his castle of Somerton.

All Saints, Harmston.

The only old feature of this church is the tower, which from extreme antiquity is interesting, and especially as forming one of a group of coeval towers in and about Lincoln and Grimsby, all of which appear to have been built soon after the Conquest, probably by Saxon masons working under Norman architects. The late church here was built, apparently upon the foundations of its predecessor, in 1717, and this has now for the most part disappeared in its turn through its thorough restoration in 1868. Its features follow the fashion prevalent in the latter part of the thirteenth century, when plate tracery was commonly used in windows before a further development of such ornamentation occurred. Those who remember what the late fabric was have reason to rejoice at the change, and especially with regard to its present internal appearance, which is in every respect well fitted for Divine worship, although, as chiefly a modern church, it is not so interesting to ecclesiologists as churches of past centuries, but few of the older portions having been incorporated in the present structure.

St. Michael's, Waddington.

Without, this church is not attractive, and has been sadly marred by the re-erection of its tower in the last century, not on the site of the former one, but within the westernmost bay of the nave, which sadly shortens it. Within, however, it retains some beautiful features of the twelfth century, namely, its aisle arcades, each of three bays, and its chancel arch. The pillars of these arcades have boldly foliated caps of an attractive character, and one of them is encircled in the middle by a band, called a "baguette" by French ecclesiologists. The caps of the chancel arch piers are of the same date, but the carving of their foliation is of a stiffer character. The entrance to the lost rood-loft still remains at the east end of the south aisle. The font also is an interesting specimen of the same period. The pulpit is a good old oak one of the time of James I. On the north wall of the chancel is a mural monument, commemorating the Rev. John Barnard, rector of Waddington. He was born at Caistor, in Lincolnshire, and became rector of Waddington and Fellow of Lincoln College. He was originally a writer, but married the daughter of Dr. Peter Heylin, a strong Royalist and High Churchman, and was appointed chaplain to Charles II. He chose to write the life of his famous father-in-law, although the Heylin family had commissioned Mr. Vernon to do so; and a fierce quarrel ensued between them, described by the elder D'Israeli in his "Quarrels of Authors." He died at Newark in 1683. Until 1867 this church was afflicted by a gallery at the west end, lofty pews, and wretched aisle windows, having wooden mullions; but then all these were replaced by more appropriate features, greatly to the improvement of the fabric. The date of the communion plate is 1669, and the oldest date in the parish register is 1564.

PUBLIC WORKS IN TURKEY.

THE English Consul, Mr. Henderson, in his report to the Foreign Office on the condition of the province of Aleppo, writes:—As regards public works much money has been spent and many telegrams have been despatched announcing the building of schools, colleges, hospitals, mosques, &c., but all these projected edifices of usefulness and benevolence have been abandoned after the laying of a few courses of stone, to be completed at a distant future. Some progress has been made, and an enormous sum of money collected from the population for the Aleppo-Alexandretta Road. The completion of the road for carriages has been duly announced, accompanied as usual by a shower of decorations, but the road is totally impassable for wheeled vehicles, and as it is six hours longer than the old route, the mule and camel caravans do not travel by it. An English engineer officer of high position inspected the road in December, and he found that it would require many years of labour and a large expenditure of money before the road will be of much public utility. There are also grave engineering defects which must be remedied to enable carriage traffic to circulate with safety.

Mr. Dickson, the Consul at Damascus, reports:—No works of public utility were undertaken during 1885, but on the arrival of the new Governor-General of Syria at the end of last autumn, more attention was devoted to municipal improvements. Orders were given to repair the roads and to widen the streets in the city; and in several places the bazaars have been demolished in order to admit the easy circulation of wheeled vehicles. The process, however, of reconstruction has been slow, and much inconvenience has been caused by the accumulation of rubbish in the public thoroughfares. A plan for running a tramway through certain quarters of Damascus has for some time past been in contemplation by the authorities, but nothing was done last year towards carrying it out, nor is there any immediate prospect of the project being realised.

THE MANCHESTER EXHIBITION OF 1887.

THE following scheme has been adopted for the jubilee exhibition which it is proposed to hold next year in Manchester:—Section 1—Industrial design, as shown in textile fabrics, pottery, metal work, &c., original drawings for manufactures of various kinds, examples of ancient fabrics and designs, architectural designs. Section 2—Industrial processes, textile machinery, engineering and general plant, and machinery in

motion. Section 3—Chemical and collateral industries. Section 4—Handicrafts: Workers in brass, iron, wood, ivory, needlework, &c.; illustrating ornamental work in great variety. Section 5—Representation of Old Manchester and Salford, in which the handicraft work of section 4 is performed; model of Ship Canal, showing docks, locks, waterways, &c. The committee of this section to be the Works Committee. Section 6—Fine Arts: Paintings, engravings, sculpture, &c., produced during the Victorian era. Section 7—Botanical, flowers and fruit, fairy fountains, electric light, music, refreshments.

The best position available for the exhibition would appear to be land in the neighbourhood of Old Trafford, where several lines of railways converge, which would afford ample means of transport and communication.

The Liverpool Exhibition is on 58,000 square yards, and cost about 17*s.* per square yard. The Edinburgh Exhibition is on 39,950 square yards, and cost 16*s.* a square yard. It was begun and completed in six months. If we adopt 40,000 square yards as the area to be covered, and this it is thought will be sufficient, the cost of building at 17*s.* per square yard will be 34,000*l.*; sundry charges and contingencies, 6,000*l.*; maintenance, 40,000*l.*; advertising and electric lighting, 20,000*l.*; total cost, 100,000*l.* Admission money, 15,000 persons per day, open 150 days, 2,250,000 at 9*d.* each, 84,375*l.*; charge for floor and wall space, 15,000*l.*; income from refreshment contracts, 9,375*l.*; income from advertisements, 5,000*l.*; sale of old buildings, 7,250*l.*; total estimated receipts, 121,000*l.* The charge for admittance has been taken at 1*s.* each person, but as this includes excursionists, who would pay less than that charge, the average is estimated to be 9*d.* each person. It has been ascertained, after due inquiry, that an exhibition of the character above described can be satisfactorily organised so as to be ready for opening by May 1, 1887.

CHURCH BUILDING AND RESTORATION.

Bamber Bridge, Preston.—Recently three foundation-stones were laid at the chancel end of St. Saviour's Church, Bamber Bridge, near Preston. It is proposed to considerably enlarge this church by erecting new chancel, transepts, organ chamber, and vestry, and further improve and adorn the existing building from designs by Mr. T. Harrison Myres, A.R.I.B.A. (Messrs. Myres, Veevers & Myres), of Preston and Westminster. The works are being vigorously carried out by Mr. Charles Walker, of Preston, the total cost being about 3,000*l.*

Dalby.—The church of St. Mary, Dalby, has been reopened after restoration. The architects were Messrs. Demaine & Brierley, York; and the contractors Mr. Wood, mason, Skewsby; Messrs. Lacy & Son, carpenters, Skewsby; Messrs. Reid & Sons, joiners, Leeds; and Mr. George Hodgson, plumber and glazier, Hovingham. Mr. George Milburn, of York, carved the reredos, &c.; and Mr. Knowles, of York, supplied the lamps and fittings.

Edinburgh.—Plans of Mr. G. Washington Browne have been passed in the Edinburgh Dean of Guild Court for a new Presbyterian church at Morningside. The cost of the building is estimated at under 5,000*l.*, which will be seated for 750 persons. Messrs. W. Beattie & Sons are the contractors.

Good Easter.—The parish church, which was destroyed by fire last year, has been rebuilt and reopened. The work has been carried out by Mr. Walter Letch, builder, of Braintree, from the plans of Mr. F. Chancellor, of Chelmsford.

Herrington.—A new church, dedicated to St. Aidan, has been opened. The building has been erected from the designs of Mr. J. H. Morton, of South Shields. The builders were Messrs. W. Scott & Sons, of Sunderland. Mr. Charles Cobham acted as clerk of works.

Port Bannatyne.—A church built to supplement the parish church of North Bute has been opened. The architect is Mr. W. F. M'Gibbon, I.A., Glasgow, and the church is built at Kames Bank on the shore on the east side of the bay.

Repton.—The ancient church of St. Wystan, at Repton, has been reopened after partial restoration. The work has been carried out by Mr. J. Thompson, of Peterborough, from the plans of Mr. Arthur Blomfield, and Mr. Pemberton Leach, who have superintended the work.

Rhydycroesau.—The church of Rhydycroesau, near Oswestry, has been reopened after restoration and the addition of a chancel and vestry. Messrs. Davies Bros., of the parish, executed the joiner work, and Mr. Pardo, of Oswestry, the stone work. Mr. W. H. Spaull, of Oswestry, is the architect.

M. Charles Ferry is about to erect a house at the angle formed by the Cours-la-Reine and the Rue Bayard, Paris, which is estimated to cost 800,000 frs. The site is valued at 900,000 frs.

NEW BUILDINGS.

Cardiff.—On Wednesday last, the 28th inst, three memorial-stones of the Calvinistic Mission Hall were laid. The building is of a Gothic character, and consists of a hall 42 feet by 19 feet, accommodating about 400; and opening into same an infants' classroom, accommodating about 80; and minister's vestry. The contract is 924*l.*, and it is being carried out from the designs and under the superintendence of Mr. J. H. Phillips, architect, Cardiff. Adjoining the hall a large plot of ground is being retained for the erection of a chapel.

Durham.—The North of England Café Company's new premises in Sadler Street were formally opened on the 23rd inst., by the Lord Bishop of Durham. The premises have been entirely remodelled by Messrs. George Gradon & Son, builders, of Durham, and furnished, upholstered, and decorated by Messrs. Harland & Sons, of Bradford. Mr. H. T. Gradon, of Durham, is the architect who has had charge of the works.

North Malvern.—The memorial-stone of the new national school buildings has been laid by Lady Foley. At present only part of the scheme will be carried out, viz., that of erecting the boys' school, classrooms, and playground; and when further subscriptions have been received the remainder, a teacher's residence, will be built. The whole cost of the new buildings will be 2,600*l.*, and about 1,700*l.* has been subscribed. The contractor is Mr. T. Broad, and the architect Mr. H. Haddon.

GENERAL.

The Exhibition of Water-Colours by Deceased Masters at the Royal Institute in Piccadilly will remain open until Monday next.

Mr. Lewis F. Day has been invited by the Council of the Society of Arts to deliver a course of Cantor lectures in the autumn upon "Ornament."

Signor Morelli is at present engaged on a picture of which the subject is taken from the libretto of Verdi's yet unfinished opera, "Iago." Painter and composer are said to have entered into a solemn compact that no one is to know anything about the picture or its subject until the opera has been actually performed.

A Member of the Royal Academy is to be invited to assist in the selection and hanging of works submitted for the autumn exhibition of pictures at the Walker Art Gallery, Liverpool.

The Autumn Exhibition of works of modern artists will be opened in the Manchester Art Gallery on September 7.

A Sum of 700*l.* has been received in subscriptions for erecting in Dudley a statue of the late earl.

Mr. Stirling Lee's Design for the second panel of the bas-reliefs for St. George's Hall, Liverpool, has been approved of by Mr. Philip Rathbone, who was deputed by the Corporation to be the judge.

The Society for Graphic Arts, at Vienna, announce that on December 1 they will open, under the patronage of the Lord Chamberlain to the Emperor, an international exhibition of the works produced in engraving, etching, lithography, and the "chemico-technical" processes of reproduction, since the last exhibition held in 1883. Contributions, which should be sent before September 30, must be directed to the society's offices, VI. Magdalenen-Strasse, No. 26, Vienna.

The Rules for the competition for the new Municipal Buildings, in Edinburgh, having been revised, are adopted by the Lord Provost's Committee, and will shortly be issued.

Mr. A. E. White, assistant borough engineer of Hull, has been appointed to fill the office of borough engineer to the town.

The Middlesex County Magistrates have sanctioned the purchase of a part of the Claybury Hall Estate, Woodford, Essex, consisting of 250 acres, for 36,000*l.*, as a site for the building of an additional asylum for pauper lunatics.

Mr. K. F. Campbell, assistant borough surveyor of Salford, has been appointed borough surveyor of Stockton, at a salary of 350*l.* per annum.

The Ancient Parish Church of Rhosymedre, Ruabon, is to be restored and extended by the addition of a chancel.

The Dean and Chapter of Bangor Cathedral, having declined the offer of Mrs. Symes to place a screen in Bangor Cathedral as a memorial of the late Dean Edwards, that lady has decided upon the erection of a church at Glanadda, a populous suburb of Bangor. Mrs. Symes lately presented the reredos to the cathedral, in memory of her brother, Lieutenant-Colonel Holt.

The Foundation Stone of a hospital for Jews has been laid in Calcutta. The building is being erected and endowed by Mrs. Ezra in memory of her late husband.

Sir Matthew Wyatt, formerly lieutenant of the Corps of Gentlemen-at-Arms, died on the 19th inst., at his residence in Hyde Park Square. The deceased was a grandson of Mr. James Wyatt, the architect, who became Surveyor-general to the Board of Works, and was for a short time President of the Royal Academy.

The Architect.

THE WEEK.

The ten competitors for the Prix de Rome in the section of architecture were this year MM. Defrasse, Louvet, Delemer, Sortais, Leroy, Debrie, Lacoste, Laffilee, Despradelle, and Cousin. The subject allotted to them was "Un Palais de la Cour des Comptes." The prize has been won by M. Defrasse, who is a pupil of M. André, an architect who is very fortunate in sending out winners from his atelier. His son gained it in 1885. The premier second Grand Prix is obtained by M. Louvet, a pupil of MM. Louvet and Ginain. He was the third prizeman last year. The prize entitles the holder to the travelling scholarship of 40*l.* which was founded by the Duc de Cambacérès. The deuxième second Grand Prix goes to M. Sortais, a pupil of MM. Daumet and Giraud.

The student who gained the Grand Prix for sculpture is M. Paul Gabriel Capellaro, who is the son of a sculptor, and, like his father, a native of Paris. M. Larche obtained second, and M. Chavaillaud third prize. In engraving the three prizemen are pupils of M. Henriquel-Dupont (the engraver of the *Hemicycle*) and M. Cabanel. M. Patricot takes the Grand Prix with the 750 frs. left by M. Leprince and the 1,000 frs. left by the Duchess de Cambacérès; M. Granet came second, and honourable mention was made of M. Chiquet.

Mr. Henry Doyle, the director of the Irish National Gallery, generally contrives to secure at a very low price some interesting work from every picture sale where a bidder with a limited purse is out of place. From the auction of the Blenheim Collection on Saturday last he acquired for twenty-one guineas a family group which came from the hand of William Dobson, the English portraitist, who, on the death of Vandyke, was appointed sergeant-painter to Charles I. It consists of seven figures life-size to the knees, a lady dressed in blue, nursing a naked infant, the father leaning on a globe holding compasses, the grandfather behind, and other figures. Horace Walpole considered it to be one of Dobson's best pictures, and he conjectured that the father was Francis Carter, the architect. If so, the picture is of great interest. Carter was assistant to Inigo Jones, and is one of the artists mentioned by John Evelyn. He lived in Covent Garden, and under the Commonwealth was a justice of the peace and surveyor of works.

Mr. Henry Currey has examined the designs sent in for the proposed Fleming Memorial Hospital for sick children, Newcastle-on-Tyne. The first prize of 50*l.* is awarded to the design marked "Simplex," by Messrs. Quilter & Wheelhouse, of London; the second prize of 30*l.* to the design marked "Sweetness and Light," by Mr. Romthwaite, of Benfieldside; and the third of 20*l.* to a design by Messrs. Clark & Moscrop, of Darlington, marked "Civis." The building is estimated to cost 15,000*l.*

Mr. Kinross, of Edinburgh, has reported on the designs for the completion of the High School, Edinburgh. The plan recommended for adoption is by Mr. J. M. MacLaren, of Duke Street, Adelphi. The second prize is awarded to Mr. R. Walker, and the third to Mr. W. Simpson, both of Stirling.

We mentioned last week that Mr. Rathbone had approved of the second panel which Mr. Lee had prepared for the St. George's Hall, Liverpool. The City Council were not so easily satisfied. On Wednesday the confirmation of the proceedings of the committee was moved and seconded, but the meeting would not approve of their action. The two panels emblematic of *Education* and *Justice* were ridiculed. It will be remembered that the Liverpool architects long ago said that style of relief was not suited to the building, and their reward was a snubbing from Sir John Picton, F.R.I B.A. On Wednesday Mr. Rathbone could find no better way to defend the work of which he had approved, when sent to London, than by saying, "The young lady (*Justice*) he would admit was very simply and inexpensively dressed, but if the councillor waited for future panels he would find the young lady properly dressed. But she had not been to the dressmaker's yet." Advocacy of this kind, coming from a judge, was sufficient to settle the affair. There was a desire to decline the confirmation of the payment of the 150*l.* for the second panel, at the suggestion of the town clerk, payment was agreed to, but the terms of the contract are to be abrogated and no more panels will be taken.

The Victoria Hotel was again the subject of a long discussion by the Manchester Corporation on Wednesday last. Some time since the Council undertook to complete the large hotel on their property, which had been commenced by a company that expended about 120,000*l.* on the work before collapsing. The building occupied a prominent site, and it could not be left in an unfinished state. After a great deal of deliberation it was resolved to carry out the necessary works, and then to seek a tenant for the hotel. In a work of the kind it was difficult to foresee all the expense, and there was some grumbling whenever the contractors' bills appeared. At last the building was finished, and a tenant was found to take the hotel. The outstanding accounts or balances were furnished, and it was found that they amounted to 14,906*l.* 15*s.*, making a total of 103,250*l.* expended by the Corporation. The question arose how far that outlay was authorised. According to some of the Council the architect's estimate was 25,000*l.*, and no larger sum was voted. The chairman of the improvement committee says that statement is unfounded, for the figures were not adopted, and when the Local Government Board inquiry was held, the sum required for the hotel was said to be 57,000*l.*, and that was the authorised expenditure. It was soon found that the outlay must be increased to 69,500*l.*, and the improvement committee declare that there they stopped. For the remaining 33,750*l.* the chairman stated there was no act, vote or resolution, and in fact until the entire of the bills came in the committee had no knowledge of the excess. However, he proposed that the whole of the balance should be paid, without prejudice to any question between the Corporation and the architect, and that a "closed book" should be made of the affair.

It is self-evident that a Corporation could not become hotel proprietors without exciting much enmity. People who are concerned in a business of the kind, including publicans, naturally object to a rival for whose losses they will have to pay, and advocates of temperance dislike the enterprise almost as sincerely. That a bitter feeling was to be created was inevitable, and it has gone so far that, according to the chairman, "the damnification of the property was the object of some of those who had undertaken to speak and write on the subject." The difference between estimated and actual expenditure on the works has therefore been ascribed to a less excusable cause than a defect in foresight. "It had been insinuated," said the chairman, "that the excessive outlay beyond the contemplated amount was to be accounted for by peculation or corruption on the part of the members of the Council, the contractors, or the architect. He had not been able to find the slightest evidence of any irregularity of this kind. He had found nothing to interfere with the confidence he had in the entire honesty and integrity of the members of the committee, the contractors, or the architect." This statement rebuts a host of allegations. But when the chairman has a conviction of that kind, it seems extraordinary that Mr. Dawes should be made a scapegoat by the committee, as is done when in their report the excess of expenditure is described "as a matter between the Corporation and the architect," on which such action may be taken as is found necessary. The Corporation could not expect to be more fortunate than an ordinary client. A most difficult kind of work was undertaken, alterations were made from time to time, and in such circumstances it would be strange if there were no contingencies. The contractors are to be paid, and it would be wise if the "closed book" theory were carried out in full.

AN INTERDEPARTMENTAL COLLISION.

THE British taxpayer occasionally is offered a little enjoyment when two or more of the great spending departments fall out, and for the time his satisfaction is not affected by the thought that the ill-will between them may be costly to himself. An opportunity of the kind is now offered. It is true the transaction is a year old, but it is only this week the affair has been brought to light. The parties in it are the Science Department and the Office of Works, or South Kensington *versus* Whitehall Place. In other words, the two branches of the public service that are supposed to produce most admirable buildings, because they keep their doors closed against the civil architect. The row was over a scheme of building.

Every one knows by this time that from its creation South Kensington has made it plain that it was endowed with an infinite capacity for absorbing things. Like the sponge described by Hamlet, it is even ready to soak up the king's countenance, his rewards, his authorities. From time to time odds and ends were accumulated about the place, and as the authorities have a happy knack of devising titles, they came to be known as the scientific and technical collections. The things were not of much use, but it was satisfactory to feel assured that while they were stowed in the "Boilers" they could not be utilised by a rival educational establishment belonging to the service. Foreign visitors, who heard so much of the superiority of the English in applications of science, were dumbfounded when they saw the contents of the Patent Museum, the gallery of Building Appliances or structural collection, and the mechanical collections. Nor could their respect for us be restored by the naval models and the casts of fish.

The best proof of the absurdity of so miscellaneous a gathering is seen when we find that in spite of the dignified titles the Government at length became ashamed of what had so long existed under its authority. In the beginning of 1884 an Interdepartmental Committee was constituted "to consider and report upon the scope of the Scientific and Technical Collections," and "to suggest plans for housing these collections in the existing galleries to the south of the Horticultural Gardens, or in new galleries to be built upon their site, and the adjacent ground now the property of the Government." It was also suggested that the present collections might with advantage be "considerably weeded," an attempt at figurative language, by the Lords of the Treasury, which everybody would accept as expressive. The Interdepartmentals consisted of Sir Frederick Bramwell, Lord Lingen, Colonel Donnelly, R.E., and Mr. A. B. Mitford. Sir Francis Sandford was also appointed, but he attended none of the meetings.

It would be strange if so fertile a source of inquiry had remained unutilised until 1884. The fact was, that three years before the leading scientists attached to the Science and Art Department were invoked to undertake similar work. Having faith in the institution to which they belonged, these good men worked their brains to discover what was best to be done with the things that were to be found in holes and corners at South Kensington. They sent in a batch of reports, all duly signed, with their names and titles in full, and bearing the exact dates, according to the requirements. The reports were transported to the official pigeon-holes, there to keep company with many other documents of the sort, and the collections remained considerably unweeded as before.

The Interdepartmental Committee could hardly fail to recognise that the most laborious part of its work had been executed by the committees who were the authors of the entombed reports. "Considering that the members of these committees were selected," says the interdepartmental report, "on the responsibility of the Government, for their competence as authorities in their respective branches of science, and considering the detailed nature of their inquiries, we assume their conclusions as the basis of our recommendations." That is to say, an area of 120,000 square feet should be provided for the display of the collections, which have in general to be created, with provision for a further space of 40,000 square feet, which it was calculated must be required in the course of ten years.

The Treasury had indicated the site on the ground at the rear of the New Natural History Museum. Some of the galleries of the Exhibition of 1862 still remain there. The Interdepartmental Committee explored the land. The aid of Mr. Taylor, of the Office of Works, was obtained, and it was discovered that by an expenditure of 43,520*l.* the country could possess 80,200 square feet of flooring for the display of anything obsolete or otherwise which might be sent there. By paying a further sum of 54,183*l.* a building "with façades at the eastern end" would be obtained, with 33,750 square feet of additional space. But all this is inadequate, and it was explained how there was an opportunity for spending 125,100*l.* more without stirring from the strip on the south of the Horticultural Gardens. Altogether the outlay contemplated did not exceed 222,803*l.*, and the sum suggests the value of the existing scientific and technical collections in interdepartmental eyes.

All these discoveries were set forth in a report dated July 27, 1885, and, if it were not for three lines of a postscript, it might be supposed that the deliberations of the Committee were marked by the dulness that belongs to assemblies of the kind. It so happens that in this case the postscript is the most interesting part of the document, and for all we know to the contrary, it may be, as in the postscripts to ladies' letters, the most important. For who is able to foresee the extent of the reforms that might be accomplished if we could have South Kensington and Whitehall Place engaged in the gracious exercise of mutual improvement? In both regions there is room for much.

Whether a duel (on paper) between Mr. Mitford and Colonel Donnelly was contemplated when the Committee was organised, is a secret confined to the Treasury. It is evident that when the time arrived for action, Sir Frederick Bramwell and Lord Lingen prudently withdrew, and left the pair of representatives of the interdepartmental principle "to have it out" without interference. Such an arrangement may have been provided for.

South Kensington has enjoyed the special privilege of expending money on building, as if there was no Office of Works. It is only in accordance with the official spirit if, in Whitehall Place, there is an apprehension occasionally that the money is not laid out to the best advantage. Mr. Mitford, therefore, begins by suggesting that it is rather premature for the Science and Art Department people to think of erecting galleries of a length of 1 mile and 162 yards lineal measure on the west side of the Exhibition Road, before they have entirely removed all the ugliness of the Brompton Boilers from the east side, of which the public are getting tired. Gigantic galleries are a bad substitute for efficient control, or, as Mr. Mitford expresses it, "*proper management* will render the buildings on the east side sufficient for the legitimate growth of the Science and Art Department."

Having suggested the character of what is to be found on the east side of the road, Mr. Mitford crosses over to attack in another form, by explaining the nature of the illegitimate work which the Department hopes to enjoy one day. He says that the outlay will be double what is stated in the report. The scientific committees who first proposed the costly extensions were "for the most part professors in the Normal School of Science," and "prophets who have been invited to bless are seldom so uncivil as to curse." It is shown that the official scientists were engaged in carrying out the South Kensington policy of centralisation. What is the result of that policy hitherto? "I believe," says Mr. Mitford, "that the gradual encroachments of the Science and Art Department have been a misfortune. The accident of the close proximity of a number of half-occupied or unoccupied galleries has led to a system of squatting, to which all the power of the Treasury has been unable to put a stop." We fancy that Mr. Mitford must have written "flirting" instead of squatting (for the initiated say much use is made of museum and galleries for that form of study), but the latter is probably the more official expression.

The unkindest cut of all comes when Mr. Mitford expresses himself about the educational value of museums and galleries as administered by the Science and Art Department. He says that "practical gardening cannot be learnt by means of artificial flowers, nor farming by means of wax models." He says that "no man would engage a bailiff on the strength of a museum certificate," and no doubt means that the document is equally valueless for any

other kind of help. He says that a man cannot become a builder "by wandering through endless galleries of drain-pipes, specimens of terra-cotta, ironwork, and all the out-of-date and heterogeneous rubbish now in the southern galleries." He says that the uninitiated cannot learn all about naval construction from small models. He points out that there is no collection of burglars' tools for the instruction of policemen.

There are imaginative manufacturers who believe that their business is served by helping to fill up the dreary vacancies with some of their productions. Now Mr. Mitford may be said to be the largest patron of the building trade in all England, and he declares that no one would go there to be guided in the choice of goods, and that a projected museum, like the one existing, is, for business purposes, "utterly valueless and illusory." He concludes therefore that "it is no part of the functions of the State to provide gratuitous advertisements for traders, or stabling for the white elephants of inventors and companies."

Colonel Donnelly does not show himself to be as nimble-wristed in parrying as we should anticipate from an officer of his standing. He knows of old the worth of "My Lords" as a defence—for it has frightened many an unfortunate teacher. There is much to this effect:—"Mr. Mitford is surely aware that all the action of the Department and the communications on the subject have been under official sanction, and that, in fact, all the most important letters on this subject have been signed by the Lord President, &c." The Department has means of information which are of an occult kind, and the action of the authorities is shaped accordingly. The worth of the correspondents may be inferred when we find it stated that the country generally does not agree with Mr. Mitford when he slights the value of wax vegetables as a means of imparting instruction to agriculturists and the teachers who are let loose among them.

But more was to come. Mr. Pole, who has served on scientific committees without number, was taken aback by the two documents. He wrote a very modest letter to Mr. Mitford requesting him to attend a meeting where the two were to be considered. "I imagined," replied Mr. Mitford, "that the height of irregularity had been reached when it was proposed to attach to my report an *ex parte* criticism by another member of the Committee. Your present letter shows that I was mistaken." When circumlocution meets circumlocution then is the real tug of war. Regardless of allegations of irregularity from the other side, Mr. Mitford returns to the attack. One paragraph will suggest the position of South Kensington in a country abounding with Government departments:—

"Is it or is it not a fact that for some years past successive Governments have endeavoured to keep in check the encroachments of the Science and Art Department on the west side of Exhibition Road? That it has over and over again been peremptorily ordered by the Treasury to give up possession of the western galleries, and that as often it has refrained from doing so? The Department has most assuredly in this acted not only 'without authority,' but against authority, and when called upon to obey orders it has opposed to authority a dumb but active rebellion. During the last ten years I believe that every successive Secretary of the Treasury has visited South Kensington with a view to laying down boundaries for the Department; but the Department continues to overflow notwithstanding."

In his first statement Mr. Mitford alleges that the Department understates the estimates of cost, in his second he implies that the number of visitors is overstated. The galleries on the western side of the road are generally as desolate as the Ossianic halls. "According to Colonel Donnelly's showing," says Mr. Mitford, "there must be an average of some 500 visitors a day, all of whom have the gift of invisibility. This is miraculous."

South Kensington gets the worst in the controversy. But it is accustomed to that mode of treatment, and we might say has prospered by means of defeats. Indeed, Mr. Mitford has a misgiving that, in spite of his remonstrance, the money for the big galleries will be granted. Whatever may be the issue, we are, in this case at least, indebted to the Department for affording us so remarkable an example of the amenities of official life.

PHIDIAS.*

THE modern critical spirit, which has shown little reverence for so many sacred and profane things, is compelled to be respectful before the works ascribed to Phidias. Nor is it difficult to discover the reason. There is always a pathetic interest about ruins, but there are no ruins to compare with that sculpture. We see them in Bloomsbury exiled from their original position. Many of the figures are wrecks, and so much of the external surface has suffered that probably not a square inch corresponds with the state in which the work left the sculptor's hands. Yet in spite of all the injuries which time and man have inflicted on them, and in spite of our ignorance of their meaning, the Parthenon figures can make an impression deeper than any other work in marble. What must have been thought of them when they were first revealed in all their glory to the Athenians?

The name of their supposed author is inseparably united with the history of humanity, for Phidias, or whoever produced the work, is one of the tokens of the capability of the species. When we stand before his work we seem to have a revelation of his qualities, and to be brought into contact with him. It is only when we try to put our knowledge into shape that we discover how little is recorded about Phidias, and in consequence writers have been compelled to imagine what kind of man he was from the evidence of character which is afforded by the figures.

The earliest and the principal sources of information about him are the allusions by Plutarch and Pliny, and when they wrote Phidias must have been dead for about five centuries. If we try to write a history of one of the great men of the fourteenth century, we may realise the difficulty of their task and the worth of their record. In some others of the Classic authors his name is occasionally mentioned, and scholars have from time to time sought after more references; but when all the materials are brought together it is found that nothing is recorded about the greater part of the sculptor's life.

As time goes on the works of Phidias will be more appreciated, and past failures will not deter authors from trying their hands on a biography of him. They know the world wants such a work, and the difficulty of the enterprise has a fascination for an inquirer. We are, therefore, not surprised when we find M. Maxime Collignon undertaking the task, and with the hope that the recent investigations by French, German, and English investigators, when co-ordinated, may afford something which, if not authoritative, will, at least, be probable and consistent. The book which he has written is a masterly summing up of all that is known on the subject, and a study of it will help people to a truer comprehension of the sculpture, if it does not tell them more than they knew about Phidias himself.

The best plan to adopt when attempting to write the life of a man or the history of a period, when there is insufficient evidence, is that adopted by Augustin Thierry in his "Récits des Temps Mérovingiens." It might be called the cross-sectional method. Incidents are related which seem to have happened, and which may be taken as corresponding with others of which there is no record. This method resembles in a great measure that which is employed on the stage, for the dramatist only gives us a series of detached scenes, and leaves us the task of connecting them. Now, following tradition, which it must be admitted is not always trustworthy, let us see if one can obtain a few glances of Phidias.

If we assume that Pausanias made a correct copy of the inscription on the base of the statue of *Zeus* at Olympia, it will follow that Phidias was an Athenian, for it said, "I was made by Phidias, the son of Charmias, an Athenian." It is necessary to guess about the year he was born. The great works of the Parthenon were probably undertaken about the year B.C. 447, and placed in charge of the sculptor. He would hardly be placed in a position of that kind if an objection could be raised against him on account of his age. Supposing that he was forty at the time, the year of his birth would then be B.C. 487. As Phidias is

* *Phidias. Par Maxime Collignon. Ouvrage accompagne de 45 gravures.* Paris: J. Rouam. London: Gilbert Wood & Co.

supposed to have began as a painter, it is inferred that his father Charmias was likewise one. There are vases of high quality bearing the name of Charmias, and M. Longperier has suggested, but timorously, that they may have been designed by Phidias, and placed by him, as it were, to his father's credit. There was another son named Panainos, who was also a painter.

Under what circumstances he gave up painting for sculpture, and who were his masters, must remain subjects for speculation. It is supposed, on the authority of an anonymous scholiast, that Agéladas the Argive was one of his teachers, and M. Beulé imagines that the earliest commission to Phidias—a statue of *Athené* in ivory and gold for the town of Pellene—may have been given on the recommendation of that master. It is evident from what was said by Cicero, that in his time it was believed that if Phidias could be said to have had a speciality, it was for representations of gods and goddesses. This is supported by the statement that when a bronze statue of *Athené* was ordered as a sort of thank-offering for the success of Athens against the Persians, Phidias was employed to undertake the work. The representations of the statue that are seen on coins do not suggest more than an archaic figure, and if the soldiers of Alaric were scared by its appearance, they must have been very simple children of nature. On one of the coins the statue appears about once and a half the height of the Parthenon, and in modern restorations of the Acropolis it is seen overtopping all the structures. M. Michaelis considers that the height, including the base, could not have been more than 30 feet.

The titles of a great many statues ascribed to Phidias are to be found in Roman writers, but there is nothing to denote the time of their production. His appointment to the direction of the Parthenon is, however, evidence of his position as an artist, although the stories of his wonderful realistic fish and flies are only fictions.

It is remarkable that nothing remains in literature, not even a fiction, which enables us to realise the Phidias of the period prior to the construction of the Parthenon. When the great works were agreed upon we find him enjoying the friendship of Pericles, the first man in Greece, and possessed of the knowledge that was required in a general director of works. The Athenians possessed able architects and clever workmen at the time, but Phidias, says Plutarch, was appointed to take charge of all the public edifices, and it was to him the artists came for instructions.

Whether the words mean other works besides those of the Parthenon cannot be ascertained. If his superintendence were confined to the temple, the office would be no sinecure. But in addition Phidias was a sculptor, and as such must have wrought the marble with his own right arm. Was it possible for any one man to possess the superhuman power that was required to carry out so much work in the efficient manner that is apparent to all? It would be invaluable if something could be discovered which might reveal how Phidias disposed of one of his days, or to what extent his superintendence was accepted, but we must be content to remain in the dark. It is evident that there were able sculptors employed under him, and we can hardly imagine them sacrificing all their individuality at his command.

The difficulty is increased if we consider also the production of the statue of ivory and gold for which the Parthenon served as a shrine. According to the legend related by Valerius Maximus, and one is grateful for some touch of nature in respect of Phidias, the sculptor recommended that it should be formed of marble, as the material would allow of a permanent polish. The Athenians listened to that reason in patience. But when Phidias said that marble was preferable on account of its cheapness, he was ordered to be silent. This story may have no more sound foundation than many others relating to Phidias, but it suggests that he was recognised as a sculptor, and there is nothing of the kind forthcoming to suggest his appearance as an architect.

Now the question arises, how long must that chryselephantine statue of *Athené* have taken to construct? The best answer that is forthcoming will be afforded by the reproduction which was made by the spiritualist sculptor, Charles Simart, at the instance of the Duc de Luynes. It was the work by which the artist was represented in the International Exhibition of 1855. That copy took six years to execute. We cannot suppose that Phidias's statue was completed in a less time, and if so, only three years would remain to carve the great frieze and the pediments of the Parthenon!

It is surprising that while the statue of *Athené* is closely connected with the fate of Phidias, there is no evidence by which his name is associated with the sculpture of the Parthenon. Plutarch relates the story of the statue, but says nothing about the frieze or pediments. Pausanias does not mention the name of the sculptor when describing the sculpture, whereupon Visconti, with the logic that characterises connoisseurs, concludes that the omission was caused by the supposition of the artist being universally known. Aristotle says Phidias was a wise sculptor of marble, but does not mention any work as an illustration. It would be dangerous to deny that Phidias may have designed the whole of the sculpture, although the only ground for the belief is the short statement of Plutarch about the superintendence. And the value of it is lessened by the absence of any record of a group by Phidias. All his panegyrists among the ancients esteemed him as a sculptor of single figures.

M. Collignon is not disposed to be sceptical about the position of Phidias, but there is one passage in his chapter on the pediments which suggests that for once at least he was unable to resist the doubt which must arise in the mind of everybody who is not controlled by a sort of superstitious faith in the omnipotence of the sculptor. He says :—

> The study of the pediments must excite a still more urgent question, viz., what part was taken by Phidias in the conception and in the execution of these vast collections of figures? Assuredly it would be puerile to recognise in every part a master's hand. However prodigious may have been the activity of Phidias, can we imagine him carving more than forty figures, on a scale that is larger than life, at a time when the execution of the Parthenon and the practical superintendence of the works of the Acropolis demanded his power and attention? What man could sustain so gigantic a task? Recognising the force of these objections which he himself formulated, Beaulé has supposed that Phidias executed only the eastern pediment, and left the decoration of the western to Alcamenes. But this is only a conjecture and nothing has been found to justify it. The solution of the difficulty is only to be found in an examination of the marbles of the Parthenon. We are at first struck with the perfect unity of the two compositions and the differences often notable in the execution of the figures. In the two pediments we recognise the same spirit in the grouping, in the movement of the drapery. It is entirely new, and marks a reaction against the timidity of the ancient schools. The style of the figures is, however, far from being uniform. In one place the handling is bolder and quicker, as in the *Hercules*; elsewhere there is tenderness of execution, as in the *Cephissus* (Ilissus); sometimes, as in the *Iris*, a model less supple and thinner. That several hands were engaged on the figures we cannot well doubt; but what is more natural than to attribute the scheme for the two pediments to Phidias alone? That is the solution which appears probable. We can easily imagine Phidias determining the plan of the pediments, modelling the figures in clay, and distributing the task of their execution in marble among the sculptors in his atelier. We can even go further, and recognise the master's own hand and chisel in such parts as the group of *Déméter and Coré* (that of *The Graces*) and the *Cephissus*. In matters of art feeling is a better judge than the reason, and before these figures can we help pronouncing, as if by instinct, the name of Phidias?

The subject of the great frieze is likely to afford opportunity for controversy during a good many years to come. In none of the ancient writers is there any clue to its meaning. For centuries it was difficult to reach Athens. A traveller who visited the city in the fifteenth century described the frieze as a representation of the victories of Pericles. In the seventeenth century Spon and Wheler said it consisted of sacrifices, processions, and other ceremonies of heathen worship. Chandler said it was a sacrifice by the cavalry of Athens. Stuart seems to have been the first who declared it to be a Panathenaic procession, and his notion has been most generally accepted. M. Collignon agrees with it. He follows Brunn and Flasch in supposing that the bearded figure at the end of the eastern section, who holds folded stuff in his hand, is, however, a priest who is about to offer sacrifice, and has divested himself of his himation, which he carefully folds

and gives in charge to an attendant. According to Visconti and others, the figure represented the chief archon, who was receiving the peplos that had been borne in the procession. This being one of the figures that is engaged in a peculiar action, it has therefore so much significance that it might be said to form a key to the meaning of the frieze. But if the priest is not receiving a peplos, how can the frieze represent a Panathenaic procession, which was supposed to accompany the bearers of the sacred veil? There is no other peplos in the frieze. M. Collignon tries to get over the difficulty by saying that Phidias took an artist's liberty in selecting what suited his purpose. That is not, however, a convincing explanation.

The story which is recorded by Plutarch was to the effect that Phidias suffered from the uncertainty of public favour. He was accused by one of his own men of dishonesty in keeping some of the gold intended for the figure of *Athené*, was cast into prison, and there poisoned. Another legend is no less tragic. According to this version the sculptor was lent to the people of Elis for the purpose of making a statue of *Zeus*, on condition that Athens was paid a large price. He finished the statue, but, as the money was not forthcoming, the people thought it easier to accuse him of robbing them of gold, and cut off his hands in punishment for the sacrilege. Is either story to be believed? M. Muller-Strubbing considers that the later legend should be read in this way. "Phidias, having been tried for false accounts and acquitted, left Athens for Elis, where he undertook a statue of *Zeus*. After its completion he died in the city, and was mourned by the Elians." It matters little now which version approaches the truth, but there would be more of justice and fitness in Phidias finding a retreat in a sacerdotal city, and spending the evening of his days in fashioning a figure that might realise the Homeric ideal of the chief among the gods.

We have of that statue some evidence, but the description of Pausanias hardly corresponds with the figure that is found on Elian coins, and among the latter there is variety. Jove sat in his chair holding in one outstretched hand a figure of *Victory*, and in the other the long sceptre used by kings and heralds; but it is impossible to say how the gold and ivory were disposed. The height of the figure is supposed to be about 45 feet. The statue was separated from the rest of the temple by a veil. It is now known that Antiochus IV. presented a costly one to the temple, and it is conjectured by M. Clermont-Ganneau that it was the veil which hung before the tabernacle in the Temple of Jerusalem.

The fate of the statue is unknown. After being one of the wonders of the world, it is not surprising that Caligula should attempt to carry it away to Rome. It was, however, protected by the Thunderer, and the attempt was followed by the death of the Emperor. A Byzantine writer stated that it was afterwards brought to Byzantium, where it remained until A.D. 475; but little reliance is placed on the story.

The book of M. Collignon is one of the most valuable in the series of the "Artistes Célèbres," and there is no book of its size and price which conveys a better idea of the position which Phidias holds in the world of art. The author is not an upholder of any startling theory, and he does his best to elicit from those which exist whatever appears to be probable.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

On Saturday afternoon some members of this society visited the neighbourhood of Keighley. The Mechanics' Institute, Art and Technical School (now undergoing enlargement by Messrs. W. & R. Mawson, architects, of Bradford) was first visited, and the clerk of works (Mr. T. A. Sugden) conducted the party over the works. West Ryddlesden Hall, an Elizabethan structure, owned and occupied by Mrs. Sidgwick, was, through the courtesy of that lady, next inspected. Afterwards East Ryddlesden Hall, known locally as "Old Ryddlesden Hall," was, by the kindness of Mr. Bailey, the tenant, thrown open to the visitors. The latter house is a good specimen of the transitional period of the Renaissance, and in its essentials remains in its original form.

HEBBURN HALL.

At the last meeting of the Newcastle Society of Antiquaries a paper was read by Mr. F. R. Wilson, architect, on a stone heraldic panel and other relics discovered at Hebburn Hall, near Newcastle-on-Tyne. He said:—The society need not be informed of the history of Hebburn Hall, but to elucidate the discovered fragments that I now exhibit to you, I desire to quote what Surtees says concerning it:—"The old mansion house was built with some view to defence, trenching on the castle like the Border towers. Whether it was the military and predatory aspect which naturally reminded the citizens of the horrors of the Border wars, or the imposing situation of Hebburn-on-Tyne, or rather, the Popish tenets of its owners, the place seems to have been from the Dissolution till the civil wars (during the possession of the Hodshons) the frequent object of jealousy and suspicion to the peaceful burghers of Newcastle. The Hodshons first obtained it in 1562. The estate of Hebburn passed by purchase about the year 1650 to the ancient and respectable family of Ellison. The mansion was nearly rebuilt about 1790. Part of the old mansion remains on the west." In the rebuilding and in forming the large mansion in 1790 that now exists all traces of the castle or pele tower and of the mansion of the Hodshons were then effaced, except one thick wall which I detect to the west of it, shown upon my plan. The mansion is a spacious erection of three storeys, in the Italian-Vitruvian style that was then in vogue. In the rear of it, and at right angles with it, is a wing of buildings, about 150 feet long by 32 feet wide, which contained the kitchens, larders, laundry, brewery, and a floor of servants' bedrooms over. The style of this wing was of the very plainest, with no feature whatever about it, except a curious clock that had a face to the courtyard, and another one in the internal servants' passage. Tyne progress, Tyne chemical factories, and Hebburn industries have caused the occupation of Hebburn Hall to be gone. And for the rising, increasing, working population the new parish of St. John has been recently formed, in which this hall stands. To provide a church for the parish it has been decided, with the sanction and material assistance of Mr. Carr-Ellison, the present owner, to convert this wing into one. This conversion is now going on. In the process, several ancient stones have been found. Several pieces of mullions and sills of the early tower have come to light, and also the very perfect stone-carved coat-of-arms, which I now exhibit to this society. Miss Carr, of Dunston Hill, has ascertained for me as follows:—"The arms on the Jarrow tombstone (1617), and, therefore, presumably the 'find' at Hebburn, are, as the Rev. T. W. Carr shows me, those of Sir Robert Hodshon himself, his wives, &c. The arms are those of the Hodshon who married an Ingilby, daughter of Neville." Some carved scroll pieces which we have also found, and which I produce, form, I conceive, portions of a large heraldic panel which formerly adorned the front of the mansion in the Elizabethan period. These discoveries show what strange changes buildings undergo in the march of time. When the pele tower was standing it commanded a wide expanse of country, and it looked defiantly northwards towards Scotland, and to the southwards over the county of Durham. The ancient and respectable family of Ellison effaced and hid all traces of it in the mansion they erected.

A cordial vote of thanks was accorded Mr. Wilson.

Mr. S. Holmes read a paper on the "Roman Baths at Cilurnum," and was cordially thanked for the same.

The Secretary, in the absence of Dr. Bruce, read a paper by that gentleman on "Two Roman Inscriptions recently discovered in Cumberland—one at Birdoswold, and the other at Harrington, near Moresby."

A hearty vote of thanks to Dr. Bruce was passed, and the proceedings shortly afterwards terminated.

PROPOSED ART GALLERY FOR LEEDS.

The members of the Special Committee of the Leeds Town Council, appointed to report on the practicability of providing a permanent art gallery and museum for Leeds, have issued their report to the members of the Council. They state that they have held eight meetings, and devoted much time and attention to the inquiry. There has been no division of opinion amongst them as to the desirability of establishing a permanent art gallery and museum for the borough. The committee believed that such an institution would prove a great source of refined enjoyment for the people, and be an important addition to the educational advantages of the town, while they entertained no doubt that if the Corporation provided a suitable home for art treasures, it would soon attract gifts from the citizens of Leeds, and become the nucleus of an increasingly valuable collection. Indeed, since the matter had been brought forward, a very interesting collection of engravings had been presented to the borough by Mr. Howgate, and a con-

siderable sum had been promised through the chairman (Councillor Harding), to be expended in the purchase of works of art for the new Municipal Gallery. When the subject was brought forward at the Council meeting on April 8, Mr. Ambler suggested that the necessary funds for the provision of a gallery could be obtained without throwing any additional burden on the ratepayers, by drawing upon the penny rate levied under the Libraries and Museums Acts, the whole of which had hitherto been exclusively devoted to the purposes of the library. Some members of the committee, however, were anxious to go outside the penny rate, and in consequence of this feeling the town clerk was desired officially to ascertain how the outlay on art galleries and museums had been met in other towns. The report was to the effect that the expenditure had generally been limited to the penny rate, and that where this limit had been exceeded it had been done in virtue of special Acts of Parliament. Taking all the circumstances into consideration the committee could not advise the Council to go to Parliament for a special Bill, and they believed that in the present condition of trade the ratepayers might not approve the erection of a costly building on a conspicuous site. Anxious not to postpone indefinitely a most necessary work, the committee had turned their attention to the original suggestion that the proposed gallery should be provided within the limits of the existing penny rate. After careful consideration they had come to the conclusion that from the proceeds of the penny rate at present levied under the Libraries and Museums Acts, the sum of 800*l.* per annum might with great advantage be applied to the purposes of an art gallery and museum. The committee point out that after deduction of the 800*l.* per annum proposed to be diverted, there would still remain about 4,200*l.* from the rate, which, with the present scale of income from sales and fines, would leave available 4,500*l.* to 4,600*l.* per annum, a sum which should be sufficient to maintain in efficiency a library already established and largely stocked with books. Turning their attention in the next place to ascertain whether anything worthy could be accomplished within the limits of the 800*l.* per annum proposed to be expended, the committee consider that of this amount at least half, say 400*l.* per annum, would be required for working expenses; so that, therefore, 400*l.* would be available to pay interest and sinking-fund charges on the outlay upon buildings. This 400*l.* per annum would permit of an expenditure of over 8,000*l.* upon buildings; and for this sum the committee believed that considerable results could be obtained upon the site contiguous to the Municipal Buildings, and already in the possession of the Corporation. The committee considered this site excellently adapted to the purpose, because of its central and quiet position, because its situation at the back of the Municipal Buildings rendered ornament and expense in the exterior of the new structure unnecessary, and because by approaching the new buildings through the existing news-room (a fine hall unsuited to its present purpose, but admirably adapted for a sculpture gallery and museum), the art galleries would really form part of the Municipal Buildings, and be worthily approached through them. No alterations to these buildings were proposed, beyond making a broad doorway at the end of the news-room to connect with the hall of the picture galleries. The new reading-room to be provided would be larger than the present one, and amply lighted on both sides. In the opinion of Mr. Ambler and Mr. Tweedale, the whole of the buildings could be completed for a little over 8,000*l.*

TESSERÆ.

How Berlin was Built.

THOMAS CARLYLE.

THIS year (A.D. 1731), says Fassmann, the building operations in Berlin and Stettin were exceedingly pushed forward. Alas! yes, this too is a questionable memorable feature of His Majesty's reign. Late Majesty, old King Friedrich I., wishful, as others had been, for the growth of Berlin, laid out a new quarter, and called it Friedrichs Stadt—scraggy, boggy ground, planned out into streets, Friedrichs Strasse the chief street, with here and there a house standing lonesomely prophetic on it. But it is this present Majesty, Friedrich Wilhelm, that gets the plan executed, and the Friedrichs Strasse actually built not always in a soft or spontaneous manner. Friedrich Wilhelm was the Ædile of his country as well as the drill sergeant. Berlin city did not rise of its own accord, or on the principle of leave alone, any more than the Prussian army itself. The number of scraggy waste places he swept clear, first and last, and built tight human dwellings upon is almost uncountable. A common gift from him (as from his son after him) to a man in favour was that of a new good house—an excellent gift. Or, if the man himself is able to build, Majesty will help him, incite him. "Timber enough is in the royal forests; stone, lime are in the royal quarries; scraggy waste is abundant: why should any man of the least industry or private capital live in a bad house?" By degrees, the pressure of His Majesty upon private men to build with encouragement became considerable, became excessive, irresistible, and was much complained of in these years to come. Old Colonel Derschan is the king's agent at Berlin in this matter; a hard, stiff man; squeezes men, all manner of men with the least capital till they build. Derschan, with his slow screw machinery, is very formidable, and Büsching knows it for a fact "that respectable Berlin persons used to run out of the way of Bürgermeister Koch and him, when either of them turned up on the streets!" These things were heavy to bear. Truly, yes; where is the liberty of private capital or liberty of almost any kind on those terms? Liberty to *annihilate* rubbish and chaos, under known conditions, you may have, but not the least liberty to keep them about you, though never so fond of doing it. Berlin itself, and some other things, did not spring from free trade. Berlin city would, to this day, have been a place of scrubs ("The Berlin" a mere appellative noun to that effect) had free trade always been the rule there. I am sorry His Majesty transgresses the limits; and we, my friends, if we can make our chaos into cosmos by firing Parliamentary eloquence into it, and bombarding it with Blue-books, we will much triumph over His Majesty one day!

Architectural Drawings.

W. BURGES.

At the end of the last century, and at the beginning of the present, the fashion was to make drawings in fine lines tinted with Indian ink. At the revival of Mediæval art a favourite way of sketching was to outline in pencil and tint up with Indian ink or sepia. Most of Mr. Blore's drawings are done in this manner, and are so surprisingly and minutely finished, that they give the idea of very clear photographs. But before this the custom of offices was to make the drawings simply in thin lines, and then to back-line them, a practice destructive of all breadth of effect, and absolutely perplexing to the eye. The elder Pugin's works are specimens of this style, which, I am happy to say, is nearly obsolete. The younger Pugin brought the first change to the system in his plates, where he, on the contrary, made things look too well by his marvellous etchings. Indeed, there is a fizziness and an action in all his plates which you look in vain for in the real thing. The present system of etching up a drawing is an offshoot from this style, and is, I am afraid, open to very nearly the same objection. We have to thank competition committees for its use, who, forbidding the employment of colour, have obtained a much more seductive style of perspective, for I think I would any day back a good etched drawing against a coloured one. But after all, the success of a design in stone and mortar must depend upon the working drawings (for nobody sets out work or chisels stone from perspectives), and it is in those that I hope to see strong, thick, bold lines employed, so that we may get into the habit of leaving out those prettinesses which only cost money and spoil our designs. But after all, no amount of architectural drawing would make a man an artist or an architect—for they are one and the same thing—unless he makes a complete mastery of the human figure. When the profession generally begin to draw the figure, and make bold architectural drawings, and generally to think for themselves, instead of going to past ages and precedents, we may then hope to have an architecture.

Renaissance Treatment of Exteriors and Interiors.

S. SMIRKE, R.A.

In the works of Bramante and Peruzzi, but perhaps more especially of the latter, a degree of interior ornamentation was indulged in that might to our cold northern tastes appear almost excessive, and which we should probably be disposed to condemn were the excesses not redeemed, and I may say in most cases fully justified, by the extreme beauty of these ornamental details, and by the judicious treatment of them. Nothing, for example, can well exceed the elaborate elegance of the decorations of the halls and corridors of the two Massimi palaces at Rome, which I own struck me as among the most finished studies of interior architectural composition that I had ever seen. The rapid advance made towards the perfecting of the new style is rendered remarkably apparent by a comparison of the ornamental details of Bramante's Cancellaria with those of the highly-finished works of Peruzzi. Now if we look to the exterior of these same buildings we shall find the most marked difference of treatment. A general abstemiousness prevails in respect to mere ornamentation. The evidences of care and study in the composition of the leading forms as well as of the details are quite as apparent outside as within. There is not a moulding that does not bear the impress of thought and care; but you will find breadth and simplicity the chief objects aimed at throughout, whether in the principal features or in the minor details. It is clear that these great masters, with one accord, were wont to say to themselves, "We will indulge our love of the beautiful on the walls and ceilings of our saloons and

corridors, where the eye has leisure to dwell upon them, and where, sheltered from the vicissitudes of the seasons, our cunning intricacies and our mimic foliage may endure, and be a permanent source of pleasant contemplation for future generations; but we must, in our exterior work, have regard to the altered circumstances of position. A building cannot be very critically examined, or even seen with convenience, from a very proximate point of view: the eye must be moved to some distance in order to appreciate or comprehend the design of the exterior when the building is large. It is not, then, in these elaborate details that we can hope to win the applause of cultivated critics; for in truth such details will be too far off to be seen. We must rather have regard to the *ensemble*, to pleasing outlines, to variety of light and shadow, to symmetrical arrangement of the several parts. Such are the considerations that must be foremost in our minds whilst we are designing external architecture. If we introduce on the outside the minute and intricate ornaments in which our fancy disports within, we shall find the breadth of our lights broken up, and their effect destroyed. We shall be inviting attention to details the merits of which will be unappreciated, and run the risk of losing the labour we have bestowed on the general composition, which may perchance pass unheeded by the eye, distracted in its attempts to examine unimportant minutiæ. Besides, architecture is a material of art; it deals with substantial realities, and is wholly dependent on static laws. Moreover, if we break up and obliterate our bounding lines, we shall deprive our work of the special character of architecture, and destroy its idiosyncrasy. It behoves us too to reflect that by raising up a structure composed of trivial littlenesses, and overlaid with festoons of little leaves and flowers and ribbons, or crowded with crockets, finials, and intricate corbelling, and by fretting the surface over with niches and imagery, and so forth, we shall be setting the elements against us. We shall find that the rain and the frost and the invisible chemical atmospheric agencies for ever acting with determined hostility against the substances we work in, will ultimately—possibly slowly, but perhaps rapidly, at all events most surely—render our sculptural labours nugatory, and perchance indeed annihilate our building; and if those who follow us are not perpetually employed in renovating our work—patching and mending, restoring or renewing—our structure will inevitably become a picturesque ruin, the established residence of bats and owls." Such may have been the reasoning of those experienced, thoughtful, and sagacious masters who ruled the destinies of our art at the end of the fifteenth century.

Gilding in Decoration.

J. Ballantine.

The effect of gilding on an apartment, when judiciously introduced, is highly poetical. It gives a new and more elevated character to everything in the room, while, without it, the finest designs look tame, flat, and insipid. Gold ought to be employed liberally in adorning cornices; and in almost all cases the primary colours can be used in connection with it in their fullest intensity with excellent effect. On the other hand, the richest furniture loses half its effect when placed in a room in the decoration of which no gold has been employed. Under the influence of artificial light, gilding becomes still more imposing, and at all times, and in all places, the effect is exceedingly agreeable.

Primaries, Secondaries, and Tertiaries.

Owen Jones.

If we examine the remains of the architecture of the ancients, we shall find everywhere that in the early periods the prevailing colours used in decoration were the primaries blue, red, and yellow, the secondaries appearing very sparingly. We find this equally in the remains of Nineveh, Central America, of Egypt, and Greece; and throughout the Eastern civilisations generally we find also everywhere that, as time wore on, the secondary colours invading the dominion of the primaries, blue and red were supplanted by green and purple. In Egypt, in the temples built by the Pharaohs, blue, red, and yellow mainly prevail, while in those built by the Ptolemies the greens and purples take their places. In those of the Roman period colours are still further degraded to a dull and incongruous muddiness. In the great temples, as far as we can gather from the few remains of colour we have, the same law prevails, while in Pompeii we find the secondaries as the ruling harmonies. In the Alhambra the blue and red of the Moors were painted over with green and purple by Charles V. and his successors, and with the worst effect. In modern Cairo, and the East generally, we have green constantly appearing side by side with red, where blue would have been used in earlier times. It is equally true of the works of the Middle Ages. In the early manuscripts, in the stained glass, though other colours were not excluded, the primaries were chiefly used; while in later times we have every variety of shade and tint, and rarely with equal success. It would seem either that the human mind, ever seeking for change, became weary of the simple harmonies which the primaries afforded, and sought more complicated effects from the secondaries and tertiaries, or that it arose from the decline of art and the incapacity of the artist to deal with the primary colours in their pure state, who took refuge in the secondaries and tertiaries, where error in the balance of colour was less fatal, although to produce a perfect harmony with the secondaries and tertiaries is much more difficult. Among modern examples of the use of colour we may cite the royal chapel at Munich, where blue, red, and gold form the principal harmonies, as far superior to the other churches of the same city where the secondary and tertiary colours prevail. At Paris, in the church of St. Vincent de Paul, decidedly the most perfect specimen of modern decorations in any country, the colours are blue, red, and gold, separated by white. This church contrasts admirably with the decorations of St. Denis, St. Germain des Prés, and other churches of Paris, where the secondaries and tertiaries prevail. When the secondary colours were used, in the best periods, in conjunction with the primaries, they were generally confined to the lower parts of the building; following in this nature, who uses for her flowers the primaries, and reserves the secondaries for her leaves and stalks.

Timber for Farm Buildings.

J. Ewart.

The best timber for building purposes is fir from Norway, and, whenever it can be obtained at a moderate expense of carriage from a seaport, it should have a preference to any British grown timber in the construction of farm buildings. The expense of carriage from a great distance, however, may preclude its use; in which case, a selection must be made of the best that can be obtained in the neighbourhood. The heartwood of mature oak is, from its strength and durability, unquestionably the best of British-grown timber for all building purposes; but its great value precludes its use in the construction of farm buildings. The wood of young oak trees, and of branches, from the great proportion of sap they contain, rapidly decays, and is therefore quite unfit for use in any building of a permanent nature. Spanish chestnut, when the trees have not attained a great age, is considered almost equal to oak for building purposes; but the timber of old trees is brittle, and becomes much impaired in strength. Ash, from its want of stiffness, and its liability to rot, is unfit for building purposes. Elm is much inferior in most of its properties for building purposes to either oak or chestnut; almost its only merit is its durability when not exposed to alternate wet and dry. The timber of all the species of poplar is useful for many building purposes; for, although it does not possess much strength, yet it makes good flooring boards; it is not liable to split on being nailed, nor does it readily take fire. Beech is very liable to decay, and from its propensity to warp is unfit for boards. Birch has no property to recommend its use in building. Alder is both subject to rot and to the attacks of insects. Plane tree and all the maple tribe are of very little value for building purposes. Larch, from its great durability and strength, is a most valuable wood for many purposes in building, for although, from its want of stiffness, it is unsuited to any purpose subject to a cross strain, yet for flooring boards, for door or window frames, and for doors and shutters it is unequalled by any other kind of wood. Of fir, any of the pine tribe of timber, grown in any part of Britain, is much inferior to that imported from Norway, Sweden, or Russia; and that grown in the Highlands of Scotland is superior to such as is grown in the southern parts of the kingdom. It may be remarked that whenever its use in buildings may be expedient, timber of British growth (except the best qualities of oak, Spanish chestnut, or larch) should always be of much greater scantling than is necessary for the best redwood from Norway.

REDISCOVERED FRESCOES AT AMSTERDAM.

THE lovers of art have been long puzzled to account for the disappearance of several frescoes and other decorative paintings described by Jacob Vos in his account of the Museum at Amsterdam. They were not to be found any longer, and there was no record of their fate. Some years ago M. Greeve, the curator of the Academy of Sciences, discovered a fresco on a ceiling in the museum which had been painted over. This fresco was by Niklaas Held Stokade, according to Vos. He has again lately, in the hall in which Rembrandt's *Night Watch* is placed, discovered a series of frescoes, which seem to be nearly as old as the building. They were all covered over with a thick paper, which had been painted and grained to imitate walnut wood. It is conjectured that this was done about the time of the French invasion, ninety years ago, to protect the pictures from appropriation by the French generals. On the whole they are in a fair state of preservation.

NOTES AND COMMENTS.

THE demolition of M. FALGUIÈRE's group on the top of the triumphal arch in the Champs Elysées is in progress. As the plaster figures had a height of nearly sixty feet and a length of more than eighty feet, the work is not easy, and it is calculated to occupy about three weeks. Great precautions have been taken to preserve the masonry of the upper part of the structure by covering the parts exposed to danger with timber, and to insure that in the descent of the various fragments the sculpture on the faces of the arch will not even be touched. Constant supervision is exercised both on the summit and on the ground.

THE opportunity for placing sculpture on Blackfriars Bridge is lost for the present. The *fiasco* is in a great measure owing to the action of the committee who had charge of the project. In the first place, by selecting four Mediæval kings for subjects the support of many councillors must have been lost, for City men know well under what circumstances charters were granted in those days. Then, again, Mr. BROCK, who has modelled admirable equestrian figures, was left out of the competition, although his sketch-model of EDWARD III. was at one time recommended for adoption. The reason given was, that it was supposed he would not do the work as satisfactorily as the artists selected. Although the bridge is only about fifteen years old, nobody seems to know whether the four masses of masonry were intended to serve as pedestals. It would be an advantage to crown them with sculpture, but what is needed is something which may give pleasure to the crowds that pass every day over the bridge. Happily the days are gone when people can admire monarchs whose lives were spent in seeking to obtain possession of various parts of the world without any honest claim to them.

THE Master of the Rolls has given a decision in the case of CRAWFORD and Others *v.* NEWTON which may suggest the difference between tenantable and decorative repair. Landlords are not easily convinced that, under the ordinary conditions of a tenancy, a tenant is not bound to leave a house in a condition that will require no outlay for papering or painting. In a five years' lease, which expired in 1872, a tenant undertook to keep the inside of the buildings in tenantable repair, and so to deliver them up at the end of the term. He continued as a yearly tenant in 1884, and on giving up the house he was sued for damages, partly because he had not painted or papered the house. Mr. Justice CAVE decided, like other judges before him, that a tenant was not bound to paper or paint, or to put a house in decorative repair, but allowed 20*l.* damages for decayed woodwork, which in one place had been caused by a neglect to paint. The law is clear in regard to damage of that kind. The owners were dissatisfied and appealed. The Master of the Rolls declined to define "tenantable repair," but Lord ESHER and the other Lords Justices were certain that, at least, it did not comprise painting, which was not wanted for the preservation of the building but for ornamentation, and papering, which was mere ornamentation. There is nothing new in the judgment, but in spite of it and many more to the same effect, we may be sure that litigation on the subject will continue as long as there are landlords and tenants.

SOME sanitarians believe that there is an advantage in the emission of disagreeable odours from sewers in streets. The occupants of neighbouring houses rarely agree in that opinion, and probably Sir ROBERT RAWLINSON himself would be tempted to be less confident about the virtues of openings from sewers if one existed in front of his hall door. If the sanitarians are right, Vulcan Cottages, Victoria Park, must have been in a blissful condition for many months, since along front and back there are drains which give unquestionable proof of their action by the escape of sewer-gas. It is not everybody who is an admirer of odours of that kind, and in consequence tenants cannot be found for many of the houses. The owner brought an action to restrain the Poplar Board of Works from permitting offensive and pestilential smells to issue from the two drains. One is a 9-inch glazed pipe drain, and was laid by the owner of the cottages for the time being; the second is a 12-inch, that was laid by the Board. When the case came before Mr. Justice NORTH the Board argued that they were not responsible for the 9-inch drain, as it was not a sewer in the sense required by the Metropolis Local Management Act, but the learned judge did not adopt that interpretation, and decided against the Board, granting an interlocutory injunction. The Poplar Board appealed, for a judgment to that effect entails a costly liability on local authorities, and as two out of three Lords Justices agree that the injunction was wrong and must be discharged, so far the victory lies with the Board. Everything turned on the difference in meaning between a drain and a sewer. According to the Act "drain" is to be taken as meaning "any drain of and used for the drainage of *one building only*, or premises within the same curtilage." Now a prior clause gives a district Board in certain cases power to substitute a combined operation for several separate drains. The question, therefore, to be determined was whether there was any clashing between the clauses. Nearly a month was taken to consider the question, and two of the Lords Justices believe that a combination of drains is still a drain, and, therefore, out of the responsibility of a district Board. As regards the larger drain or sewer belonging to the Board a decision could not be given, for evidence was necessary which was not before the Board.

IT is announced that the Receiver for the Metropolitan Police District has purchased the site on the Embankment known as the Opera House site, for the erection of new Central Police Offices. The building which Mr. MAPLESON projected, and on which a good deal of money was expended, would be more appropriate on the Embankment, but the days are over for operas which are conducted on the "star" system. It is to be hoped, however, that the style of the new building will make some amends for its purpose.

THE half-yearly meeting of the National Association of Master Builders of Great Britain was held on the 27th ult. at the Red Lion Hotel, Cambridge, and was attended by representatives from London, Liverpool, Birmingham, Bristol, Hull, Bradford, Bolton, Lancaster, Northampton, Wigan, St. Helens, Cambridge, and Lincoln. The meeting was presided over by Mr. W. H. COWLIN, of Bristol, the president of the association, who reported to the meeting the evidence given before the Select Committee of the House of Commons upon the working of the Employers' Liability Bill, 1880, and the proposed amendments, and also upon other matters of legislation affecting the building trade. It was decided to hold the next half-yearly meeting at Nottingham.

THE Consul-General for Belgium reports that he has reason to believe that England's participation in the Fine Arts Exhibition at Antwerp last year gave great satisfaction, English works of art being, as a rule, so seldom exhibited abroad. The British section contained 116 specimens, consisting of oil paintings, water-colour drawings, sculpture, engravings, and etchings.

PEOPLE who may be disposed to admire the carpets in the Indian section of the exhibition at South Kensington should bear in mind that much of it represents prison labour, and it is not complimentary to the colonists to find their products placed in juxtaposition with those of convicts. Mr. VINCENT ROBINSON, in a paper which he read at a conference a few days ago, pointed out that the carpets in the exhibition had no claim to be considered as reproductions of the fine old originals. The gaol authorities have nearly ruined the carpet-weavers' craft, and it appears it is now allowable for them to destroy other art industries with a like impunity. Mr. PURDON CLARKE, who has charge of the Indian department of the museum, acknowledged that the deterioration of Indian art was entirely due to the prisons. It is known that analine dyes are largely used in carpets, which, in consequence, cannot long endure. Would-be connoisseurs, who turn away from the products of English looms, will do well to consider what they purchase and whom they patronise when they buy Indian goods.

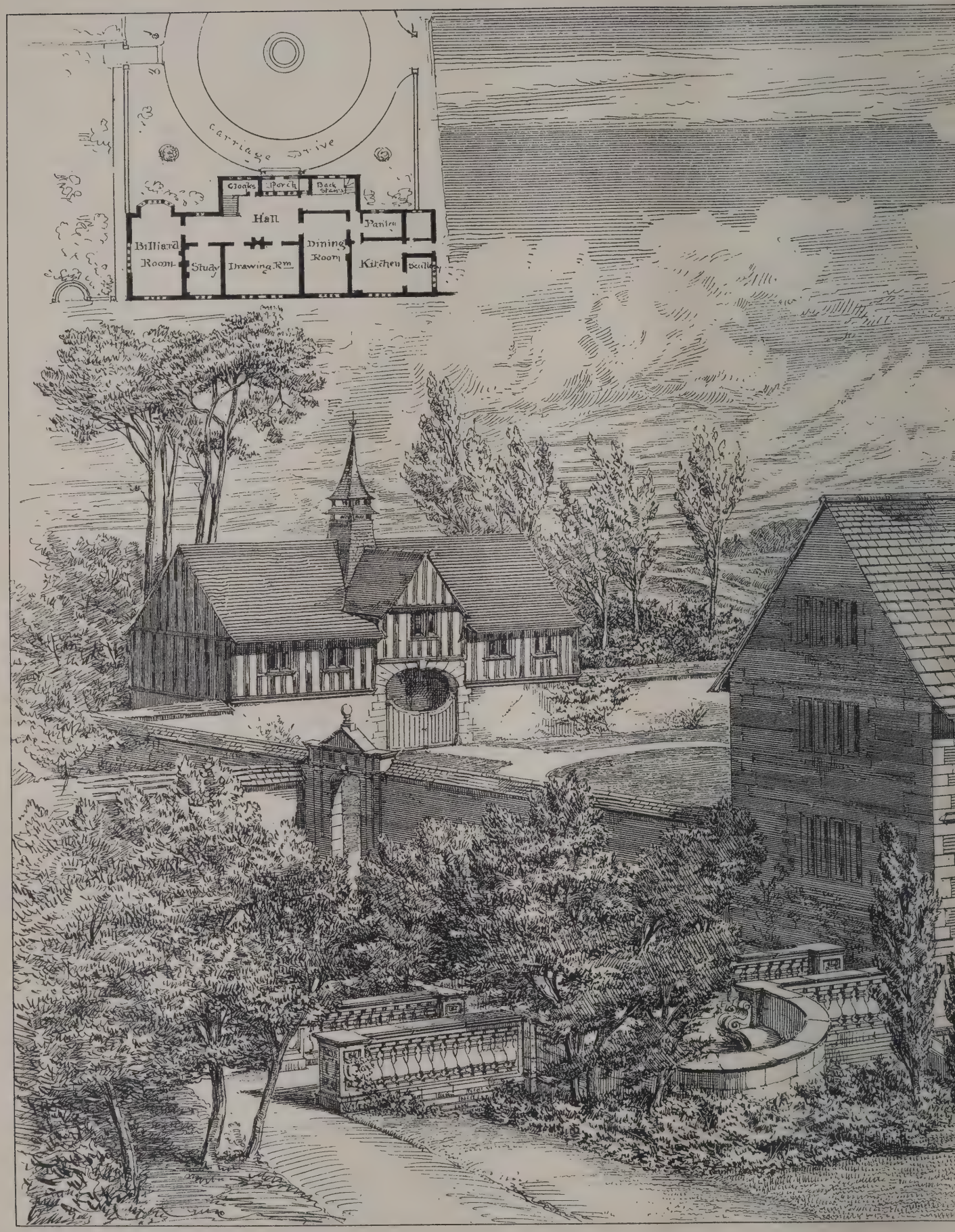




Mrs BALDWIN.

(Collection of Mr William T. Blodgett)

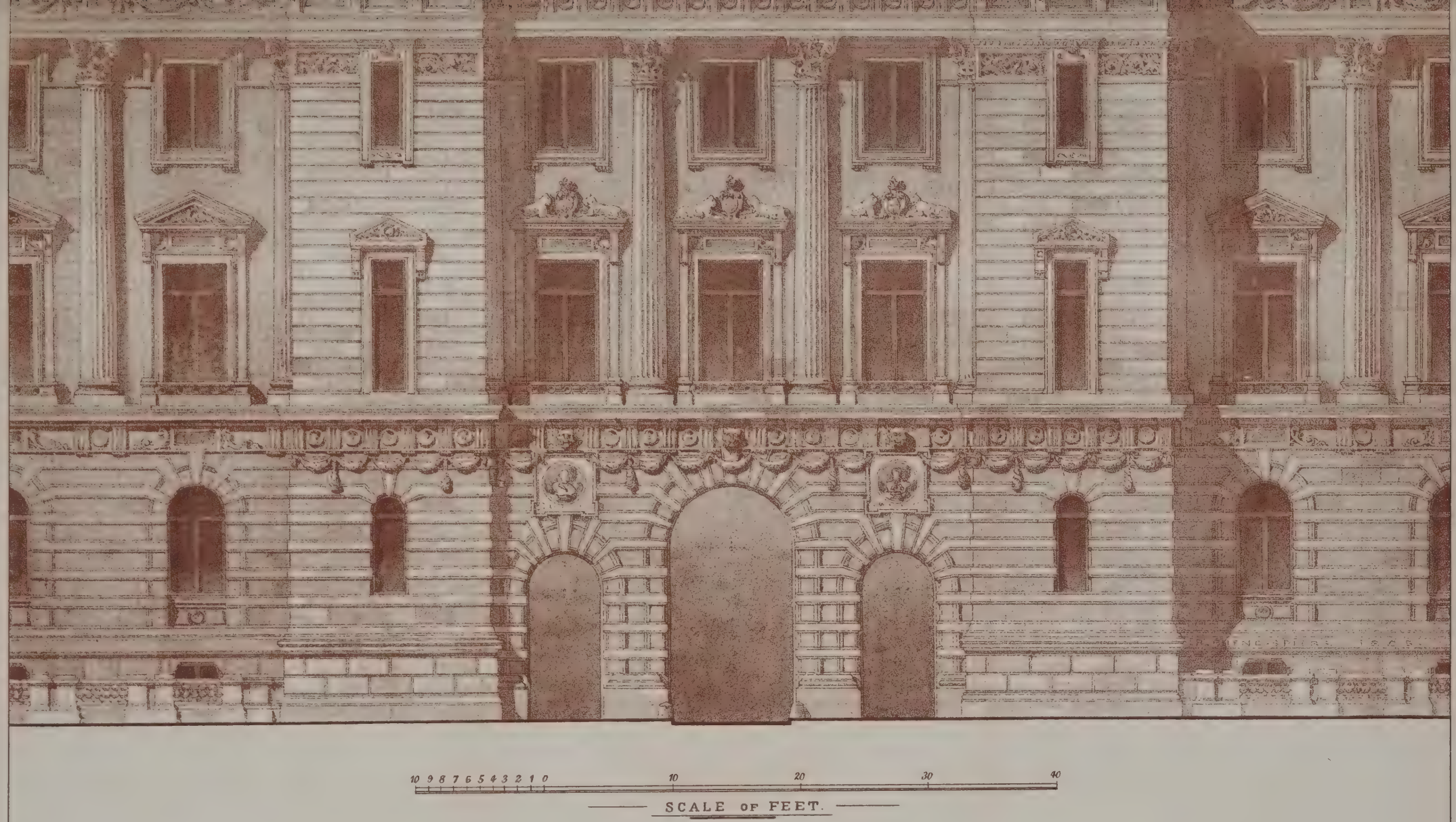
Boston: Houghton, Osgood & Co. 211 Washington St. 1880


Carriage Drive
Cloaks
Porch
Back Stairs
Hall
Billiard Room
Study
Drawing Rm.
Dining Room
Pantry
Kitchen
Scullery



Printed by Sprague & Co. 22, Martins Lane, Cannon St. E.C.





INK PHOTO. SPRAGUE & Cº. LONDON.

STUDY FOR CENTRE BLOCK OF A PUBLIC BUILDING.

BY R. PHENÉ SPIERS.

ILLUSTRATIONS.

MRS. BALDWIN.

THE portrait of Mrs. Baldwin is one of the most characteristic of Reynolds's portraits, and the etching from *L'Art* is the most successful attempt at its reproduction.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 14. HAYES COURT, OXTED.
NO. 15. CENTRAL BLOCK OF DESIGN FOR A PUBLIC BUILDING.

NOTE.—"Youlgrave," which was published last week, is by Mr. R. Norman Shaw, R.A.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE members of the British Association have had the advantage this year of exploring a large district in the north of England.

On Wednesday in last week the visits began with one to Piercebridge. The site of a Roman camp is now the village green, but as yet the place has not been adequately explored. At Gainford the church was seen. There were remains showing that a church had existed in Saxon times, and Mr. Brock stated that almost every church in the county had evidences of being preceded by one in Saxon times. Staindrop Church was also found interesting. It contains some early Norman work, a church being erected in that era without aisles, which was extended in its present form in the early part of the thirteenth century. Adjoining the chancel is the vestry, which was originally a priest's house, built by Joanna Swainford, daughter of John o'Gaunt. In the church are the Neville monuments, being effigies in alabaster of the first Earl of Westmoreland and his wife, Joanna Swainford. He died in 1326.

Raby Castle, belonging to the Duke of Cleveland, is near, and the members were entertained at luncheon in the great hall. The cellars date from about A.D. 1450. The kitchen resembles one in Durham Castle, but is larger. The Rev. Mr. Hodgson said the first mention of Raby was in connection with Canute. The original house had disappeared, the present one being built on the same site. Raby was unique and interesting as a castle. It was built by one man, the son of Neville, the victor of Neville's Cross. In almost all other cases it was found that there was a Norman core round which the buildings had grown, but Raby was the conception of a single mind. It was pitiful to think that this castle, which had been built by John, Lord Neville, remained practically intact till the end of the last century. It was then that the alterations had been made, the roof of the barons' hall having been altered and the room made 30 feet longer. He pointed out the remains of the old minstrel gallery at the end of the barons' hall. The relics and paintings of the barons' hall and the castle were inspected, many of which were of great historical interest.

The ruins of Barnard Castle were afterwards visited. Eggleston Abbey was described by Mr. J. P. Pritchett, and Sir J. Picton pointed out the mullioned eastern window as being unique in form. The day's work was finished with a visit to Rokeby.

Thursday's work was restricted to the neighbourhood of Bishop Auckland. The parish church of St. Andrew was described in turn by Sir J. Picton, Mr. Loftus Brock, and Dr. Hooppell. According to Mr. Brock, nearly all the churches in the diocese bore evidence of erection at different periods. The arching was amongst the finest in the county; but it was difficult to reconcile the tower, which was Early English of a simple character, with the architecture of the nave. The diversity of the designs in the pillars was a peculiarity, but served to impart a pleasing effect without adding to the expense. The vaulting of the south porch was considered charming. A peculiarity of the churches in this diocese was the absence of tracery. There was literally no Saxon work in the county, because the Saxons were little seen in Northumbria. Some Saxon stonework, however, had been discovered during the recent restoration of the church, and some of it was the most delicate that had been seen on that side of the Humber. These stones were for the most part sepulchral, and seemed to indicate that numerous interments of people of a noble class took place. That county was singularly destitute of monastic establishments, particularly of the enclosed, or lock-and-key order. A feature in Durham was that they found a great number of collegiate buildings, of which the present edifice was one, and it looked as if the bishops of that diocese were farseeing men, and had seen that the more secluded houses were not good, collegiate buildings allowing those belonging to them to live more amongst their neighbours.

St. Helen's, Auckland, was described by Dr. Hooppell. It was entirely composed of Roman stones, worked by Roman hands and brought to that place from Vinovia, which at that time contained a large population. They saw before them, without question, the whole of the original outlines of the church. Altogether the church bore a very striking similarity to the very ancient ecclesiastical remains in Ireland, which competent authorities were agreed upon, contained the remains of the most ancient ecclesiastical buildings, but which, however, were very rapidly disappearing. The real character of the church was fortunately discovered about seven or eight years ago, when great interest was excited, and a paper upon the subject was read at the time at the association's meeting held at Great Yarmouth in 1879. The church, which had been gradually going into ruin, had 600*l.* or 700*l.* spent upon it, and the old parish church thus became restored. Mr. Roach Smith, in his remarks, said in the church they had not only Roman materials, but Roman influence. Even the windows were Roman, and the structure must have been as near the Roman period as was possible, and must have been erected under the direction of Roman architects. At Auckland Castle the party was entertained by the Bishop of Durham, president of the meeting.

An evening meeting was held at Darlington, when papers were read on "St. Wilfrid of Ripon," and "The Conyers of Sockburn Hall."

The weather interfered with the success of the excursions, although on each day a large party was in attendance. On Friday the fine church of Richmond was visited. Mr. Loftus Brock said that the history of the church was closely connected with that of the adjacent castle, but whether or not there was a church there before the erection of the castle was a moot question. The probability was that there was a church in the Saxon times. The tower on the outside was worth careful inspection. It was entirely different to anything he had yet seen in Durham. It was a good sample of an early Perpendicular tower, and since it had the Neville arms on one of the parapets, and on one of the buttresses the arms of FitzHugh, with the date 1399, the theory had been advanced that it had been built by him.

After seeing Trinity Church in the Market Place of the town the party proceeded to the castle, which was founded in A.D. 1071. According to Mr. Brock, the external wall of the castle was about 600 yards in length, the barrier being strengthened by lofty square towers, the habitations of the principal officers, and enclosing a triangular space of five acres. The northern and eastern sides of the castle were defended by a moat, the weaker part towards the town being protected by a keep or great tower—a noble specimen of Norman architecture with walls of extraordinary thickness, and built about seventy-five years after the foundation of the castle by Earl Conan. This is 99 feet high, and the lower storey, now used as a militia guard-room, is supported by a massive octagonal column in the centre, from which circular groined arches spring.

On returning to the town the old Grey Friars Tower was seen, being all that survives of the monastery erected by Fitz-Randolph in A.D. 1257. A drive brought the members to Eastry Abbey, founded in 1152 by Ronald, Constable of Richmond Castle, and dedicated to St. Agatha. It was a Præmonstratensian Priory, chiefly Early English and Early Decorated, and was occupied by "white canons," whose order was founded in France in 1120. The first group of buildings contains the remains of several fine apartments. A part near the Swale is at present in danger of collapsing.

At the evening meeting Dr. Eastwood read a paper on "The Roman Roads," in the course of which he said the Roman communications between the southern and northern parts of Britain were kept up by means of two great roads, one of which proceeded from Deva (Chester) to Manchester, Lanchester, through the lake district—the High Street—to Carlisle and into Scotland. The second, and greatest road in the country, was from Dover to London, York, the Tyne, into Scotland. This was called the Watling Street. There was also a third road, about which much less is known than about the two roads mentioned. This is considered to be the Rykenild or Ikenild Street. It came from St. David's to Gloucester, went through Staffordshire, Derbyshire, by Derby and Chesterfield, probably to York, where it would join the Watling Street. From York its course was to Thirsk and Thornton-le-Street, three miles north of Thirsk, and from thence its course may be fairly traced through Great Smeaton, Girsby, and Over Diesdale, in Yorkshire, to Pountey's Ford. From the ford the road goes on to Sadberge, Stainton-on-the-Street, thence to Sedgefield. For six miles further north the course is clear, when the road is lost. For thirty-six miles from Thirsk to this point the Roman road is used as a modern road, with the exception of a few places where its course is obliterated, or it has degenerated into a field road or a foot-path. North of this point, in the parish of Kelloe, the course of the road is very uncertain, and the probable termination was on the Tyne, at or near South Shields, opposite Tynemouth.

Mr. Hutchinson also read a paper on "The Palatinate of Durham."

On Saturday several buildings were seen. First came Croft Church, with a thirteenth-century chancel and fourteenth-century nave. Croft Bridge was constructed in the fourteenth century. Hurworth Church was next visited, and was described by Mr. Pritchett. After the interesting church at Sockburn, the hall was visited. It was formerly the seat of the Conyers. The falchion, with which the "worm" or serpent was said to be slain, was exhibited. It was in perfect condition, possessing a copper handle, and having a coat of arms of three lions by the side of the pommel and an eagle displayed on the other side. The first representation was the early arms of the kings of England, and the latter those assigned to Earl Morcar. The date of the workmanship is about the middle of the thirteenth century. A stone effigy of the date 1290 called forth the remark that when legs were crossed in effigies, it was intended as an expression of repose, and not as a sign of a visit to the Holy Land.

At Dimsdale House some interesting objects were shown, which were found in the neighbouring excavations.

Mr. Loftus Brock read a paper at the evening meeting on "The Peculiarities of the Churches of the County of Durham." The churches of Durham were not, he said, so elaborate as those of some other districts, yet it would be found that they were of great interest. They were for the most part plain buildings, rather square and heavy in their proportions, and when they were large in size the same features were observable. Speaking generally, the churches of Durham would be found to consist of more regular planned structures than in some other parts of England. A local peculiarity was the existence of woodwork of great beauty in many of the buildings which had come under review. It would be found that close to the church in numerous cases there still remained the old residence of the earl of the manor, or such a building had existed. Were this found in only a few instances no safe deduction could be drawn from it. Being, however, so usual, it was of value as a disproof of the assertions so common in the present day, but which are so untrue, that each local church was erected by the State, and that it was therefore State property. Their position in respect to the manor-houses was alone sufficient to show that at some period in remote times the owner of the land erected a church for the benefit of his tenantry and his family. This was usual throughout the whole length and breadth of the land. In Durham, in addition, they found very ample evidence in the page of history that at early periods the owners of the soil were in possession of their own churches which they or their predecessors had built. They found them effecting repairs and also exercising all the rights of ownership.

Monday was the last day of the meeting, and the Wensleydale district was selected for the excursion. Middleham Castle was the first place of stoppage. Mr. Pritchett said it was one of the most famous historic buildings in this country. There has been practically a castle within a castle. The inner building is of Norman architecture, and is said to have been founded by Robert FitzRalph about 1119. The outer building is the creation of Robert Neville, the first Earl of Westmoreland, and dates back to the fourteenth century. It was at Middleham Castle that the Earl of Warwick, "the king maker," resided. The Duke of Gloucester, afterwards Richard III., also resided here, and it is the birthplace of his only son, an event which took place in 1473. During this period the castle was practically the centre of government for the country, and was the scene of some of the most thrilling episodes in the history of that period. The castle is now in ruins, it having been rendered untenable during the Cromwellian period. Notwithstanding this, however, the grandeur of the building may still be seen in the remains which yet stand commemorative of a bygone and glorious past. The parish church dates from the fourteenth century. Visits to Wensley Church and Bolton Castle, filled up the remainder of the day, and completed an agreeable meeting.

DURHAM CATHEDRAL.

THE members of the British Archæological Association, and other persons to the number of about two hundred, visited Durham Cathedral on Tuesday in last week. Before the building was examined the party attended the morning service.

The Dean of Durham (Dr. Lake) afterwards addressed the visitors from the lectern. He said that the building in which they were present was by many people considered to be not only a noble example of Norman architecture but one of the noblest of churches. When it was proposed about ten years ago to carry out some alterations, one of the best informed of English architects wrote to him, saying, "Be careful what you do, for you have to deal with the noblest church in the world." As he had asked Mr. Fowler to guide them through the building he proposed to relate the history of the cathedral in the briefest manner. After many wanderings the body of St. Cuthbert was brought there about the year 995, and the cathedral was commenced by the bishop of that time. That building was made of wood, and in about 100 years time it gave place to the predecessor of the present magnificent building. The work had really been done by the Bishop William of Carilepho. About 1090 the choir and central tower was built by him, the work being completed within ten or fifteen years by his successor, Ralph Flambard, a favourite minister of William Rufus. Rufus, with the assistance of the chapter, built a great part of the nave. Then the building went on, in periods of about fifty years. About 1150 the next bishop but one built the chapter-house, the two great doors, and other points. The Galilee was afterwards built by Bishop Hugh de Pudsey. That was about 1200. Fifty years further the Nine Altars Chapel was built. This was considered one of the most beautiful pieces of work it was possible to find. Mr. Fowler would, when they visited that portion of the building, draw their attention to the extremely able way in which the Norman and later styles were harmonised. This work was continued by Prior Melsanby, and within the space of 150 years that magnificent cathedral had been erected. It had suffered from the terrible work done at the Reformation. At the end of the last century the cathedral chapter had cut in half the magnificent chapter-house, which was the finest chapter-house of the kind existing in England. The present chapter had done their humble part to restore some parts in which it was thought the cathedral was wanting in beauty, but he hoped without doing injury to it in any way. When he first came he remembered being struck by the majesty of the whole place, but also that there was something wanting in what they might strictly call the beauty of the cathedral. Under the auspices of Sir Gilbert Scott they had had it restored. The choir screen before them was one of the works; some people liked it, some did not, but the chapter had done all they could to preserve and increase the beauty of the cathedral.

Mr. Charles Hodgson Fowler, F.R.I.B.A., prior to conducting the visitors round the building, gave a sketch of the history of the cathedral. He related the legend which led to the body of St. Cuthbert being brought to Durham. The monks were conveying the body of the saint through the country, and when they reached Warden Law, a hill in the vicinity of Durham, it became immovable. They prayed that they might be shown where to take the body, and after two or three days it was revealed to them that they were to take it to "Dunholme." They did not know where Dunholme was till they heard a woman inquiring of another woman whether she had seen her cow. The second woman replied that she had seen it in Dunholme, and the monks bearing the body (which could now be moved) followed her till they reached Dunholme, or Durham, where they deposited it and built over it a wooden church. That erection was replaced by a stone building known as the White Church, built by Bishop Aldhun. The position of that church, which was a magnificent church for those days, was probably on the south side of the present building. Bishop Carilepho came there bringing the Benedictine monks from Wearmouth, and turned the church from a secular into a monastic or regular building. This bishop, after being exiled for three years, during which it was supposed he thought the matter well out and drew plans for a church, laid the foundation of the building on August 11, 1093. There was very little doubt but that the idea of the great building came from him. There were certain points about the building which were essentially English. The choir was commenced first. When Carilepho died in 1096 he had completed the choir, and possibly the vaulting, part of the tower, the lower part of the transepts and the first bay of the nave, the triforium of which was of a simpler nature than the triforium of the remainder. It had been discovered lately that during his life the walls of the church had been built up as far as the arcade which ran round the building. This was not known at the last visit of the association, for the walls were then covered with whitewash. The cathedral was of especial interest, because it was apparently the work of one mind. During the three years the see was vacant after Carilepho's death the monks continued the building. The work went on during the episcopate of Bishop Flambard, and the vaulting of the nave was completed by the monks during the time the see was vacant from 1128 to 1133. Bishop Pudsey built the Galilee Chapel. At first he commenced to build it at the east end, but it fell down, and he then erected it at the west end of the church. It was really for the use of the people and was meant for a parish church. They next came to the Nine Altars, which was the idea of Bishop Poore, and which was carried out by Prior Melsanby. The bishop's throne was a beautiful and elaborate specimen of work built by Bishop Hatfield. In the choir there was formerly the great Pascal candlestick, the candles in which reached up almost to the vault of the aisles. It was the most magnificent thing of the kind in England, if not in the world. The only thing to be compared with it was the candlestick in

Milan. On the right of this was a pelican lectern, from which the lessons were read, and on the left an eagle lectern, from which the gospels were read. The stalls were the work of Bishop Cosins, and were remarkably beautiful specimens of the work of the time. They had had one of the finest screens in the world, reaching up to the capitals of the piers of the nave. There was a similar screen on a smaller scale in the Abbey of St. Albans.

The company then, under the leadership of Mr. Fowler, proceeded to examine the cathedral. He explained that the reredos was made of Dorset stone, and brought from London to Durham, where it took two years to erect. Passing out of the choir the company entered the Chapel of the Nine Altars, in which is the tomb of St. Cuthbert. The slab covering the tomb was laid by the commissioners of Henry VIII. when the body was taken from the shrine and buried there. There have been statements made that the body had been removed by means of a tunnel made to the tomb. No one who had read carefully on the subject, said Mr. Fowler, could come to any other conclusion than that the body still remained at Durham. In 1827 Dr. Raine opened the tomb and found a body, from which was taken the remains of several vestments of exceeding beauty. The pavement round the tomb had been much worn, it was supposed by people who on great days were allowed to go on the raised place where the shrine was and look at the coffin, which was exposed in those days. In the Nine Altars Chapel there were formerly nine altars, three in the centre and three on each side. They were formerly divided by screens of wainscot work. Here was also hung the banner of the Scottish king taken at the battle of Neville's Cross. Leaving the Nine Altars, the party proceeded to the nave again, where Mr. Fowler drew attention to the lantern tower and its extreme beauty. Proceeding to the end of the cathedral, the blue pavement, beyond which females were formerly not allowed to pass, was examined, and then the font, which is of comparatively modern date, the original being in the church of Pittington. The tombs of the famous Neville family, the doors, and the former place of sanctuary, were also pointed out, after which the company entered the Galilee Chapel, the principal object of interest in which is the tomb of the Venerable Bede. Mr. Fowler pointed out that the chapel was built on the verge of the precipice which overhung the Wear, and was supported by strong buttresses.

In the library Canon Greenwell exhibited many of the treasures to the visitors. In speaking of the restorations about the place, he said that some were not restorations at all, and referred with praise to the example set by Mr. Hardwick, who declined to remove the old oaken roof and substitute a high pitched roof of deal. After luncheon the castle was visited, Mr. Hodgson Fowler again acting as guide.

NORTHERN ARCHITECTURAL ASSOCIATION

THE annual excursion of this association was held on Monday to Raby Castle. The members reached Winston Station about 11 A.M., where they were met by their president, Mr. G. G. Hoskins, F.R.I.B.A., and driven to Staindrop. Here an inspection was made of the ancient church, after which the members walked across the park to the castle, of which an inspection was made, Mr. W. Livesey, the Duke's architect, and a member of the association, acting as cicerone. At 3 30 the members dined at the Queen's Hotel, Staindrop, the chair being occupied by Mr. Hoskins, and the vice-chair by Mr. Shewbrooks, vice-president. The party then drove to Darlington and paid a visit to St. Cuthbert's Church, expressing their general approval of the two new painted windows.

HYTHE CHURCH.

THE newly-found doorway, which was mentioned in last week's *Architect*, lies to the north of the crypt facing the main entrance, and the mouldings and Purbeck marble shaft are almost as perfect as when they came from the mason's hands 650 years ago, showing that for many centuries they must have lain buried. The monastery, of which the church was in all probability the abbey church, lay but a few yards below, and one of its principal entrances and the dole window are still seen *in situ*. Mr. Pearson, R.A., who is just about to restore the chancel, speaks of it as "one of the most interesting with which he has ever been associated," and adds that "the improvement consequent on the restoration in the internal effect will be almost inconceivable." It has many striking features. The exquisitely proportioned Early English windows, rich with dog-tooth ornamentation, the clusters of Purbeck marble shafts, which stand out with singular boldness from the main architecture, the triforium, like that of Canterbury Cathedral, verging on the Transitional, distinguish the choir as one of unusual beauty.

MR. STREET'S PRINCIPLES OF RESTORATION.

A CORRESPONDENT has sent us the subjoined lecture delivered in 1861, and in his letter says:—"The best refutation of the attack which Mr. Thomas Drew, R.H.A., has made on the reputation of George Edmund Street as a restorer is, I think, to be found in the lecture delivered a quarter of a century ago, of which I enclose a report. It will be seen that Mr. Street was an advocate of the most reverential mode of restoration. There is another point on which I should like to say a word. Mr. Drew says that Mr. Street's design for the Edinburgh Cathedral was 'pronounced to be crude, unsatisfying, incomplete.' It would be interesting to discover who were the hypercritics in this case. Certainly Mr. Christian, the referee, was not among them, for he testified that the design was excellent in every particular, very simple in its general character, bold and vigorous in detail. Mr. Street recognised the stipulated conditions of cost in the fairest way; Sir Gilbert Scott did not in respect of the tower, and probably no one in Edinburgh would say the best design was selected. The late Edmund Sharpe might be taken as a pretty fair judge of a design for a Gothic church. I remember his saying to me that among all the designs he preferred Mr. Street's. His reason was that in it a purer English type was recognised than in any of the others. It was not set aside on account of 'mere novelties and quaintnesses,' as Mr. Drew alleges. May I recommend to Mr. Drew the perusal of a letter relative to Christ Church Cathedral, which appeared once in *The Architect*? It says, 'So admirable is the restoration of Christ Church Cathedral as a whole, and so evident at every hand the personal devotion of Mr. Street's mind to it, that no one here, I think, would be ungenerous enough to cavil at trivial deficiencies in details, or unreasonably expect provision against every unforeseen circumstance which may be developed in the years after a work has left an architect's hand.' It is dated from the chapter-house of the said cathedral, and is signed 'Thomas Drew, R.H.A., architect.' What a contrast it affords to the paper reprinted in *The Architect*!"

This subject is one on which it may be difficult to say anything absolutely new or original, and on which nevertheless it is of no little consequence that from time to time something should be said by those who feel the whole importance of the charge with which we are entrusted in the restoration of our ancient buildings. How is it possible to overstate their value? They illustrate almost every page of the history of our country, in letters which are legible and unmistakable to all who take the pains to read them; and yet the slightest mistake in the restoration of any one of them may go far to destroy all their interest and all their value. They connect the present with the past in the liveliest way we can imagine, yet a mistaken mode of restoration may end in leaving us nought of the old work or the old associations, but in their place a completely modern-looking building, with associations going no further than a tribe of modern workmen, a careless architect, and a committee of enthusiastic but ignorant restorers. So that, in truth, the restoration of ancient buildings may very easily—as it does only too often—mean their destruction.

Our first duty is to be as justly conservative as possible wherever we have to deal with anything old. Not conservative in the sense of putting up a new copy of an old work—such as is in progress at St. Mary Magdalene's, Taunton—but conservative in the much truer sense of keeping the old work in its old place, with its old tints, its old weather-stains and lichens, and even its old defects.

It is almost impossible to overrate the importance of this first and great condition of all tolerable restoration, and I confess that as I grow older and think more on the subject, I find myself even more and more impressed with its invariable truth. Some years ago, at one of the first architectural meetings I ever attended, I remember having heard a discussion on the restoration of churches, which was opened by one who, partly for the sake of argument, partly because there was a half-truth at least in his argument, maintained that the only true mode of restoration was the "destructive," as he called it; by which term he explained that he meant that we ought to decide for ourselves which is the best style for our purposes, to make some one style our own, and then ruthlessly to pull down everything that disagrees with it: so that the choir of Lincoln and the nave of Peterborough or Ely, not being in that perfect Middle-Pointed style in which alone he saw any perfection of design or completeness of purpose, were, I suppose, to be pulled down, until nothing should remain but old works of one date, and new works in imitation of them; or—to carry the argument to its legitimate end—so that everywhere old buildings should give way to the perfect style (whatever that may be) of the nineteenth century.

Absurd and extravagant as such a view is, there is nevertheless a vein of truth in it, for the argument was founded, no

doubt, upon a careful consideration of the mode of work adopted by our forefathers, and in exact imitation of their mode of thought and action. No one who has examined their work can forget how little they reverenced the work of their forefathers. We praise William of Wykeham for his grand nave at Winchester, but what should we say to the man in our own age who should propose to continue the style of the central octagon of Ely on into the nave, by paring, destroying, or casing the old columns, inserting pointed and moulded arches, and throwing the aisle and triforium into one by the destruction of the Norman vault between them? Yet this is precisely what Wykeham did at Winchester; whilst his predecessor, Edington, no doubt pulled down a grand Norman west front in order to substitute his own conception in its place. And the instance I have given is one of all but universal application. Every man in the Middle Ages seems to have thought his own work better than that of his predecessor; and the instances are rare in the extreme where, as in the naves of Westminster Abbey and Worcester Cathedral, the architect has distinctly copied the work of the earlier architect of the choir. And unquestionably, great part of the admiration we feel for this old work is intimately dependent upon that hardihood and self-confidence which ever characterised its designers; for it needs not to be said that, if our old architects had reverenced their fathers' works as much as we respect theirs, we should have had, perhaps, more buildings of uniform character, but they would have shown far less originality and life and vigour than they now do. The reason, however, for this contempt for their predecessors' work is very plain, when we consider how comparatively short the interval was which separated the latest of our Mediæval architects from the earliest, and how completely it had been bridged over by the very gradual nature of the development in their style.

The destructive system of restoration which was the rule in the Middle Ages, however defensible and right it may be in theory, is entirely indefensible and wrong in practice. For let us once allow it to be right in practice, and we shall soon find men on all sides with little reverence for what has gone before, and much conceit in their own cleverness, ruining in a short space of time that which no space of time whatever can give back to us.

There are three modes of destructive restoration, and each equally effectual. The first, that which would pull down and reconstruct in a new style; the second, that which would pull down and re-erect in the same style; and the third, that which would tool and scrape every stone in a wall until the whole should appear to be new. Of these systems the largest and boldest examples are, fortunately for us, to be seen on the Continent, and we have suffered comparatively little as yet.

How much is lost in the course of destructive restorations it is almost impossible to calculate. In some cases in England we have suffered terribly, and nowhere more than at Salisbury. The destruction of the old campanile, the confounding together of portions of monuments of various dates in the most indiscriminate fashion, the removal of screens, and the carting away of old stained glass to the city ditch, are among the architectural sins for which James Wyatt, "the destructive," as Pugin rightly called him, has to answer.

The restoration of the west front of Lichfield Cathedral between A.D. 1788 and 1795—one of the most abominable even of the works of that "ingenious architect Mr. James Wyatt," as Storer called him—and the restoration of St. Denis, in France, are cases of even more grievous spoliation than that of Salisbury; and we cannot, I think, be too thankful that an age in which all restoration would necessarily have been destructive in the extreme, was at the same time an age of such apathy and lethargy that it was the rarest thing for any restoration or repair of an old building to be undertaken at all.

That third kind of destructive restoration to which I referred is, unfortunately, so popular with some people that, if we do not take care, great damage will be done, not always to the architectural design, but (which is just as important) to the colour, tone, and interest of our old buildings. And in reference to this I am unable to avoid mention of two restorations now or lately in progress, both of which seem to me to be of an unfortunate description. They are those of the western fronts of Lincoln and of Winchester.

The former is, I am told, being retooled and repaired wherever defective, so as to make it look like a new work of our own day. And the history of the whole thing is worth telling. It seems that a former clerk of the works is supposed to have had some interest in the use of a Yorkshire stone in place of the native stone in repairing the west front. The Yorkshire stone he used has decayed rapidly, and all his work now requires renewing with the same stone that was used in the old work; but, not content with repairing defects, they are carrying the cleaning, tooling, scraping process over the whole of the work, so as to make it look uniform.

I wish men would consider a little what this cleaning process involves. Directly you set a mason to clean a piece of old work he proceeds to chisel away something like an eighth of an inch of the surface everywhere. All mouldings assume, of course, new proportions: the hollows become larger, the bowtells smaller, and each cleaning is therefore one step in the destruction of the work; whilst it happens continually that an ignorant workman will in an hour or two destroy the special features of an old moulding, without having the slightest idea that he has altered the section at all. It ought to be understood, therefore, that in all cases of cleaning and refacing old carved or moulded work no amount of skill on the part of the architect (who cannot always be on the spot) can secure the work from irreparable injury; and I hardly know what guarantee we can have that at Lincoln the damage to old colour and the alteration of the relative proportions of mouldings are the only things we shall have to lament in this mistaken work of so-called "restoration."

At Winchester a most inexplicable work of the same kind is in progress. Here the main beauty of the old work was its colour. It never was a very grand façade, and had many of the usual faults without the best features of Perpendicular design; but time had done its work, and the west front was in colour and general effect fairly in harmony with the rest of the building, and a work for Englishmen to be proud of. Now, as you go along the railway to Southampton, you see the new tower and spire of a church, and beyond it what seem to be the equally new gable and pinnacles to the cathedral; and I hear that they propose to polish up the whole west front in the same way, to match the gable. Then, if funds last, I don't see why they should not undertake the side walls, and finish up with a refresher over the whole surface of the fine Romanesque central steeple! When all this is happily consummated, the good people of Winchester will, I suppose, be happy, and their grandchildren may hope to see the cathedral again in its old colour and with its old effect. I cannot imagine that the stonework required scraping; for not only is the stone at Winchester generally in very fair condition, but at the same time I have but little doubt that the putting a new face on it will render its future decay more probable and rapid than any other course that could have been adopted. The castle and much of the exterior of the cathedral at Norwich are also examples of destructive restoration; and here the walls have been so plastered with cement, coloured to imitate the stone in the most elaborate way, that I fear most of the original work is absolutely destroyed.

Destructive restoration is accomplished also by the removal of furniture or fittings of old buildings as often as by the alteration of old detail. For instance, there used some years since to be a number of very fine carved oak stall or desk ends, of the fourteenth century, in the choir of Wells Cathedral; their places are now occupied by new work and designs, and on a recent visit I could find no trace whatever of any of the old ends, whilst the verger absolutely refused to allow that there ever had been any such work as I described in the cathedral. Similarly, I remember seeing the fine wooden gates of the screen at Dorchester in a builder's yard at Oxford, copies of them having been erected in their place, to save the trouble of restoring the old gates, and probably without the knowledge of the architect. So, too, some one once sent as a present to the Oxford Architectural Society a fine seat-end, which I recognised as having been taken from a church in Staffordshire, probably during some repairs; and in these cases we architects are by no means always in fault, for there are some clerical and other restorers who take strong fancies and strong dislikes. One man cannot tolerate his old chancel screen—another does not like poppy-heads; and each of them banishes his enemy when he has him in his power during the work of restoration! And then there are, or at any rate there have been, some antiquaries who seem to think it no theft to pocket a curiosity, and have no compunction about giving the last wrench at an old brass. So of late years the grand St. Maur brass at Higham Ferrers has suffered, and at the present moment, the church having been shut up unused for a couple of years, one of the older brasses is all but pulled off the stone, and will probably, unless more care than hitherto be taken, have disappeared altogether before the restoration is complete.

I was told the other day of a curious example of the effect of careless or ignorant restoration on the south doorway of the north wall of the choir of Lincoln Minster. The central shaft was of later date than the jambs, and the latter, having become decayed, have now been restored in imitation of the central shaft. The result of course is unfortunate in every way, and the story which the old doorway told has now a third chapter added, which makes the whole unintelligible.

So far all the examples of destructive restoration have been such as all will agree in condemning. There are other examples as to which we may well be more cautious in the expression of an opinion; because, though they are among the really destructive works, they are also among the best, the most careful, and the most sumptuous of restorations. Take the most remarkable example—the chapter-house at Salisbury. Here we see the whole interior restored with new polished marble shafts; new stonework wherever the old was damaged in any way; walls

and roof covered with new painting; and finally, the whole of the sculptures from Old Testament story which fill the spandrels of the arcades restored, repaired, and renewed in the most elaborate manner, and then covered with painting. Now, independently of the question whether the chapter-house be or be not now exactly in the state in which it was left in the fifteenth century (and, as far as the colouring is concerned, I doubt it vehemently), such an elaborate restoration is very dangerous.

I believe it to be quite impossible, and very wrong, ever to attempt the restoration of sculpture. If you have a piece of old sculpture so damaged as to interfere seriously with the purpose of the portion of the building in which it occurs, the right thing to do is to move it bodily to some other place, and there carefully preserve it; whilst in its place you insert an entirely new and original work. You have no more moral right to touch up or patch the work on which an ancient sculptor bestowed his art than you have to touch up, finish, and repaint the work of a Giotto or a Fra Angelico. They are all works of individual artists, and because their names happen to be unknown we are not relieved from the duty of preserving them exactly as they have been handed down to us.

In the chapter-house at Salisbury no absolute necessity for the restoration of the sculpture existed. The old sculpture, damaged as it was, gave us nevertheless the exact measure of the artist's power, had all the interest which the certainty of antiquity imparts, and presented to us in every part the sculpture of the fifteenth century. Now it is difficult to know what to trust. The work has been done with singular care; yet I am confident that it must be impossible to repair and patch any old work without at the same time running great risk of having the old work chiselled, filed, and fitted to the new; whilst the final operation of painting has effectually concealed much of the delicacy of the sculptor's work. Suppose, for an instant, the same system adopted elsewhere, and our royal tombs at Westminster, our unsurpassed sculpture at Wells, our sculptures round the chapel at Ely, and elsewhere, all carefully and painfully repaired, restored, scraped, and repainted, and I think you will be affrighted at the idea. The truth is that most of us at the present day had better, when we want to show our knowledge of sculpture, do so in our new work, and when we wish for colour, paint also our new works, and not our old.

The question of the application of colour upon architectural work is not to be settled in a sentence; but, fond as I am of colour in its right place, I should generally dread very much to hear of its being applied to any old building for which I had much affection. Would any of us tolerate the idea of Westminster Abbey being given up to the colourist? I think not; for though the proportions, the mouldings, the traceries would remain all as they were before, the marks of age, all that makes the church venerable or connects it to the eye with the associations of the past, would have disappeared at once; and we ought never to forget that in all restorations this evidence of antiquity is the one thing which, above all others, must never be destroyed on any account, and just as in all destructive restorations no account whatever is taken of it, so in all restorations well carried out this is the one thing which, above all others, is most taken into account.

The first mode of restoration is fairly called Destructive; the second and safer mode is rightly called the Conservative: and I will now endeavour to show how this mode may without difficulty be generally carried out.

The mason must be attentively watched in his mode of doing his work; he should (if the old work be good) attempt, as far as possible, to assimilate his own to it in every way—in the bond of the masonry, in the mode of dressing or working the stones, and in the general character of the work. He should be allowed to indulge in no such ingenious devices for spoiling masonry as black mortar or ruled joints; and whether the work be new or restored he should be compelled to do it at least as solidly and substantially in all respects as the old work.

Where old buildings are so decayed as to be capable of repair only by propping or by rebuilding, the former is generally the better of the two plans, as still leaving most of the old work intact. When rebuilding is decided upon, if the stone is not decayed, and the work very good in its character, every stone of the old work should be marked as it comes down, and should be re-erected in its old place, and with as little disturbance as possible to the old work. This is the true conservative course; but I am not sure that any good example can be given for the course (so often taken now) of rebuilding entirely new work in imitation of old work which has been completely destroyed. At Doncaster, for instance, after the fire it was made a great point that the steeple (I am not sure about the church) should be accurately restored in the new building. The architect's hands were tied by the condition, and he has given us a steeple and a church which are evidently compromises. They are not really a copy of the old work, and yet would probably have been still better than they are if they had not pretended at all to be a copy. At St. Mary Magdalene's, Taunton, the tower is being rebuilt in exact conformity with the old work, and an enormous amount of architectural superintendence given to that which is after all only the proper work of an ordinarily intelligent clerk of the works. Finally, at Chichester, the central steeple is a ruin, and the people of Sussex have come forward nobly with a large part of the funds required for rebuilding it. But the first condition one hears is that the steeple is to be rebuilt as of old; and one asks with some astonishment whether it can really be purposed to erect a copy of the late spire upon the copy of the early tower! Surely it would be tenfold better, if copying there must be, to confine it to the tower, and to make the whole steeple uniform in its style. There ought to be no difficulty about making a spire at least as good in its outline as the old spire; and the rebuilding of an exact copy of it, with nothing but new materials, would not to my mind be a restoration at all. Nevertheless, the spirit which prompts this desire for exact facsimiles of old work is one full of good, and marks that intense love for our old buildings and old customs which still I hope marks the people of England above all others at the present day.

In matters of detail, conservative restoration is often possible when it is not practised. In stained glass, for instance, Mr. Ward some time ago gave an example of the best mode of restoration, in an old window of a church in Berkshire which I was restoring. A good deal of the glass had been destroyed; the leading still in the main remained, and he re-leaded the whole of the glass, filling in the vacant places with plain glass, opaquely painted; and the result was that, at a small expense, we had the old work, and nothing more, permanently preserved, with nothing conjectural, and with an effect which, I confess, I could scarcely have anticipated. This work was done under Mr. Winston's supervision.

There are many other points on which a restorer should take special pains to conform to the old example. Wherever old levels of floors can be discovered, they should be most carefully copied. Old levels are generally well arranged, and not unfrequently with great peculiarities. As, for instance, the laying a floor on a gradual slope up from west to east. Then, again, the local fashion as to seats, &c., in churches is generally preferable to any other, especially where any example exists in the building under restoration which is at all worth repetition.

Painting on walls should, generally speaking, be carefully cleaned, and, where it consists of figures and subjects, should not be restored. If the work be rude, it can hardly be restored in a rude fashion without being absurd; if its character be good, then it is, as I have said elsewhere in reference to sculpture, a pity to touch it, lest we destroy any of the characteristic touches and fire of the old artist. I have the authority of Mr. Layard—than whom no one has more zealously exerted himself in the cause of early Italian art—for saying that the greater portion of the damage which is done to the old Italian frescoes is inflicted by their restorers, who recklessly paint and repair every damaged work for which they can induce anyone to pay. And the fact is the more startling when we consider that the existing government of Italy is engaged in putting down the religious orders, turning them out of their houses, and converting the convents and churches—which contain the most glorious works of art in the world—into stables, barracks, and schools; so that the restorers must be actively vicious indeed who outdo such a government in destructiveness!

There is one common reproach in the mouths of those who have no feeling for our national antiquities, to which a few words of answer are necessary. They assert that all this work of restoration is unreal and untrue, inasmuch as both our religious life and our civil life are quite unlike what they were: they say that the old buildings of each class are consequently quite unfitted for our use on religious and on utilitarian grounds. In short, Lord Palmerston's "Civis Romanus sum" is interpreted literally by them, as it is by his lordship, to mean that Roman architecture is the only art fit for English citizens, and that we ought no longer to put up with any revival of English art. The charge is ingenious, but untrue. Take our churches—and in what respect is it necessary to alter them materially for modern use? As far as the Church is herself concerned, I may safely answer, hardly in any single respect need they be altered; for whilst Ely and Sherborne and a host of smaller restored churches show the perfect liberty which she enjoys and allows in their restoration on the most gorgeous scale, we hear now, week after week, of gatherings in our cathedral naves—either in Westminster or Exeter to hear sermons, or at Ely and Peterborough to join in choral practice—so large that even their spacious areas are not ample enough to hold the crowds that throng through their doors. And is it possible that this English nation, which prides itself so much upon its practical character, should be so unpractical as to go on, year after year, ever more and more actively at work, restoring and refitting old churches, if those old churches are not the most convenient and the most suitable buildings that could be devised for their sacred purposes?

No work perhaps affords better training for an architect than the study which is involved in the attempt to become a thoroughly good restorer of ancient buildings. He cannot do

his work even passably well without a hearty love and reverence for them; this love and reverence cannot be mere abstracting, but must be followed up by active work, active study, sketching, measuring, making notes, and thinking well upon and among them. This can never be done so well at any time as at first; and yet I grieve to say that a large majority of young architects go on year after year without apparently even so much as thinking of the necessity of studying old buildings for themselves, or taking the slightest active interest in any work beyond that which is put before them in their office. Now what must be the fate of buildings restored by a class such as this? Is it possible that they can be well, scientifically, or in any respect properly done? Obviously not. Yet—I am within the facts in what I say—I have over and over again had applications from assistants in want of employment, and it is a painful fact that a very large majority of them have never studied or sketched any old building; or if they have done so, have done it once or twice only in their lives, in a way so disgracefully careless as to make the hair stand on one's head at the idea of its being called study at all. Yet every one of them would undertake to restore a church with as much *sang froid* as it has been said one of our statesmen would display in taking the command of the Channel fleet. We want also educated clerks of works and educated builders; and let me say, without any lack of respect for the class, that generally speaking it is much safer to entrust works of restoration to local builders in only a moderate way of business than to large contractors, who seldom themselves see the work which is being executed, and who do not find it worth their while to enter carefully into those minutiæ which every restorer of an old building is bound to attend to. Our educated architects must educate themselves, not in Continental examples or from Continental books, but from English examples and English books. Whatever may be the value of foreign study to the architect (and from some points of view it cannot be overrated), nothing is more certain than it will be of no help whatever in finding out the meaning or intention of ninety-nine out of every hundred of our old English churches and houses. They are thoroughly national, and all their peculiarities are national peculiarities. They have also provincial peculiarities, so that none can expect to understand them thoroughly without mastering all their provincial as well as their broader national peculiarities.

The Pugin Travelling Fund will, I hope, soon be in existence to encourage men in this branch of their studies; though, if the entire truth must be told, our art will not prosper while our students require a premium to induce them to study it. For myself, I should be ashamed of any young student of architecture who is content to waste his time and his holidays in indolent and selfish amusements, when he might, knapsack on back, be at work from day to day, for a month or two in every year at the least, walking from one spot to another of this glorious country, gathering as he goes the information which will enable him in time to distinguish himself in his art, while the act of obtaining it is as full of real pleasure as deer-stalking, climbing Alps, or any other athletic work.

This, then, is the sum of what I have to urge: that only after diligent study of our old buildings should we ever venture upon undertaking the charge of their restoration, and that the great end and object of all our restorations should be to preserve the old fabrics in all their old beauty of colour and design for our children's enjoyment. In our new works we have plenty of scope for the most ample originality, if we are capable of it. But we do not want to see Venetian Gothic windows introduced into our cathedrals or our castles, where they would be out of all harmony with everything that surrounds them, and standing evidences, not of our knowledge and our skill, but of our childish conceit and affectation of superiority to the men whose work we so obviously despise, though we pretend to restore it.

ROCHESTER CASTLE.

A PAPER on Rochester Castle was read by Mr. Stephen Aveling on the occasion of the visit to Rochester of the Kent Archæological Society. In the course of it he said:—The earliest history of the castle is bound up with that of the church of St. Andrew, which adjoins. Twelve hundred years ago the castle and the bishopric were under one rule, and doubtless the residence of the bishop was within the castle walls. Midway between London and Dover, on the great Roman road, and on an important river, it must always have been a stronghold of great value. There has been some little difference of opinion as to the age of Rochester Castle as it now stands, but I believe it is now generally admitted that the main portion—this wonderful keep—was built in the second quarter of the twelfth century, or say between 1126 and 1139, by William de Carbeuil, Archbishop of Canterbury. It has been called Gundulph's tower, and it may have been erected on the site of a tower erected by Gundulph, but it was not built until a quarter of a century after that great architect's death, when the custody of the castle, which formerly belonged to the See of Rochester, was transferred to that of Canterbury. It afterwards fell into the hands of the Crown, and in the early part of the thirteenth century reverted to Canterbury and again to the Crown. In 1215 it underwent a siege of three months, and its defenders played an important part in the history of our country. Having withstood the battering rams, catapults, and engines of war (the 80-ton guns of that day), it fell by the efforts of the miners. The breach probably occurred at the south-east angle, and accounts for the circular bastion tower in the curtain wall and the south-east circular angle tower of the keep. A large portion of the keep was destroyed. The very inferior work of the rebuilt portion is in strong contrast to the original. In the construction of the keep Kentish rag, ashlar and Caen stone was used. The mortar is very good, though imperfectly mixed, and contains a large quantity of uncrushed sea shells. The keep is 125 feet to the top of the turrets. It is a square, 70 feet at the base and tapering to 66 feet, and it is one of the loftiest in England. Lately, a sailor, for a bet of a pint of beer, climbed one of the turrets, and stood with outstretched arms on the uppermost stone. The walls are 12 feet at the base and 10 feet at the summit. There are several chambers in the walls of the keep. The basement was probably used only as a store-room. In the north wall is a bold arched doorway with chevron moulding, and within the outer face is a portcullis groove. The main or State floor has some very handsome work. The arcade of the divisional wall has been filled by a stone screen built between the piers of the wall, and not bonded into them, although original. The fireplaces are interesting, the tunnel-vent passing diagonally through the wall. The chapel, which is the uppermost floor of this building, is divided by an arch into nave and chancel, the former occupying two-thirds of the building. There is a door from the main floor of the keep into the nave of the chapel. In the opening is the groove for working the iron grating, which closes the door underneath. The chancel has a groined or semi-domed roof and stone floor, and there is an entrance to it on the south side from the staircase, in the usual position of the priest's door. There is also remaining the drain of the piscinæ, which probably suggested the mistaken idea that this had been a kitchen. I was for a long time undecided whether to attribute this chapel building to a later date than the keep or to the same period as the keep itself, and after thinking about it from the year 1860, I am inclined to conclude that it was not an addition, but part and parcel of the original building. The castle and outworks occupy about 4¼ acres. The gate-house stood at the north-east angle. In piercing the tower at the north-west angle for the new entrance, a portion of a perpendicular chamber or crypt was discovered. The earliest work appears to be in the western wall. Valuable papers have been written upon the castle by the Rev. Chas. Hartshorne and Mr. C. T. Clark.

THE INSTITUTION OF CIVIL ENGINEERS.

THE members of the association of the Birmingham students of this institution on Tuesday last visited the works of the Horseley Company, Tipton, when, amongst other ironwork, a bridge for the Buenos Ayres Railway, and 6 feet diameter wrought-iron pipes for the Sydney Waterworks, were inspected with much interest. After the visit a meeting was held, when Mr. E. Pritchard, M.Inst.C.E., was elected president, and Messrs. J. W. Gray, M.Inst.C.E., C. Hunt, M.Inst.C.E., and W. S. Till, M.Inst.C.E., were elected vice-presidents.

Bygones.

"*Antiquity after a time has the grace of novelty.*"—HAZLITT.

THE LONDON ARCHITECTURAL SOCIETY.

IN the paper on the history of the Institute which Mr. C. L. Eastlake read at the conference held in 1876, there is mention of the London Architectural Society that was founded in 1806. It was an early example of what is now called a Mutual Improvement Society. The founders proposed to improve one another, and to improve the science, for in those days architecture was considered to be a science rather than art. It will be seen from the rules which are given below that the end was proposed to be attained by means of—(1) essays; (2) designs; (3) discussions; and in the three kinds of work every member was expected to bear his part, or, if not, to pay a fine. The composition of essays was intended to "excite a spirit of inquiry and accurate observation, and to induce each author to make himself more fully master of the subject than he perhaps

otherwise ever would have been." The designs were meant to "develop invention, thinking, and the rejection of incongruous ornaments and useless members." The discussions were to "give to each member the advantages of the taste and experience of all the others."

The necessity of the society was suggested by the unsatisfactory condition of architecture at the time, which is thus described:—"In England, architecture has been considered rather as a trade than as a science. The public buildings in which it has had opportunity to display itself have been comparatively few; and it has perhaps been imagined that, in the usual practice of house-building, the accomplished architect has little advantage over the mechanical builder. Yet surely, in construction and in arrangement, superior science must afford some advantages, and it ought to be remembered that it is only by the union of taste and knowledge that economy can produce simplicity, or expense be well directed to attain magnificence."

Among all the institutions in London at the time there was not one that was calculated for the encouragement of architecture. The Royal Academy was no exception, for, according to the statement of the founders of the society, "the lectures have long ceased; and medals privately distributed, and the use of a library for a few hours one day in the week, at a time when it is hardly possible for a student in architecture to attend, and that interrupted by long vacations, cannot be deemed of much value."

According to the list which appeared in the volume representing the work of the society there were only twenty members. Joseph Woods, the author of "Letters of an Architect from France, Italy, and Greece," and other works, was the first president. James Elmes, also known as a writer, and James Savage, who afterwards designed St. Luke's, Chelsea, were the vice-presidents. Among the members were Samuel Beazley, who built many theatres in London and wrote a few plays; W. H. Ashpitel, the father of the late Arthur Ashpitel; J. Taylor, the publisher; George Smith, the architect of St. Paul's Schools, lately removed; Edmond Aikin, who was employed on Milbank Prison; and C. A. Busby, afterwards largely engaged in Brighton. The provinces were represented by Mr. Billing, of Reading.

The following were the rules adopted for the society, and in another number an account will be given of the essays:—

1. The society shall consist of a president, four vice-presidents, a treasurer, secretary, members in ordinary, and honorary members.

2. The president and treasurer may be elected from the members in general, but the vice-presidents and secretary shall be chosen from the ordinary members. The above officers to be annually elected by ballot, and to serve without fee or reward.

3. The ordinary members consist of those gentlemen who engage to produce designs and essays, according to rules 10 and 11, and to these shall the whole property of the society, as vested in the trustees, belong. The honorary members are not required to produce any such designs or essays, nor shall they be subjected to any fines for non-attendance at the meetings of the society.

4. All the members shall have an equal vote in every transaction of the society, and equal right to the present use of its property.

5. The subscription demanded from every member shall be two guineas annually, to be paid in advance at the last meeting of the preceding session.

6. No member shall have the right of voting, or the use of the society's property, who has neglected his subscription according to the preceding rule; and if any member shall neglect to pay his annual subscription for two years after it has become due, he shall be liable to ejection from the society.

7. The meetings of the society shall be held once a fortnight, on Friday evening, at half-past seven o'clock precisely, from the last Friday in October to the first Friday of meeting in May inclusive, at all which meetings the president, or one of the vice-presidents, or, in case of their absence, any member appointed by the gentlemen present, shall take the chair, regulate the business of the evening, and read the communications. The secretary also, or, he not being present, a member appointed in his place, shall read the minutes of the preceding meeting, and then note the members present. He shall afterwards present communications, and take minutes of the present meeting, with the fines incurred and received. Other business transacted at the society's meetings will be to discuss the designs, observations, and essays before it, in which all persons present may take a part.

8. Every ordinary member who shall be absent on two successive nights of meeting at the time of noting the members present, shall incur a fine of five shillings, and also five shillings for every additional night of absence, unless prevented by illness, or a distance of more than ten miles from the place of meeting.

9. Any day of meeting, or any other day during the session, may be appointed and declared as a special day for the consideration of extraordinary or important matter, upon a requisition signed by four members, and made to the president or one of the vice-presidents; and notice of such special meetings shall be sent by the secretary to each member; the requisition, during the interval, being placed in a conspicuous part of the society's room.

10. Every ordinary member shall produce annually, according to a rotation and time agreed on, an architectural design never before in any way made public, consisting of at least one plan, elevation, and section, and accompanied with observations critical and explanatory (without which no design can be accepted), under the forfeiture of two guineas.

11. Every ordinary member shall also produce annually, in the agreed order, an essay on some subject connected with civil architecture, or forfeit half a guinea.

12. The designs and essays delivered shall remain the property of the society, who shall publish annually a selection of such essays as a committee, appointed for that purpose, shall think deserving of public notice. The author of each essay inserted shall be presented with two copies of the volume, and every other member shall be entitled to purchase a set of the publication at prime cost. The same rule shall be observed if the society publish any selection of the designs.

13. All fines incurred shall be demanded by the secretary at the first opportunity, and any member neglecting or refusing to pay his fines on demand shall be subject to the first, and if he neglects or refuses to pay them during two years, to the second of the penalties mentioned in rule 6.

14. All the subscriptions, fines, and other receipts shall be paid to the treasurer, who shall keep accounts of the same, and make all the disbursements required for the use of the society. The treasurer shall attend at the last meeting of each session, and produce receipts for all sums above 2*l.*, together with his accounts, which shall on that day be finally adjusted and closed, the balance in hand (if any) carried forward to the account of the next session; and the current accounts being audited and passed, shall be signed by the president, secretary, and at least three members. The treasurer shall not pay any sum above 10*l.* without an order of the society signed by the president, or a vice-president, and three members.

15. The funds of the society shall be appropriated to defraying the necessary expenses of meeting, to the purchase of books, prints, articles of furniture, the publication of the essays, and to such other purposes as the society may judge proper.

16. A committee of the ordinary members shall be annually elected to direct the expenditure of the society.

17. On the last night of every session no design shall be exhibited or essay read, but the accounts of the year being closed, the society shall proceed to elect all the officers for the succeeding session. The elections to be performed by ballot, each member delivering his list, folded up, to the president, vice-president, or such other person as may be in the chair, who shall appoint three scrutineers to examine the list and declare the officers elected.

18. Every candidate for admission into the society shall be proposed and recommended by two members, who shall deliver to the secretary a paper specifying the name, place of abode, and addition of the person recommended. This paper being read, shall be suspended in the society's room, and at the second meeting after that at which the proposal is made the candidate shall be balloted for; and if three-fourths of the members voting ballot in his favour, he shall be deemed a member of the society upon payment of the subscription, together with whatever entrance-money it may be thought proper at some future period of the society to demand, and subscribing the book of rules and orders.

19. Any member may be expelled from the society, sufficient cause having been assigned, and a motion for that purpose made and seconded, which shall be entered on the minutes, a notice of it suspended in the society's room, and a copy sent to the objectionable member. The motion shall be again proposed at the second meeting afterwards, and then put to the vote; and if three-fourths of the members present and voting determine in favour of the motion, it shall be carried in the affirmative, and the person who is the object of it shall cease to be a member of the society.

20. Any member shall be at liberty to withdraw from the society, upon signifying his intention in writing to the secretary.

21. No proposition shall be made for altering or repealing any rule or order of the society until the same shall have been in force at least three months.

22. No new rule shall be made, nor shall any old one be altered or repealed, without the concurrence of two-thirds of the members present and voting at a meeting subsequent to that at which such new rule, alteration, or repeal was proposed; and such new rule, alteration, or repeal must be confirmed at a future meeting by a majority likewise consisting of at least two-thirds. After such confirmation it shall be considered as a rule and order of the society.

23. Any proposition for the above purposes, after having been rejected, shall not be renewed until the expiration of three months from the time of such rejection.

24. In all dubious cases the person in the chair shall have a casting vote.

25. Every member shall be allowed to introduce one stranger to any meeting of the society, except the last in each session and all special meetings, on giving his name to the secretary.

26. Any member losing or injuring any of the society's property shall be bound to make good the damage.

27. The whole of the society's property and effects, of what kind soever, shall be vested in four trustees; and whenever their number shall be reduced, an extraordinary general meeting shall be held for the purpose of filling it up.

CHURCH BUILDING AND RESTORATION.

Beverley.—The foundation-stone of a Congregational chapel has been laid. The building is to accommodate about 500 people. The design is Decorated Gothic, and the material will be red brick with Ancaster stone dressings. Mr. B. Thompson, of Hull, is the architect, and Mr. R. Potts, of Beverley, the builder.

Burton-on-Trent.—The memorial-stone of a Baptist chapel has been laid. The plans for the new edifice were prepared by Mr. A. T. Greening, architect, of Birmingham, and the contract to execute the work was taken by Mr. H. C. Mellors, of the Borough Road, Burton-on-Trent, the price being about 1,800*l.* The building will be of brick with Bath stone dressings.

Clumber.—The foundation-stone has been laid of a new church near to Clumber House, on the estate of the Duke of Newcastle. Messrs. G. F. Bodley and T. Garner are the architects. The style of the new church will be fourteenth-century Gothic, strictly English in character.

Greystones.—The foundation-stone for the extension of St. Kilian's Church has been laid by Dr. Walsh, the Catholic Archbishop of Dublin. The new building is an extension of a small Gothic edifice built many years ago on the same site, and which at present affords accommodation for not more than 300 persons. Mr. P. F. Comber, of Dublin, is the architect.

New Brinsley.—The memorial-stones of a new Primitive Methodist chapel at Brinsley, near Alfreton, have been laid. The architect is Mr. G. Eyre, Codnor, and the builder Mr. G. Radford, Alfreton. It will cost 355*l.*, and seat 230 persons.

Sharlston.—The foundation-stone of a new church has been laid at Old Sharlston, a populous colliery village, about midway between Wakefield and Pontefract. It will be built of local stone. The contractor for the works is Mr. J. Freeman, of Hemsworth. The architects are Messrs. Micklethwaite & Clarke, of Westminster.

NEW BUILDINGS.

Burslem.—The foundation-stone of a cottage hospital in connection with the Haywood Charity, at Burslem, has been laid. The hospital forms part of a scheme for the alleviation of suffering among the sick poor, the origin of the charity being the munificent bequest of 30,000*l.* some years ago by Messrs. Howard & Richard Haywood, brothers, who were natives of the town. Mr. G. B. Ford, of Burslem, is the architect, and the builder, Mr. Wm. Cooke, whose contract is for 2,300*l.*

Nottingham.—The foundation-stone of new union offices in Shakespeare Street has been laid. Plans for an imposing block of buildings have been prepared by Mr. A. H. Goodall, architect, Market Street, Nottingham. Pressed red bricks relieved by blue Handsworth stone dressings will be used in the erection of the exterior of the fabric, which is estimated to cost 12,000*l.* The contract for the foundations was secured by Mr. Henry Vickers, of Wilford Road, and this portion of the work has been carried out substantially and satisfactorily under the superintendence of Mr. G. Jones, clerk of works.

SCHOOL BUILDINGS.

Pilsley.—The foundation-stone of a Church Sunday school and institute has been laid. The building will be of red bricks, with stone facings. The contractors are Messrs. W. Hall & C. Rouse, builders, of Pilsley. Mr. W. Haslam, of Hardstoft, is the architect.

Wigston.—A Board school to accommodate 500 children has been opened at South Wigston. The architect is Mr. Arthur Wakerley, of Leicester, whose plans were chosen in competition with seven others, and the builder is Mr. C. Sharpe.

Stanwix.—New schools erected for the School Board have been opened. The contractors—all local men—were as follows:—Messrs. C. & J. Armstrong, mason and brick work; Mr. George Black, carpenter and joiner's work; Messrs. Thompson & Son, plumber's work; Messrs. Smith & Son, slater's work; Mr. Ferguson, plasterer's work; and Mr. Graham, ironwork. The work was carried out from designs by Mr. C. J. Ferguson, F.S.A., architect, Carlisle. The school and classrooms are fitted with the Manchester school grates.

GENERAL.

The Aberdeen Artists' Society opened their second annual summer exhibition on Monday. The pictures hung number about 500, as against 700 last year, 120 works being rejected.

Sir T. Spencer Wells will preside over the Sanitary Congress that opens at York on September 21.

Mr. E. Fisher Smith has notified his intention of offering to the Dudley School of Art a piece of sculpture from Florence.

A Memorial Portrait of Sir A. C. Campbell, M.P., is to be painted.

The Sketching and Art Club of the Leeds and Yorkshire Architectural Society held a meeting last Friday evening, when the drawings produced during the past month were exhibited. Amongst them are Mr. A. Whitehead's drawings of *Fountains Hall*, *near Ripon*, and *View of Kirkstall Abbey*; Mr. Frank Haigh's *Tower of Fountains Abbey*; and Mr. A. E. Dixon's *West Doorway*, *Headingley Church*.

The Royal Cambrian Academy of Arts was opened at Conway on Monday. A jubilee album of original drawings of picturesque scenes in North Wales is to be presented by the members to the Queen.

Mr. P. Magnus, the Director of the City Guilds Technical Institute at South Kensington, is to receive the honour of knighthood.

Mr. R. Pratt, of Eastbourne, has been appointed borough surveyor of Henley.

The Drinking Fountain designed by Mr. Basil Champneys, and erected on the Thames Embankment as a memorial of the late Professor Fawcett, was opened on Tuesday. It was executed by Mr. T. Elsley, the modelling being done by Mr. G. Frampton.

The Authorities of Brussels have entered into a contract with an English company for the electric lighting of the streets in the centre of the city.

Roman Remains have been discovered during excavations in Hermon Street, Chester-le-Street. A well has been discovered about 3 feet in diameter, walled with stones, chisel-dressed, the well gradually tapering to the bottom. In it was a stone, about 2 feet high and 9 inches square, cleanly chiselled and moulded. There was also found a funeral urn.

Mr. John Clutton, who acted as arbitrator in the case between the Governors of Christ's Hospital and the Postmaster-General, ha war ded the sum of 129,937*l.* as the value of the property in St. Martin's-le-Grand, required for the enlargement of the Post Office.

The Rev. Canon Jacob has obtained from an anonymous donor 15,000*l.*, in New South Wales bonds, in aid of the fund which is being raised to erect a new parish church at Portsea. There will be 280*l.* interest accrue on January 1, and by the time the money is required it is expected that the donation will amount to 16,000*l.* Mr. A. W. Blomfield is the architect.

The New General Post Office in Paris, of which M. Guadet is the architect, will be opened on September 4, the anniversary of the proclamation of the Republic.

Plans for Providing further market accommodation on the vacant triangular piece of land abutting on Snow Hill, Holborn, to the south of the present fish market, have been adopted by the Common Council, and referred to the Markets' Committee for execution.

The Plans Committee of the Aberdeen Town Council have sanctioned the plans of a new circus proposed to be built in Bridge Place by Mr. John Henry Cooke. The building will cost 2,000*l.*

The Aston Local Board on Tuesday appointed a committee to consider the question of obtaining a suitable site for the erection of baths, the plans and cost of erection, and the estimated cost of maintenance.

A Poll of the inhabitants of Newcastle-under-Lyme, taken on the question of providing public buildings at a cost of 22,000*l.*, has resulted in an adverse verdict.

The Architect.

THE WEEK.

The majority of the schools of the country have been for years under the Science and Art Department for the teaching of drawing. The public have a right to expect some result for the expense. According to the reports of the Department inspectors the progress is most satisfactory. When, however, independent tests are applied a very different judgment is passed. The examiners for the City and Guilds of London Institute are impartial, and they have the best opportunities for ascertaining the quality of the work of candidates who have been in the Department schools. In their reports it is very common to find remarks which suggest that drawing is the weakest point with most of the students. The examiner in coach-building says the knowledge of drawing possessed by the majority of candidates was "lamentably deficient." The examiner for wood-working says "the pen-and-ink sketches show very small capability." The examiner for pattern designing says the papers generally "are of a very low standard." The examiner in milling says that with few exceptions the candidates "are unable to make intelligible sketches of simple matter." The examiner in electric lighting says "very often a wretched scrawl served to illustrate a reply." These results are extremely unsatisfactory, for they are evidence that the students taught by the Department are incompetent when they have to utilise their drawing for a practical purpose. The authorities will, of course, refer all sceptics about the worth of their system to the successes of Academicians and Associates who have studied in the Department schools. Genius can overcome all that South Kensington may do to impede its progress, and the artists referred to do not acknowledge that they owe much to the schools. What is most needed is a general competency in simple drawing, and it is evident that is not to be found. An alteration in the mode of teaching is therefore necessary.

The Royal Archæological Institute could hardly find a more fitting place for a meeting than the city selected this year. Thirty years have elapsed since the last meeting in Chester, and in that time many changes have taken place. The St. John's Tower is among the remains that are no longer to be seen, but some compensation for losses of that kind is to be found in the restored cathedral and priory, and in many new buildings. Indeed, the corporation address referred to the general improvement in architectural style exemplified in the city since the last visit; and other corporations would do well to imitate the example of Chester in testifying to what has been done by architects.

It is a rather novel experiment for provincial archæologists to select London as a hunting-ground. Although so little known, few regions are more productive. An adventurous party belonging to the Archæological Section of the Midland Institute, Birmingham, undertook the task this week, and intend to occupy from Thursday to Saturday on the work. The programme includes the Roman antiquities in the crypt of the Guildhall, and other relics of Roman London; Lambeth Palace, the Charterhouse, the Tower, Sir John Soane's Museum, Westminster Abbey, Romano-British antiquities in the British Museum, and the Temple Church. Mr. A. W. Franks will give the visitors the benefit of his great knowledge when they arrive at his department in the British Museum, and at the Guildhall Mr. Overall, the librarian, and Mr. C. Roach Smith will undertake the office of guides. It may be interesting to people in the provinces who wish to try a similar experiment to know that the sum charged for all expenses is 2*l.* 15*s.* 6*d.* per member.

At the last meeting of the Metropolitan Board of Works it was resolved "That Mr. George Vulliamy be appointed superintending architect for a further period of three months, namely, from September 29 until December 25 next." The meaning of the resolution is that some difficulty has been found in filling up the office, and a further delay is requisite. It is expected that a larger number of candidates may be attracted. The applicants for the office are much disappointed, and with reason, for it was anticipated that the election would be over before the Board adjourned for the vacation.

The news of the death of Mr. F. W. Moody, who was for many years Professor of Decoration at South Kensington, will be heard with regret. He was a man who never lost his individuality, although he served in a Government office, and of very few ca so much be said. Mr. Moody was an enthusiast for Renaissance art, and he seemed at times to have many of the characteristics of the old Italian artists. In self-confidence at least he resembled them. His manner had an attraction for students, who like always to meet with a teacher that has something definite about him. Mr. Moody carried on the work that had been done by Stevens and Sykes, and, like them, helped to impress an Italian character on those students who came under his influence. Whether that was an advantage we need not now discuss, but at least that style seemed to be in keeping with the soul of the teacher.

The report of the Commissioners of Inland Revenue supplies statistics about houses on which house duty has to be paid. For the year 1885 the number of inhabited dwelling-houses on which the tax of 9*d.* in the pound was levied amounted to 816,564, being an increase of 7,293 over the year preceding. The annual value of the houses was 42,464,971*l.*, the increase being 366,529*l.* It is remarkable that in the three divisions of property which are subjected to a sixpenny rate there was a decrease in number. Thus there were 243,209 shops or warehouses in 1885, while in 1884 the number was 244,306. The beer-houses were 84,046 against 84,688, and the farmhouses 32,568 instead of 32,786. The figures are expressive of the depression which the country has been undergoing. The increase of the number of buildings charged will in consequence be reduced from 7,293 to 5,276, and the increased valuation from 366,529*l.* to 182,209*l.* The decreases were largest in York, Somerset, Lancaster, and Durham. Dwelling-houses valued at less than 20*l.* do not pay inhabited house duty. There was a slight increase in that class of property, but it was hardly proportionate to the needs of the times. The property described as "houses belonging to Her Majesty" and "houses occupied by foreign ambassadors" increased during the year from 322 to 385, but the 63 additions were only valued at 16,267*l.* Hospitals, schools, and houses for the relief of poor persons increased from 20,509 to 21,918. It may surprise taxpayers when they learn that the houses which are not assessed for house duty are more than double the number of those which are. All that tax is borne by 2,051,491 houses, while 4,986,673 are exempted, the larger number of the latter being houses valued at less than 10*l.*

The ordinary assessments for income-tax do not correspond with the valuation for house duty. Under schedule A the value of "lands" in England and Wales is 47,594,178*l.*; in Scotland, 7,461,957*l.*; and in Ireland, 9,983,031*l.*; making a total of over sixty-five millions. The decrease in value last year was 0·75 per cent. in England, and 0·57 per cent. in Scotland; the principal decreases being in York, Essex, Northampton, Norfolk, and Lincoln. The total decline in the value of lands, which has been continuous since 1879–80, now amounts to 4,509,630*l.*, which must be further augmented by the repayments of duty in the past year and discharges from assessment since the last new valuation of property in 1882–83, owing to agricultural depression. The total, so far as shown in the income-tax records, amounts to about 5,265,000*l.*, or about 8 per cent. The houses in England and Wales are valued at 112,790,729*l.*, in Scotland at 12,279,808*l.*, and in Ireland at 3,481,724*l.* It will thus be seen that the houses more than make up the difference between Scotland and Ireland in respect of lands.

ACADEMY REFORM.

THE letter on the Royal Academy, signed by Mr. Holman Hunt, Mr. Walter Crane, and Mr. George Clausen, which appeared a few days ago, is only the latest expression of discontent among painters, for something similar has been heard from the foundation of the Academy. In this case the discontent was inspired by the failure of the reform party in the Academy—although aided by the President—to induce their brethren to agree to a reduction of the number of works which every member can insist on exhibiting. At present the regulation number is eight, and four was proposed instead. Considering the quality of the works which some Academicians have been producing of late, we must say that four is an ample allowance, for the blank wall space would be preferable to certain of those masterpieces.

The writers of the letter wish the public to recognise that the Royal Academy is a private society, which has always asserted and maintained its privacy, and, after so long a contest for the interests of its members, it should be left to enjoy its rights in peace. The exhibitions held in Burlington House have therefore no claim to be called "national," and there will not be a really national exhibition until one is established which shall be conducted by artists on the broadest and fairest lines, in which no artist shall have rights of place, and all works shall be chosen from a jury elected by, and from, all artists in the kingdom. That is to say, our annual exhibitions must be on an inequitable basis until the system of the Palais d'Industrie is substituted for that adopted in Burlington House.

It may as well be admitted in the first place that the Academicians are acting within their rights. According to the original diploma of King George, every Academician was granted "all the emoluments" pertaining to his position. What they were remained undefined, and it is allowable in the Academicians to put their own interpretation on the phrase. They have declined to accept the words in one sense; for, with all their faults, the Academicians have never employed the funds for their personal enrichment. It would be better if they showed themselves inspired by a spirit of self-sacrifice in disposing of the wall space in their galleries, but in these times we must not expect too large an amount of heroic virtue in mortals. The plan of their society was not wisely laid down, if the interests of art rather than of a few fortunate individuals were to be promoted, but it should not be forgotten that originally the Academy was only a sort of royal fad. King George spoke of it as "my exhibition," and Reynolds in his opening address gave the credit for the design to His Majesty. Under such circumstances it was hardly to be expected that the Academy should be equal to the requirements of artists who lived a hundred and twenty years afterwards. It deserves also to be remembered that in the preparation of the laws of the Academy there were three foreigners engaged against one Englishman. In this way we may account for any absence of a spirit of fair-play which may be inherent in the constitution of the society.

The history of the Academy testifies that the Academicians acted as if, like the Gentiles, they were a law to themselves. If we credit Northcote's statement, the first gold medal that was offered for an historical painting was awarded to an incompetent student. He had been useful, however, in giving evidence on behalf of Baretti, when the Italian was tried for murder, and the foreign Academicians were in consequence partial to a young fellow who helped a foreigner out of a difficulty. Barry was expelled because he was so simple as to imagine that the Academy was under an obligation to the public, and was bound to expend some of its funds on the library and school. Professor Cockerell was on the point of expulsion, because he also expressed his thought. According to Reinagle, the Academic conscience has often been shown to be of the most accommodating kind whenever members of the exclusive or anti-reform party were concerned. In fact, the majority in the Academy has shown itself to be as selfish and as merciless as any Venetian oligarchy. Sir Martin Shee, who, as a mover among the majority, was raised to the presidential chair, to the surprise of those who judged him by his paintings, described what was done and what ought to be done by the Academicians when he said:—"To have the interests of our rivals in our hands, and hold the means to injure or to serve, affords an opportunity which generosity will accept for its honour, selfishness will seek for its advantage, and malevolence will seize for its gratification." The examples of generosity in that way have been effectually concealed by the Academicians.

As we have said, the Academy never professed to be more than a private society (it was so designated by the secretary before a Parliamentary Committee), and as such displayed the narrowness of a trades union or of one of the old trade guilds. The accepted members took the whole of the credit for everything done that had any worth. It was officially stated at one time that the existence of the Academy was solely due to "the talents of the members only." Academical imagination flattered itself, and we dare say still does, that the public paid their shillings to see the pictures of the Academicians. The rest of the works were admitted to serve as foils to them. "It is not true," said Mr. Howard, when secretary, "that the money produced by the exhibition is in a great measure raised by the works of the artists who are not members; it is the excellence of the works which is the attraction," and the excellence was, of course, confined to Academicians and Associates.

According to the ideas of the Academicians, there is no small condescension in opening the Academy to the works of outsiders. Being a private society, like the "Mirlitons" or other art club in Paris, the walls are supposed to belong to the members, and the proposal to abandon their right to as much space as is needed for eight pictures, no matter what their area might be, was therefore considered to be revolutionary and communistic. For it must not be overlooked that the Academicians claim to hold their privileges and their property direct from the Crown, and are, therefore, as independent of Parliamentary or other powers as a Norman baron in the good old times. Some years ago the Government was informed that the Academicians did not consider themselves amenable to any control except the will of the Sovereign, and they act as if such a power as public opinion could not reach the council-room. We cannot blame them, for their title to their property corresponds with that by which the oldest estates in England are held.

The Academicians have acted on this principle for nearly one hundred and twenty years. It has also been recognised tacitly by the State. As in England rights of property must be respected, no matter who suffers, it would be unconstitutional to interfere with the prerogatives of the occupants of Burlington House. The proper course would be to leave such privileged persons to the enjoyment of their own galleries. Let each of the painters hang eighty pictures on the walls, if he is able to produce that number, and, if the public will pay for seeing them, no one would have the right to complain. Such a course is, however, impossible. After so long a period of omnipotence the Academy is not to be readily displaced, although it may not be always just in its dealings with artists who are competitors of the members.

Nor is a substitute of a perfectly impartial kind easily raised. The French Salon is in theory of that class. The juries are elected by exhibitors, and hold office for no more than a season unless they are re-elected. But every year complaints are heard from painters whose works are rejected, and from painters whose works are placed in remote galleries and in unfavourable positions. The French Society of Artists is likewise in an unstable position. The State can, at any time, refuse to grant the use of the building where the exhibitions are held, or may set up a rival exhibition. Either proceeding would be full of risk to the existence of the society. In London there is at least no danger of that kind.

It may also be questioned whether, under the modern conditions of buying and selling, an able artist does gain much by the exhibition of his pictures in an Academy exhibition. At one time it was advantageous. "If the public are competent to single out and discover talent themselves," said Sir Martin Shee, "it is vain to talk of the distinction of R.A.; it is because the enlightened classes are incompetent judges that it is necessary for artists to decide who are entitled to Academic advantages." The dealers now have assumed the office, and it is by their opinion of future value that purchasers are guided. We

know artists who are regular exhibitors, and whose works are always well placed, but who rarely sell pictures from the Academy. In the case of architects little difference could be felt, no matter how high-handed the Academicians might become. It has never once occurred, we believe, that an architect obtained a client through the exhibition of a design. Mr. Holman Hunt is a living example of how influential an artist may become without academic distinction. His best works have not been seen in Burlington House, and yet they are as well known as any of our time. We have also a remarkable example in the late Gustave Doré. He was not an exhibitor in the Academy, and in the Salon he was generally represented by very small landscapes, yet he was about the most popular artist of his generation. On the other hand, it is well known that several Royal Academicians, although their pictures occupy prominent positions in the exhibitions, cannot attract purchasers for them until they go through a course of wandering among provincial towns.

The men who profess to have felt the envy of the Academicians may not have suffered much if they are occasionally excluded. Those who have not been sufficiently complaisant to gain the favour of an Associateship need not complain if they think much of their art. In too many cases an election is followed by a decline in the character of the painter's work. But, whether outsiders suffer or not, it is vain to sigh for the reformation of the Academy. The annual dinner condones for many defects in the eyes of the authoritative classes, and the effusive eloquence is more than a match for the grumbling of the discontented. The Academy is only one of many anomalous institutions, and is not the worst among them.

ROMANESQUE AS A MODERN STYLE.

[By a Correspondent.]

IS it not rather surprising that this style has not yet been more generally adopted as one of the many revivals which have found favour with architects in this country? The modern examples could probably be counted on the fingers of one hand; yet no style of the past would appear to require so little modification to render it perfectly applicable to the state of the advanced civilisation of our era. Structurally, it is in every respect the equal of the Pointed style, of which indeed it was the parent that retained many old-fashioned but noble characteristics, such as columns as large as in Classical edifices, and a general breadth of treatment that was lost in the later splendours of the Gothic style. The unbuttressed, or slightly buttressed, walls seem specially to recommend the style for urban architecture. All materials were freely adopted or adapted by the Romanesque architects: the clay of Lombardy was invested with value and dignity, and that subtle charm which, as Gruner says, we involuntarily experience on discovering the perfect adaptation of simple things to great uses; the variously coloured stones of the volcanic district of Auvergne used in the noble churches of Clermont, Brionde and others for external mosaic work, in place of the arcaded galleries of Germany and Italy, and which Fergusson tell us is "the only specimen of external polychromatic decoration now to be found so far to the north;" and the splendid marbles of Italy were no less eagerly sought and applied. Then for variety of outline no style surpasses the Romanesque. There are towers and cupolas of all possible forms—square, hexagonal, and circular—and round arched vaulting used, as Mr. Quilter says, "with a disregard of convention for which I know no parallel. The Roman arch, the Byzantine dome, the Arabian minaret, the square tower, the mosque, the basilica, and the temple were all mingled here, yet executed with the utmost simplicity of material. . . It is difficult to say whether the first impression produced is wonder at the variety, indignation at the eccentricity, or delight at the effect of the whole building." With all this there are examples of great simplicity, *i.e.*, the Basilica at Treves, and no style can claim a wider geographical range, extending, as it does, from the shores of the Atlantic to those of the Adriatic, and from the north to the south of Europe.

When writing of Romanesque, the late Sir M. D. Wyatt said:—"The principal quality consisted in the effect of vastness produced by the multiplication of regular subdivided parts, equally subdivided themselves in their turn. There may be perceived (in these buildings) vigour and life, indicative of a state of germination, a casting off, as it were, of an old skin to put on a new one, and after the throes of labour to give birth to an entirely new creation."

THE RESTORATION OF ST. MARK'S, VENICE.

SINCE the time when the repairs on St. Mark's excited such furious obloquy and stormy discussion little has been heard, says a correspondent of the *Times*, of the restorations on the great buildings of Venice. One might suppose that they had at that day been inaugurated, and that as a result of the English denunciations the repairs were stopped, while the simple fact is that, according as means permitted, the work has been going on ever since 1840, and that before that at various times the Venetian Republic had restored and rebuilt as the stability of St. Mark's required. A curious evidence of this was three or four years ago brought to light. In repairing the façade of the portico of the church a large stone tablet was removed, disclosing on its hidden face a long inscription containing a treaty between two Cretan cities. This inscription was sent to Professor Comparetti, who recognised in it a lost inscription which was unsatisfactorily transcribed in Venice about two hundred years ago, and has never since been seen, until the recent repairs in the façade of St. Mark's rediscovered it.

The fact is, as I showed in a letter which was a contribution to the discussion above alluded to, that St. Mark's was built by men who were admirable artists but wretched builders; it was built probably in parts, and without any appreciation of the artistic importance it should one day have, or much care for the elements of stability requisite for the prolonged existence it has enjoyed. In the renewal of the little pavilion at the south-west angle, which is only attached to the church at one side, but serves as a flying buttress, and bears the thrust of the outer walls of the two chapels on that side, the foundations were found on excavation to consist of piles about six feet long, on which was laid a mass of uncemented rubble a yard or two thick (I do not now recall the exact thickness then stated to me by the architect, now deceased), and on this the bases of the columns were laid. As lately the accusations brought during the old discussion have been authoritatively repeated, and as the work is now being completed, I think it may be worth while to restate the substance of what I then said as to the reasons for demolishing and reconstructing this corner of the church. The wall on the south side of the southern aisle had split from top to bottom from the wretched quality of the material, both brick and mortar, and from the use of sticks of fire-wood, which had been used in the piers as binding material and, perhaps, to save masonry. The mortar had almost lost cohesion, the bricks could be rubbed to dust by the fingers, and the wood had not waited to be rubbed, for nothing but dust remained of it. The outer pier of the south-west pavilion was sinking from the insufficiency of the foundation, and the whole south wall of the two chapels had long been prevented only by extensive shoring-up from falling into the piazza and carrying with it the vault of the chapel, and with it all that face of the south aisle wall which was detached from the inner face by the cleft I have spoken of, as well as everything which supported from without the vault of the south aisle. This crack was getting worse in spite of the shoring and the braces and ties which had been applied from within.

The whole outer wall of the chapels and the entire pavilion was taken down, the brick masonry inside it repaired as well as possible, and, solid foundations being prepared, the pavilion and wall were rebuilt, the marbles, which formed a thin shell over the brickwork, and the columns, entablatures, &c., of the original structure being restored as far as the stone cohered still; the vacant places were filled by pieces of the same material as the original where it was attainable, and where not by the nearest substitute for it. The old sculptured material was all preserved intact and restored to its original position. The columns, corroded on the sea side, were turned round so that a new surface was exposed; not an old stone that was utilisable was rejected, and only the incrustation of marble plates was renewed and two or three columns. This was the condition in which I saw it. The Chevalier Meduna, who, with his elder brother, had been in charge of the church for half a century and reverenced every stone in it, has followed his elder to the grave, and the works are now in charge of another not less conscientious and reverential architect, Dr. Pietro Saccardo, who has his hoarding now around the pavilion, to complete the work of Meduna by restoring the marble shell in places where the new structure had not in Meduna's day settled to its bearings and now receives its new coating of

marble. Saccardo has gone further in some details than did Meduna, because he has by diligent search found fragments enough of the various marbles employed by the early builders to be enabled to remove the substitutions made by Meduna and replace them with material identical with the old—the verde di Genoa by the verde antica, and the grey Italian marble by the original grey Greek. But so difficult to obtain were these, that the latter, which was in the original used in slabs, has been cut into very thin plates, which are cemented on substantial slabs of marble of Carrara, fastened with nickel bolts, and then this compound plate is cemented in its place. The old south wall of the chapel was disfigured by a sixteenth-century tomb which Meduna had removed, restoring the wall to keeping with the whole façade, but in the substituted material. This Saccardo has removed, putting in its place the genuine antique material as elsewhere. The veneering of the south-west angle of the chapel and the south doorway remain to be completed, and the church will then be freed from the scaffolding; but if any person with an eye to symmetry and the grace of the structure will look at the corresponding north-west pavilion, he will see it sinking in the same way below the level of the body of the structure, and only held to it by a complication of iron bars, which drag on the building itself and make the pavilion to be a burden instead of a support as it should be. This should be corrected; but, as less immediately imperative than the south-west pavilion, so the renovation will make less apparent change, the marbles there being in incomparably better state than were the old ones on the other angle. The only visible external restoration beyond those now mentioned are the correction of the cornice which, with the partial and unequal subsidence of the façade, had taken a wavy line more indicative of the picturesque than the stable, and which is now a straight line the entire length of the cornice.

The mosaics of the chapel, against the renewal of which so much outcry was made, have been completely changed, and the old mosaics, which were cleft and riven in scores of fragments, the glass cubes of which they were composed being in many cases wanting at both sides of the fracture for an inch or more in width across the whole subject, have been repaired with the best art of the mosaicist, and replaced on the walls of the chapel, only one composition of the entire series being absolutely irreparable, and being replaced by a new mosaic composed on the very slight indications of the old one. I have just been over the work carefully, and, without the indications of the mosaicist, and should not have been able to determine which is the new among the old, so perfectly has the spirit of the design and the tints of the old been followed. On this point I have the testimony of an architect and decorator of reputation, who, after seeing what had been done, avowed, enemy though he was of the restoration, that the new work was practically in all points as good as the old, though he added, "I would not tell them so, not to encourage them in going any further."

But, in spite of all partial repair, the cathedral is slowly sinking into "the mud of the lagoons," the tide ebbs and flows up under the great dome, and yesterday I saw the water standing on the floor of the crypt, which was walled in and cemented only a few years ago, it was hoped impermeably. The earth on which the church stands is being slowly washed out by the flow and ebb, and the foundations of the church are unequally subsiding. The old piers of the first church, which are under the nave and transept, bearing no weight, do not sink equally, and are lifting the floor into waves, which make it perilous walking on it, and which are increasing perceptibly, it seems to me. Nothing can stop this but the sinking around the entire church of a solid, impermeable wall to keep out the salt water, within which the foundations may be made as stable as the site will permit; or the inner face of the foundations must be laid bare and the entire area of the church must be excavated and similarly treated, after which the floor-level may be restored and the pavement, with its invaluable decorative designs, rescued from the destruction it is now undergoing. In many places the mosaics are already effaced under the tread of visitors' feet; the people who stigmatise the restorer of those which have been preserved being among the most eager to denounce any attempt to preserve them by the only means which will suffice, *i.e.*, copying them in solid workmanship while enough of the original remains to follow the design. This is in some places already impossible, but most of the patterns are still practically complete.

I want particularly to insist on the fact, utterly ignored or denied by the denouncers of the restorations, that these are purely structural, only undertaken where the stability of the church is impaired or the destruction of its decorative qualities threatened. But for the general system of repairs so long going on, the whole church would in all probability have been before this a mass of ruin. In all that has been done there has been, it seems to me, no needless renovation, and the old sculptural work has always been restored to its place without being scraped or cleaned except by washing with water, the plain marbles and undecorated parts of columns being alone polished to preserve the stone from the action of the elements, the old carious surface inviting decomposition. The Republic employed men to scrub the stone and keep it clean from the accumulation of dirt and incipient vegetation which disfigure it and imperil its surface; more than this its successors do not propose, and less they cannot safely do. The Government allows only 2,000*l.* a year for the repairs, &c., of St. Mark's, which is much less than Austria allowed. In my unprofessional opinion this, if insufficient, is, as far as it goes, well and wisely spent. Only an architect can criticise the technical appliances, and this I make no attempt to do; but, as far as the æsthetic result is concerned, I do not see how any fair-minded person who respects the artistic character of the church can find fault with what has been done, if he will only take pains to find out how much and what it is.

THE LORDS' COMMITTEE ON ELECTRIC LIGHTING.

THE evidence taken under conditions of such extraordinary secrecy by the Earl of Camperdown's Select Committee upon the three Bills introduced by Lord Rayleigh, Viscount Bury, and Lord Houghton last session to amend the Electric Lighting Act of 1882 has at length been issued, three months after the issue of a brief report of the Committee's decision. Owing to a difference of view in the House of Lords at the last moment, viz., on the report stage, the Bill, finally approved by the Committee (Lord Houghton's), which was virtually a Government measure, was withdrawn, and nothing further was done. The matter has, however, become of such importance that it must be taken up again very speedily, and a glance at the most valuable evidence recently obtained will be of service in view of further action. In late years the electric light as a general illuminant has made practically no advance in this country, and it has been widely held that this stagnation is mainly due to clause 27 of the existing Act, which empowered any local authority to compulsorily acquire at the end of 21 years any installation within the area of its jurisdiction at the then value of the undertaking, without compensation for such compulsory purchase or any allowance for goodwill, profits, or anything else. Lord Rayleigh's Bill (No. 1) to remove this grievance proposed to repeal the 27th clause, and among other things to put electric lighting in exactly the same position as gas as to profits, purchase, &c. Lord Bury's Bill (No. 2) also proposed to repeal the 27th clause, and to substitute a provision enabling a local authority to purchase at the end of 41 years an installation on paying the then value of the undertaking as a "going concern." Lord Houghton's Bill (No. 3) proposed to substitute 42 years for 21, or 30 years where 42 were not specified, and to empower the Board of Trade to determine the conditions of purchase. The Select Committee to whom all three Bills were referred examined more than twenty witnesses—electricians, scientific men, municipal representatives, and business men—the evidence occupying seven or eight sittings, and numerous petitions for or against the several measures were received.

Professor George Forbes, M.A., F.R.S.E., explained the various methods available for the distribution of electric lighting, and observing that in 1882 there were no engineering difficulties which need have stopped the progress of electric lighting, said that had there not been some other barrier we should now have had numerous examples of central-station lighting on a large scale in this country. American towns were generally well supplied by means that were well known in 1882, and his conclusion was that the Act of 1882 had been the main difficulty and impediment, the conditions in that Act being far more stringent than those imposed on gas undertakings. There was now in existence only one central lighting station in the United Kingdom on any large scale, and he thought that fact was perhaps the strongest evidence that the Act of 1882 had something to do with the matter. That station was the one distributing from the Grosvenor Gallery buildings, and the peculiarity of that installation was that no appeal had to be made to the Act, because the wires were carried overhead and there was no necessity to break up the streets. In America there were stations not only in almost every important town, but the system was being introduced in almost every new town and village, and on the Continent of Europe electric lighting was almost universal. So far as he could see, electric lighting, from an engineering point of view, could be made a practical thing if people were allowed to put money into it and get a return, but not if they had to give a bonus in any form to local authorities. There was no such margin possible at present that the light could succeed in spite of legislative obstacles. Referring to probable improvements in electric lighting in the future, he strongly objected to the provision in the Act under which, at the end of twenty-one years, or, if not then, at the expiration of every succeeding seven years, a company could be bought up, pointing out that while this possibility was hanging over them they would not adopt the improvements which

might benefit the public. The ten years' successive period proposed in the Government Bill would have the same deterrent effect. He did not consider even forty-two years long enough to return a profit on the lines of the Government Bill, but he thought it would not take many years to attract customers. As to cost, he did not expect that, although lamps might become cheaper, electricity would become cheaper; that could not well be expected, seeing that the machines producing electricity were converting something over 90 per cent. of mechanical power into electricity.

Mr. Rookes Crompton informed the Committee that, as engineer to the Edison-Swan Company, he designed the installation which was intended to carry out the provisional order under the Act of 1882 for lighting Victoria Station, and then stated that, although the company had spent 16,000*l.* on the generating station alone, they found the conditions in the provisional order and in the Act so onerous that they stopped the undertaking, and the 16,000*l.* had in consequence remained unproductive. The purchase clause (27) was the sole and entire cause of that stoppage. A similar result ensued with regard to an effort by the Crompton-Winfield Association, Birmingham, to establish an installation for lighting Birmingham and the district. In the provisional order for that purpose the limit for purchase was sixteen years, but they could not get the capital owing to the purchase clause. Incidentally he mentioned that although his company had fitted up all the machinery for electric lighting in Vienna, at the last moment the authorities, seeing that facilities were not given in England, had suddenly disallowed or put difficulties in the way of completing the undertaking; and he further stated that there were no engineering difficulties in the way of house-to-house electric lighting in detached installations and on a moderate scale. Difficulties might crop up when this was done on a large scale requiring new arrangements, but nothing had occurred since 1882 to show that a large number of moderate house-to-house installations could not have been carried out then. The real difficulty now was the financial difficulty. There would be no difficulty in getting the capital if the electric light was placed on terms equal to gas, and he much preferred Lord Rayleigh's Bill (No. 1). That would give no unfair advantage, and he could not see that there would be any monopoly. In fact, electric light, coming in as a second illuminant, would further diminish the monopoly of gas.

Sir Frederick Bramwell, F.R.S. (a shareholder in the Edison-Swan Company), after describing some improvements made in incandescent electric lighting since 1882, said he did not know of any improvements made in the means of distribution, and he attributed the want of progress entirely to the character of the Act of 1882. On that point, he said, nothing could be more instructive than the fact that all but one of the fifty-five Provisional Orders obtained in 1883 had been abandoned. The Act had not only prevented public installations to any extent, but had operated in the same way against the use of the light as a luxury in private houses. The mere extension of time to forty-two years would not meet his objection to the Act. With only that extension the necessary capital for developing a concern would not be obtained; and a further objection he had to No. 3 Bill was that he disapproved of making governing bodies traders. With regard to Bill No. 2, if a "going concern" was properly defined so that it could be carried out on the mode of valuation that had prevailed in the case of many transfers he had taken part in, and then a sufficiently long time was given for the development of the concern—say, forty-two years—he thought there would be no difficulty in getting capital. He admitted that he had had a considerable share in framing Bill No. 1, and he contended that similar legislation to that bearing upon gas would be the most satisfactory solution of the matter—first, because it would protect the public in the way they should be protected; and, secondly, because it was free from the vicious principle of at any time giving powers to local authorities to become traders. Years of experience had shown that the legislation as to gas had been beneficial to the public, and all that was now asked was that electric lighting should be put on an equal footing with gas, and that no favouritism should be shown to gas by severe restrictions upon electricity.

Mr. J. S. Forbes, chairman of the Edison-Swan Company, expressed the conviction that under the present Act electric lighting would not be obtained—at all events out of any private enterprise. He had tried to induce people to find money to carry out the Act, but he had not succeeded because of the 27th clause. He had been to skilled capitalists, but he could get no encouragement because the term of twenty-one years was too short to allow of a probability that the normal value of the business would be developed, and because at the end of the term the conditions of resumption were such as no capitalist would look at. No. 3 Bill, therefore, he described as of a repellent character; no capitalist would touch it; but No. 1 Bill, he thought, was a workable Bill, possessing advantages which No. 2 did not. It gave the public greater protection; and, taking the gas analogy, it gave undertakers the strongest inducement to develop for their own advantage, and as much for the advantage of the public, a liberal return of interest, and the possibility of increasing that interest as the condition of reducing the price.

Sir John Lubbock (also a shareholder in the Edison-Swan Company) took a similar tone, believing the present terms of purchase to be almost prohibitory. Not only, he said, did they authorise local authorities to acquire an undertaking at the end of a period which was too short to allow of its satisfactory development, but by the restrictions they imposed they made it almost absolutely certain that if the concern had been successful it would be acquired at less than its real value. He also objected to public authorities being allowed to carry on commercial undertakings, mentioning by way of illustration that we had lost a million and three-quarters over the purchase of the telegraphs; and observing that there were many other elements in the case than clause 27, he expressed the view that, with either No. 1 or No. 2 Bill, the other elements remaining the same, it would be possible to give a fresh impetus to electric lighting.

Mr. Wm. H. Preece, F.R.S., electrician to the Post Office, gave evidence mainly as to the interests of that department in the spread of electric-lighting wires. Citing his experience in the United States, where overhead wires abound and accidents are frequent, he protested strongly against what he called "marauding companies" being allowed to establish overhead installations without any legislative control (as in the case of the Grosvenor Gallery), and even in spite of Acts of Parliament. He explained the public danger involved by the erection of overhead wires without restriction, and said that, even if controlled, such wires often seriously interfered with the working of the telegraphs and telephones, because these wires using rapid alternate currents of electricity these rapid reversals of electricity disturbed both telegraphs and telephones in the neighbourhood. At Newcastle he had found that such disturbance was created at a distance of 3,000 feet. This could be avoided if proper regulations were enforced, and therefore he urged that the evil should be checked at once.

Mr. Calcraft, Permanent Secretary to the Board of Trade, referring to the proposal in No. 1 Bill to put electric lighting on the same footing as gas, and to introduce the sliding scale, stated that at present, when a new gas undertaking came before the Board of Trade, it was not the usual practice to authorise an initial price and the sliding scale, because they had not at that time sufficient experience to show what would be the expenses connected with the introduction of gas or the demand for it and other details. Applying that principle to electric lighting, he thought it would be utterly impossible to fix a proper initial price for such a scheme in the first instance.

Mr. Robt. Hunter, solicitor to the Post Office; Mr. Albert Meysey Thompson, Major Armstrong, R.E., Mr. Shorebred, M.I.C.E., and several other witnesses were also examined, the majority blaming the Act of 1882 for the non-advance of electric lighting.

STONEHENGE.

At the annual meeting of the Wiltshire Archæological Society, held at Swindon on Tuesday, Mr. Story-Maskelyne, M.P., in the chair, the present condition of Stonehenge was discussed at some length. The Rev. A. C. Smith, one of the secretaries, read a special report presented by a deputation appointed by the society to inspect this great national monument, which is undergoing daily injury at the hands of the vast numbers of people who visit it and picnic within its precincts. The report gave details of the injuries sustained by the seventy or eighty stones of which Stonehenge consists, the burrows of rabbits forming an important factor in the mischief. The deputation recommended the formation of a sunk fence, so as to exclude all carriages from the precincts, and the appointment of a caretaker, who should admit no one inside the enclosure except under proper regulations. They also recommended that such of the stones as were unsafe should be pushed back to their original position and secured there, and that the great trilithon which fell in 1797, the former position of which is accurately known, should be replaced on its old site. Mr. Maskelyne cordially supported the movement. Although considering that a light iron fence was more effective, he regarded the matter as of paramount importance. In the course of the discussion it was deemed inexpedient to approach the owner, Sir Edmund Antrobus, whose expressed opinion was understood to be that he was doing all that was necessary for the preservation of Stonehenge. Canon Jackson supported the proposal to replace those stones, the former positions of which were known. On the motion of Mr. Maskelyne it was unanimously resolved to invite the co-operation of the national antiquarian and scientific societies in carrying out some measures for the preservation of Stonehenge.

TESSERÆ.

Trinity House.

J. ELMES.

A CELEBRATED politician in the last century acquired the name of Single-speech Hamilton, from the circumstance of having delivered an oration of much promise and great ability, and never again opened his mouth in Parliament: so likewise may the architect of one of the most original and tasteful buildings in London be designated by the title of Single-house Wyatt, from his only public work, the Trinity House, on the north side of old Tower Hill, now called Trinity Square. If John Nash be more polystructural than Samuel Wyatt, the latter may plead that although his progeny be not numerous, his single production is a lion. This building is a handsome stone and brick edifice, and extends from Cooper's Row on the east to Savage Gardens on the west, with extensive lateral fronts to both of these streets, and consists of a main body and two wings. The principal storey is of the Ionic order, raised upon a rusticated ground storey. Above the windows are some beautifully sculptured medallion portraits of George III. and his queen, sculptured panels in low relief representing genii with nautical instruments, and four of the principal light-houses on the coast. These sculptures are so beautiful in style and execution as to deserve being moulded, and casts made from them by the Royal Academy for the use of their students. The style of architecture used in this building is neither so pure as that selected by Stuart for the internal portal of the chapel at Greenwich, so pedantic as that copied by Wilkins in his portico of Downing College, Cambridge, nor so fanciful as that used by the Adams in the Adelphi; but is a successful adaptation of the Ionic order to proportions of his own, with too much elaboration of foliage in the capitals, trenching on those of the Corinthian. The mechanical execution of every part of this elegant building cannot be too much admired, so beautiful is the masonry and the brickwork of its exterior, that the best workmen both in brick and stone would find models for imitation. The first stone was laid September 12, 1793, by the master, assisted by the deputy-master and elder brethren of the corporation, and the offices opened for business in 1795.

Venetian Pavements.

C. H. WILSON.

The floors of rooms are finished with this pavement, as it is somewhat incongruously termed, and I shall briefly describe the mode of operation in making these, but must first observe that they are usually formed over vaults. In the first place, a foundation is laid of lime mixed with *pozzolana* and small pieces of broken stone; this is in fact a sort of concrete, which must be well beaten and levelled. When this is perfectly dry, a fine paste, as it is termed by the Italians, must be made of lime, *pozzolana*, and sand: a yellow sand is used which tinges the mixture; this is carefully spread to a depth of 1 or 2 inches, according to circumstances. Over this is laid a layer of irregularly broken minute pieces of marble of different colours, and if it is wished, these can be arranged in patterns. After the paste is completely covered with pieces of marble, men proceed to beat the floor with large and heavy tools made for the purpose; when the whole has been beaten into a compact mass, the paste appearing above the pieces of marble, it is left to harden. It is then rubbed smooth with fine grained stones, and is finally brought to a high polish with emery powder, marble dust, and, lastly, boiled oil rubbed on with flannel.

Shop Fronts in London.

PROFESSOR HOSKING.

The history of the shop-front is somewhat curious. The Act for rebuilding the City of London after the Great Fire (18 & 19 Car. II.) is supposed to have been drawn by Sir Christopher Wren, but upon what the supposition is based does not appear, unless it be the internal evidence of sound practical knowledge and general good sense which pervade the statute. This Act, after requiring that "the outsides of all buildings in and about the said city be henceforth made of brick or of stone, or of brick and stone together," with certain exceptions in that respect as to brestsummers "for conveniency of shops," directs that "no trap-doors or open grates be in any wise suffered to be made into any cellar or warehouse without the foundations of the front, but that all lights to be made into any of them be henceforth made upright, and not otherwise; and that no bulks, jetties, windows, posts, or anything of like sort, shall be made or erected in any streets, lanes, or by-lanes, to extend beyond the ancient foundations, nor that any house be set further into the street than the ancient foundations, saving only that in the high and principal streets it shall be lawful for the inhabitants to suffer their stall-boards (when their shop-windows are set open) to turn over and extend 11 inches and no more from the foundation of their houses into the street, for the better conveniency of their shop-windows;" that is to say, the shop window-board might be hinged as a flap and be turned out when the shop-window was open, as a stall, upon which to expose goods for sale, and, of course, to be turned in when the window was shut. The next time the stall-board makes its appearance in a Building Act, the permitted turn-over flap had become a fixed projecting base to the bayed or bowed and fixed shop-window, enclosing the space allowed by law to the hinged flap while the shop was open only; and the pent-house shelter for the public, which the Act of Charles II. had required to be made over the paved footways before the houses, had become the cornice to the protruded shop-front. Thus a "bulk" with "windows" in it came to be extended "beyond the ancient foundations," contrary to Sir Christopher's wholesome provision as to such things; and after time had honoured the abuse by winking at it for two or three generations, the 12 Geo. III. c. 73, made a bow-window or other projection "for the convenience of a shop or shops" an exception to its general prohibition of "bow-windows or other projections against or before any house or other building situate in any public street, lane, or place," limiting the protrusion of the datum—the stall-board—to five inches in lanes and narrow streets, and to ten inches in any street being more than 32 feet wide. The prohibition and exception as to projections and protruded shop-fronts are continued in the 14 Geo. III. c. 78, now known in London as the Old Building Act, more in detail than in the earlier Act, and with an alteration of 32 feet into 30 feet as the width of a street which would admit the greater protrusion of shop-front. Hence it appears that an ill-judged concession to the shop-keeping citizens in the time of Charles II. has had the effect of making Cheapside, Ludgate Street, Fleet Street, and the Strand in the older parts, and indeed all the old shop-streets and lanes throughout London, from one to two feet narrower than they would have been if the concession as to the turnover stall-board had not been made, as the shop-front excrescence would, in all probability, otherwise never have been devised.

Weight of Iron Girders.

E. CLARK.

It will be useful to have some simple rules for ascertaining the weight of tubes or beams of wrought iron. The following are on the assumption that one cubic foot of wrought iron equals 480 lbs. First, the sectional area in square inches of any tube, bar, or plate of wrought iron multiplied by 10 will be the weight in pounds per yard of length. Thus, an angle-iron whose section is 3·5 square inches weighs 35 lbs. a yard. In large masses or tubes multiply the sectional area in square inches by the length in feet, and divide by 672 for the weight in tons. To reduce cubic feet into tons multiply by 1½ and divide by 7. A deduction of one-twentieth from these results will give a close approximation for cast iron.

Architects and Gardening.

T. H. WYATT.

I may here be allowed to say a few words on the subject of landscape gardening, a pursuit so enjoyable in itself, and so intimately bound up with our operations, that I am almost inclined to lay exclusive claim to it for the architect; at any rate, I must contend that those who have felt and studied the peculiarities of certain scenery, and have designed buildings to harmonise and group with those features, must be as competent to work out a general *tout-ensemble* as the fashionable landscape gardener who, in his morning ramble, levels wood and hill as with a magic wand, and who will, perhaps, not condescend to consider the character of the house as influencing his decisions. "The picturesque eye is not limited to nature, but ranges through the limits of art—the picture, the statue, and the garden may be equally the objects of its attention." It does not, therefore, follow (as some imagine) that from the architect's intercourse with works where proportion and order and regularity are essentials, our ideas on picturesque effect must necessarily be warped; taste is intuitive, and may be as judiciously and picturesquely applied by the architect in working out and bringing together the beauties of nature in the park or garden, as in proportioning and adjusting those of art in the portico or tower. I know no education that will give taste where none is inherent. Neither rule nor axiom will carry you through her varied bearings, and I cannot help thinking that he who has a natural love for scenery, who has studied the various effects of light and shade, of distances and of contrasts, and who has, to a sufficient extent, the power of embodying in his own mind the effect of contemplated alterations, and, in the mental eye, to judge accurately of the results, is as well qualified to garden a landscape as a Repton or a Gilpin. I have made it a point, in cases where I have been employed in the country, to be indulged with the general arrangement of the adjoining grounds, considering it so intimately connected with the spirit of the design, and so gratifying an occupation in itself. The architect need not be deterred by the want of practical knowledge as to the species or growth of trees, &c.; it

seldom happens that the head gardener of any establishment where such occupation would probably be required is not qualified to render you every assistance in practically working out your ideas and intentions. If we bear in mind this undoubted fact, that "simplicity and variety are equally sources of the sublime as of the beautiful," we shall seldom err. The fault of some scenes that have passed through the ordeal of landscape gardening is, that there remains either an affected simplicity, or that nature has in the generosity of her doctor been sadly surfeited. Hill and dale, wood, water, rock, and heath are unceremoniously jumbled together, without thought of harmony or consistency.

> If thy skill should fail to people well
> Thy landscape, leave it desert,

was the advice of one considered a good authority on these matters; it certainly is a safe one.

Brickwork in London.

J. Turner.

During the reigns of Mary and Elizabeth (1553-1558) the ornaments of Roman architecture were frequently introduced in brick, or baked clay, which laced the fronts of houses and covered the shafts of chimneys, and continued in numerous fantastical shapes until the reign of James I. (1603). Shortly after they were laid aside. In this and the preceding reign the walling was very bad, being mere rubbish, or even turf or peat between two thin shells of brick. Inigo Jones introduced a better method, of which the piers in Lincoln's Inn Fields are an excellent specimen; and Sir Richard Crispe, the patriotic friend of Charles I., is said to have been the inventor of the art of making them as now practised. "In the year 1587," says Fuller, "began beautiful buildings in England, as to the generality thereof—whose homes were but homely before are now most regular pieces of architecture." The method adopted principally in these ages of building with brick was in what we term now "English bond," which was certainly well understood, and many durable examples of which still continue to adorn this country; but about the time of James, and for a long period after, a very careless method of erecting walls with brick began and continued; and although much is attributed to its perfection in the days of Inigo Jones, it does not appear, upon examination of several old buildings, that it was thoroughly understood and appreciated until some years after, when its peculiar advantages over wood, a very common method of building, began to present itself to the Government of James I.; and accordingly we find a proclamation by him, March 1, 1605, forbidding all increase of all new buildings within the city and one mile thereof, and likewise commanding all persons henceforth to build with either brick or stone; and another, October 10, 1607, to the same purpose, when it appears that some were censured in the Star Chamber for building contrary to the tenor of the proclamation; and again in 1614 all commissioners were required to proceed with strictness against offenders in this sort, "for from this time," says Stowe, "began the new reformation in building." But it was not until after the Great Fire of London that it attained universal adoption; and to the age of Sir Christopher Wren and his immediate successors must we feel indebted for some of the finest specimens, as far as regards neatness of workmanship, of which the entrance to the Middle Temple and several fronts of houses about the City and West-end of the town are excellent examples, when the method styled Flemish Bond was introduced.

Greek Architecture in France.

Albert Lenoir.

The Phoceans, as is shown by the remains preserved in the Museum of Marseilles, brought into Gaul the elements of Asiatic art, which they used with taste. In 1773 M. Grosson, an inhabitant of that city, published a quarto volume, in which are engravings of many ancient monuments, found within the boundaries of the old colony. Notwithstanding the mediocrity of the representations, we can easily recognise on some of the tombs, decorated with bas-reliefs and inscriptions, how completely they had succeeded in imparting a Classic taste. The crowns of olive leaves and wreaths of flowers and foliage boast the same elegance as on the coasts of Attica or the Peloponnesus, Caria or Ionia. On the borders of the territory of the Greek colony, in a place called Le Bas Vernègues, near the Pont Royal, on the road from Aix to Lambesc, is to be seen a temple of the Corinthian order, evidently of a Greek character, both as regards its general composition and the style of its mouldings and ornaments, as may be judged by the following engraving. The capital is decorated with sharp cut leaves, like those still to be seen at Athens and on the coasts of Asia Minor. It reminds us of the foliage used in the decoration of the capitals of Pompeii, sculptured in the Hellenic school. In the temple of Vernègues, the bases of the columns, the mouldings of the pedestal, and the proportions of the architraves have evidently been designed and executed by Greeks. The influence of the Asiatic colony was not limited to the bounds of the Marseillese territory, but was felt throughout Gaul, and thus it is we find at Vienne in Dauphiny, and at St. Remy-en-Provence, the ancient Glanum, traces of Oriental art, as readily to be recognised there as in the fragments of the Phocean metropolis. When Gaul came under the power of the Romans the Greek spirit still survived, as we may see in the case of the two cities just mentioned. At Vienne the capitals of the temple of Augustus and Livia were executed on the Greek plan, as may be ascertained by the finely-executed sharp leaves, and in the Museum of Vienne, formed in the cella of the temple may be recognised more than one fragment which shows the Greek chisel. The triumphal arch at Orange is a monument cotemporary with the first victories of the Romans in southern Gaul. In it we trace something Greek, every detail serving to remind us, in some degree, of that school. The composition of the mouldings of the entablature, and particularly those at the top of the architrave, bring to mind the profiles seen in the ancient edifices of Asia Minor. A cavetto is seen surmounting a line of ova, reposing on a string of pearls, a detail completely Ionian. The modillions decorating the principal cornice of the arch have a remarkable peculiarity which is met with in the octagonal monument at Athens called the Tower of the Winds, and reproduced in the Maison Carrée at Nîmes—an edifice of a later date than that on which we are now treating. These modillions are sculptured in an inverse way from those which decorate all the ancient entablatures; the larger part, instead of resting against the cornice so as to form a console, is, on the contrary, near the outer edge of the corona—a very rational arrangement if we consider this part of the decoration as being derived from a wood building, and as the expression of the pendent extremities of the rafters supporting the tiles. The resemblance between this entablature at Orange and the Athenian edifice, which, as it is described by Vitruvius, must be of ancient date, comes in confirmation of the influence exercised by Greece on architecture and its details in southern Gaul. A specimen of the Greek palmetto is to be found in the midst of the foliage of the upper ogee of the impost of the arch at Orange. The coffers decorating the arches are executed with more delicacy than in any Italian monuments, particularly in the double arches, where we observe a happy arrangement which adds to the finish of the execution. In general, the Roman monuments of southern France show in their ornamentation a lightness of touch which may be attributed to the Greek school as introduced by the Phocean colony.

St. George's, Bloomsbury.

W. H. Leeds.

When he was paying a tribute to the artistic talent of Vanbrugh—an architect gifted, if not with taste, with real conceptive power, and that in a prosaic age—Reynolds might very properly have thrown out a compliment to Hawksmoor, and quoted the campanile of St. George's, Bloomsbury, as a most strikingly happy composition, one on which the eye of a painter cannot but rest with delight. Happy as it is in itself, that masterly production has been made a martyr, not to criticism, but to stupid ridicule. Had he possessed aught of critical faculty, it would have enabled Walpole to perceive how beautifully the statue poses upon, how admirably it completes, and how essential it is to the artistic completion of the *ensemble*. It is not an artistic statue elevated to such a height that the personality it is intended to figure to us is utterly lost—nor is it hoisted on a pedestal of its own, clapped upon the top-heavy capital of an overgrown column—a truly unhappy combination, productive of the most harsh abruptness of outline at the general summit. Here, on the contrary, the statue is incorporated with the architectural mass, of which it is the efflorescence, springing out of it as its finial or acroterion, and continuing to a point the lines of the obelisk-shaped part of the structure which it crowns. In regard to that stupidly calumniated church there is another curious fatality, for no one has ever bestowed even so much as a syllable upon its north façade. Indeed, it may be fairly questioned whether it is yet known to exist, for of the thousands who pass the portico, scarcely one, perhaps, suspects that the other side of the building shows a piece of architecture of no ordinary merit — certainly one marked by no ordinary degree of architectural energy, and so far affording an excellent and much-needed study. In the windows of all Wren's churches there is scarcely any reveal; in Vanbrugh's and Hawksmoor's buildings, great depth of reveal—a difference that does not show itself in geometrical elevation, but which is an exceedingly important and influential one in perspective effect—consequently, in the buildings themselves, for while the former mode is attended by the insipidity arising from the absence of boldly defining statues and of corresponding lights on the opposite sides of the apertures, the other secures them. Besides which, we are impressed in the one case with the disagreeable idea of the walls being universally thin, while, in the other, we at once perceive that they are unusually thick and substantial.

NOTES AND COMMENTS.

MR. MATTHEW ARNOLD, in his report on "Certain Points connected with Elementary Education in Germany, Switzerland, and France" (a Parliamentary paper which everyone who takes an interest in education should possess), says that, in general, everywhere now in towns in Germany, Switzerland, and France the school buildings were spacious and handsome. In staircases, landings, and corridors they had the advantage of ours; in England, he says, it seems impossible to an architect not to pinch his staircases and his passages. Mr. ARNOLD supposes it would be admitted that in sanitary arrangements England is still ahead of the Continent; but the improvement in respect of these since his last visit struck him very much in the foreign schools, particularly in France. Certainly ventilation is more cared for with us, and it is more the habit to open windows; at Hamburg, however, he observed more attention than anywhere else to the state of the air in the schoolroom. The Hamburg schoolrooms, too, were always so arranged that the light came from the left to the children as they sat at work.

ON Wednesday Dr. TAAFFE read a paper at the Congress of the British Medical Association at Brighton, in which he spoke of the advantages gained by the introduction of smoke-consuming grates. The money saved by economy of fuel would soon, he said, cover the expense incurred by the changes, and the new grates might be held to be fixtures, to be transferred from tenant to tenant at a valuation. It is worthy of note that the fires in the underfed grates are always bright at the top, which adds greatly to their cheerful appearance, and to the amount of heat given out. It is to be hoped that the day is not far distant when we shall be able to have our rooms lighted by the electric light, with all the advantages of breathing air free from the deleterious products of combustion of gas, and having the walls and ceilings of our rooms free from the blackness of smoke; but until this happy time arrives we ought to take advantage of any means we can command to remedy, as far as possible, the evils arising from the burning of gas in our homes.

THE large house belonging to the Princess DE CHIMAY on the Quai Voltaire, Paris, was purchased lately for the purpose of enlarging the Ecole des Beaux-Arts. The house is in a great measure modern—a part dates from 1860—and it has been resolved not to interfere with the main walls. The work which is now in hand is the transformation of the interior into galleries and classrooms. It is not expected that the work can be completed before the end of December, and as the interior will have to be decorated, the addition to the school is not likely to be utilised before the expiration of a year.

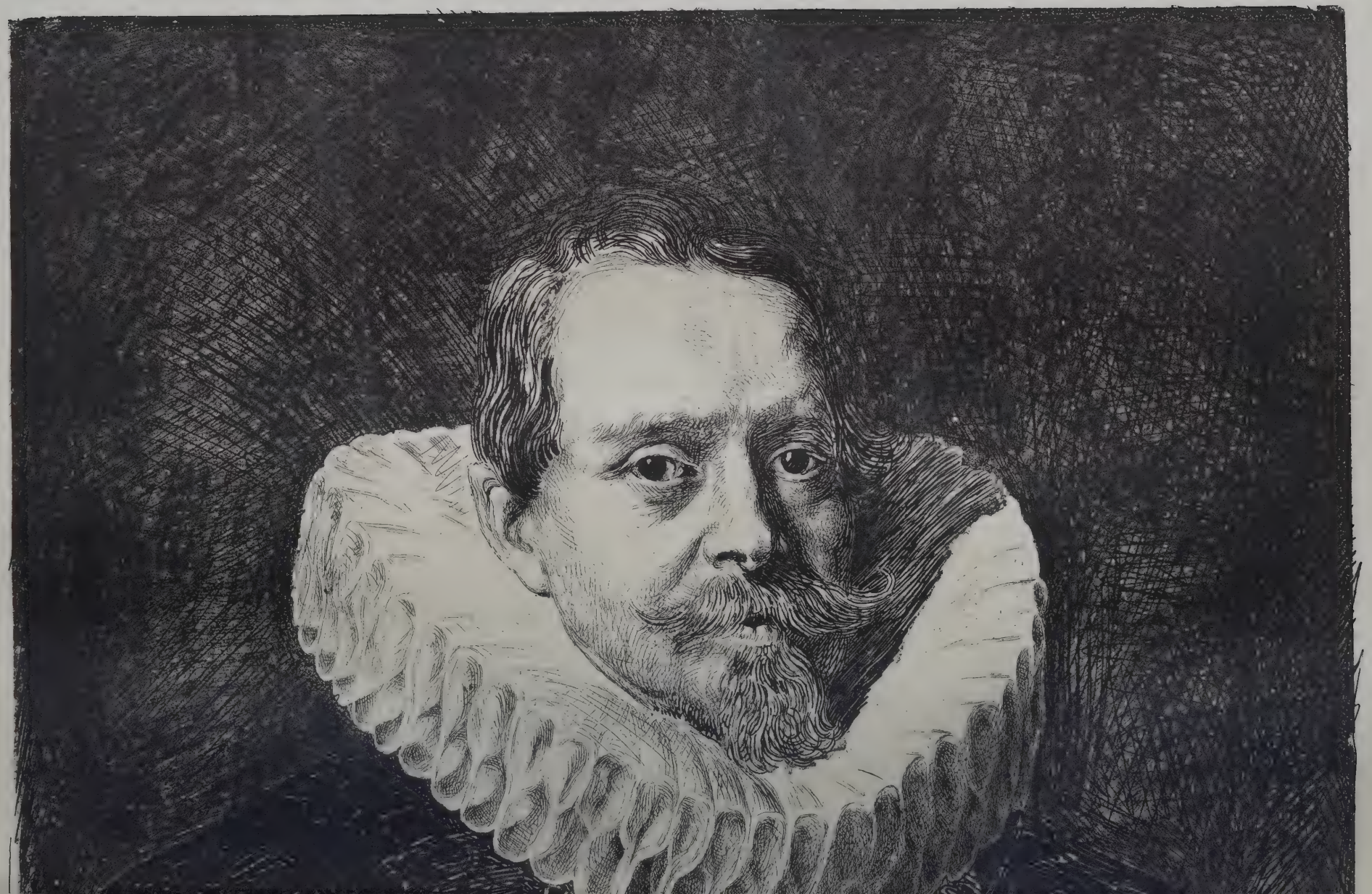
A COMMISSION has been formed to organise the department of contemporary and retrospective art, which will form a part of the Paris exhibition of 1889. M. BAILLY, the president of the principal Society of French Architects, and M. QUESTEL, the ex-president, will represent architecture. The painters are M. BOUGUEREAU, M. BONNAT, and M. CABANEL; the sculptors, M. GUILLAUME and M. MOREAU; and the engravers, M. HÉDOUIN, M. GAILLARD, and M. CHAPLAIN. In addition there are writers on art, and members of the Academies of Fine Arts and Inscriptions. The Baron ALPHONSE DE ROTHSCHILD is the representative amateur.

THERE has been some letter-writing in the *Times* about the title of RUBENS'S charming portrait in the National Gallery, the question involved being whether it should be called *Chapeau de Poil* or *Chapeau de Paille*—that is to say, felt hat or straw hat. According to the history of the picture furnished by M. DE NODUWEZ, both titles are applicable. The subject of the picture is a Baroness DE LUNDEN, who was much admired by RUBENS, but she always refused to sit to him for her portrait. At last he contrived to paint it unobserved while she was gardening. Mdlle. DE LUNDEN wore a straw hat at the time. The picture was afterwards presented to her. On the death of the lady, RUBENS, who had hoped that one day she might be his wife, begged the portrait, promising to give in exchange one more worthy of the subject. In the second portrait, which is now in Trafalgar Square, he substituted a felt hat, but the family always called it by the title of the earlier portrait. The *Chapeau de Paille* was sold to M. VAN NIEWENHUYSEN, in 1822, for 89,000 florins. Afterwards it was purchased by the late Sir ROBERT PEEL, and it finally passed from his collection to the National Gallery.

IT may not be generally known that by an Act lately passed in the American Legislature any person, such as a mechanic or labourer, who, with consent of the owner or contractor performs labour or furnishes materials in erecting, altering, or repairing any building or structure, may have a lien upon the premises for the value of such labour or materials to an amount not exceeding the agreed price or the value of such labour and materials remaining unpaid at the time of filing the lien. Notice of lien must be filed within ninety days after completion of the work; the lien continues for one year only, unless within that time an action to enforce it is commenced, and notice of pendency filed or other proceedings taken according to the statute. The object of the Act is apparently to aid co-operative enterprise among workmen.

THE building trade in Dresden is at present in a prosperous state, as, a great architectural transformation of part of the city having recently been commenced, the local operatives have certainties of employment sufficient to compensate any slackness in their regular avocations. The various allied branches are, of course, sharers in the good fortune. Wages have risen, and the extensions, largely voted by the Landtag, of the auxiliary railway net, guarantee further openings for displaced industrial hands.

ACCORDING to a paper published as an appendix to the English representative's report from Mexico, the city of Puebla is exceptionally well endowed with building materials. From an inexhaustible quarry on the hill of Guadaloupe, in the neighbourhood, have come the pavements, houses, palaces, churches, and other great or large edifices in adjacent towns. This stone is dark and of a very fine grain. Further, Puebla has a quarry on the hill of Loreto, from which is taken a soft stone called "xalnenen," used in building. There is the "kaolin," which supplies the factories of Puebla, where are manufactured the tiles and that ware known as "talanera." There is a very fine clay for red earthenware and brick, which supplies the potteries in the suburb of La Luz and the eighty-nine kilns for making the Roblano brick, which is known to have the consistency of stone; and the greater part of the plain on which the city is built is of a calcareous nature. There is abundance of chalk, or marl, for making lime, and this is manufactured in more than sixty kilns, which run the year round. There is also another quarry at a league's distance, whence comes in great abundance the stone called "chiluca" in the capital. From the river called Tetlaxcuafar, which traverses the city, and from the full-flowing Atoyac, half a league away, is taken gravel in abundance, and divers sorts of sand for building purposes. Three leagues off plenty of iron is found, and a large foundry is kept running, there being others for bronze in Puebla. The neighbouring mountains of Ualintze, of Tepenene, and Tepozuchitl furnish the town with wood and some charcoal. At a distance of 7 leagues are the mountains of Tekali and Tepeaca, which consist entirely of translucent marble, fine and vari-coloured, which is called "Mexican onyx," as well as other solid marbles used for pavements. These mountains of marble would suffice to build a hundred cities of the size of London, Paris, Pekin, Vienna, or New York, without including in the calculation the mountains of transparent marble of Tecuantitlan, in the district of Acatlan, whose territory covers 70 square leagues of stone-fields of divers marbles. The city of Puebla, instead of being built of dark granite, might consist of buildings of transparent marble—a city unique on the continent: it certainly has the material near at hand.





P. P. Rubens pinx. Ch. Waltner sculp.

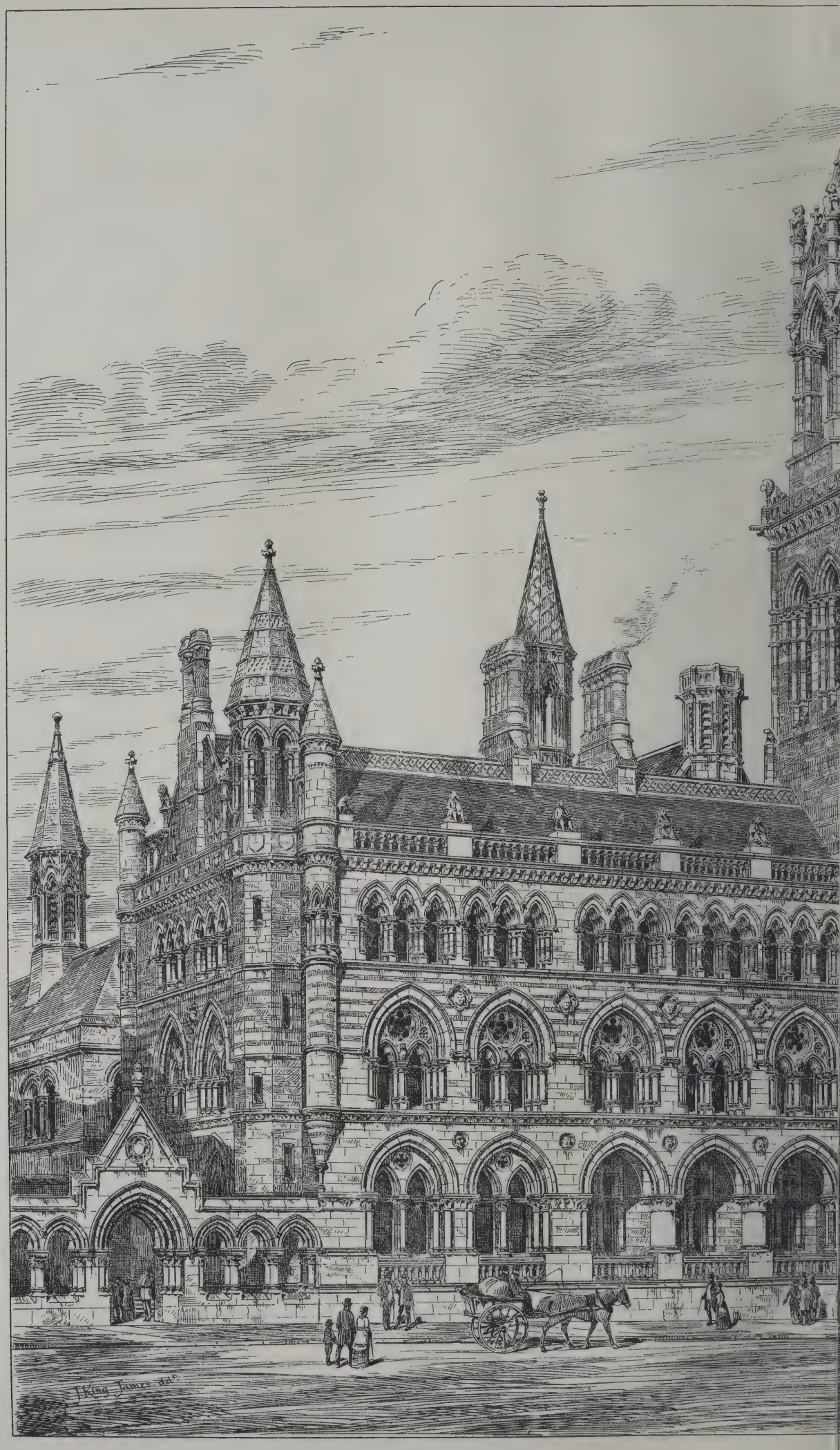
JEAN CHARLES DE CORDES

SEIGNEUR DE WICHELEN-CESCAMP

(Musée Royal de Belgique)

An Etching from L'Art.

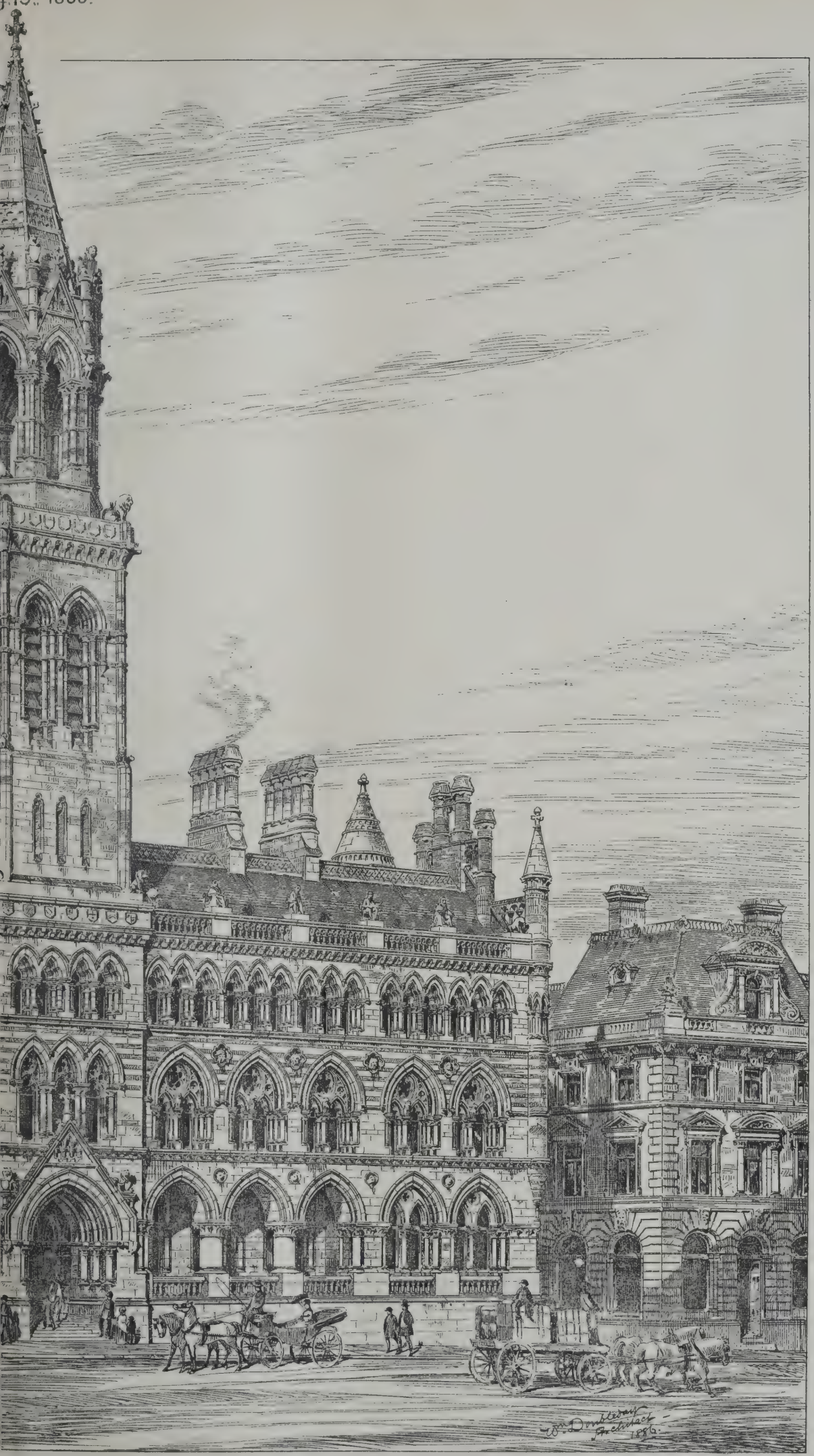
Printed by Sprague & C° 22, Martins Lane, Cannon St EC



DESIGN FOR ASSIZE

By WILLIAM

13th 1886.

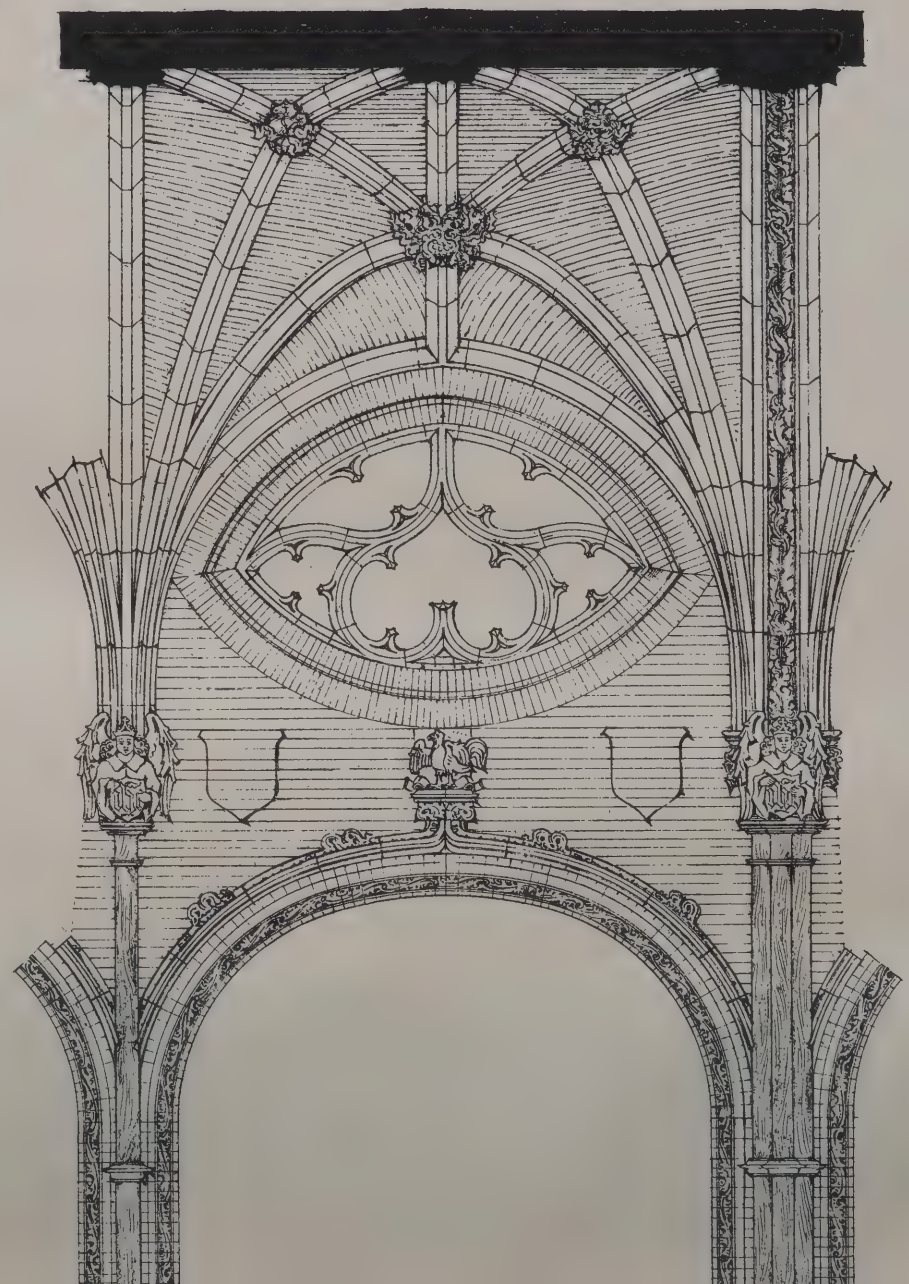


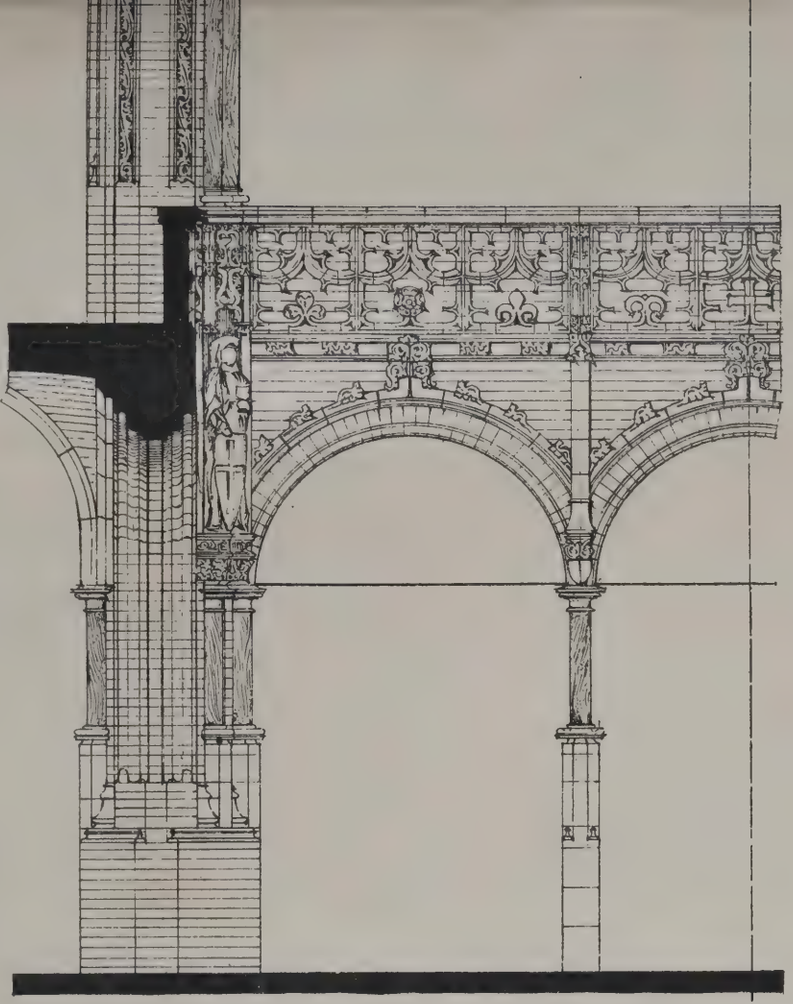
OURTS, BIRMINGHAM.

LEDAY, Architect.

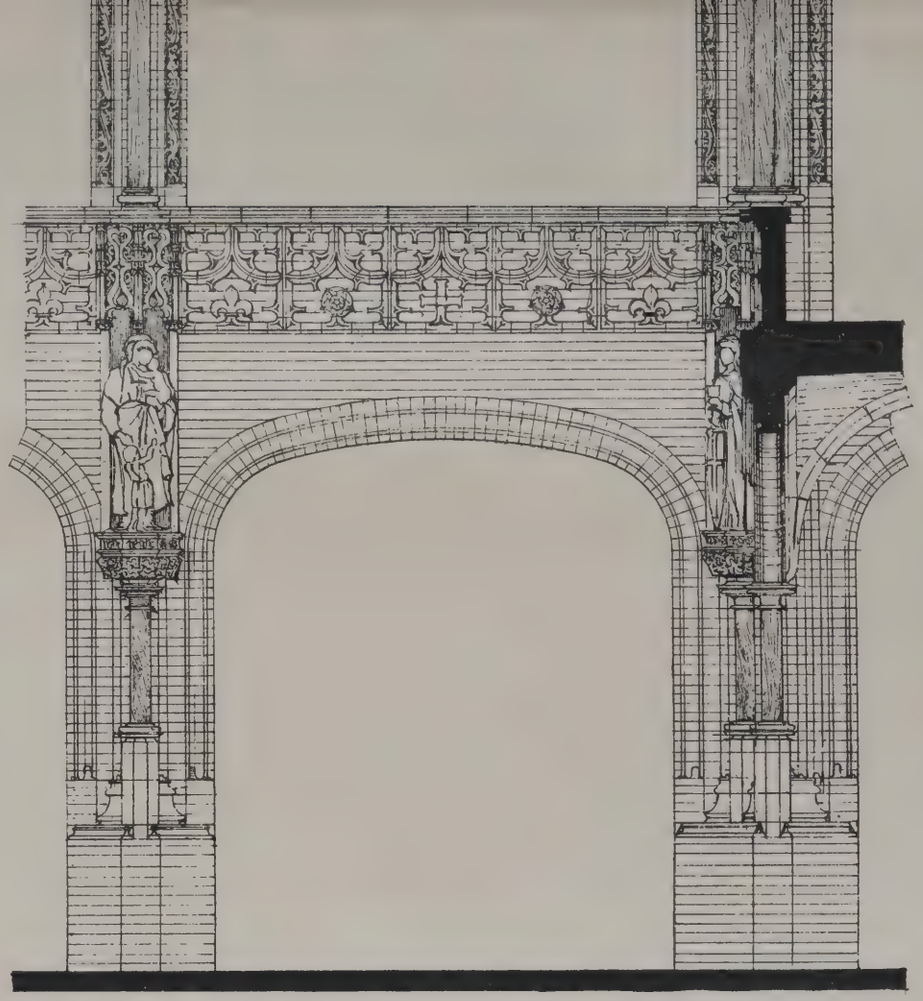
Detail of a Bay of Nave:



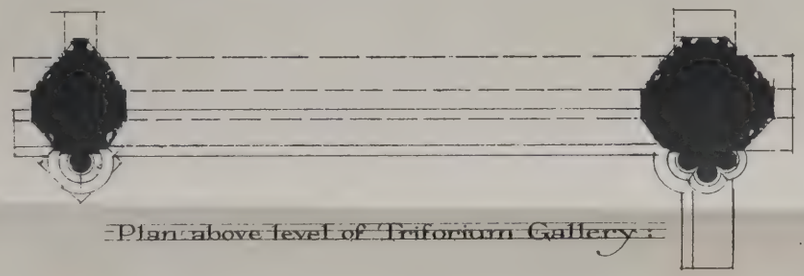




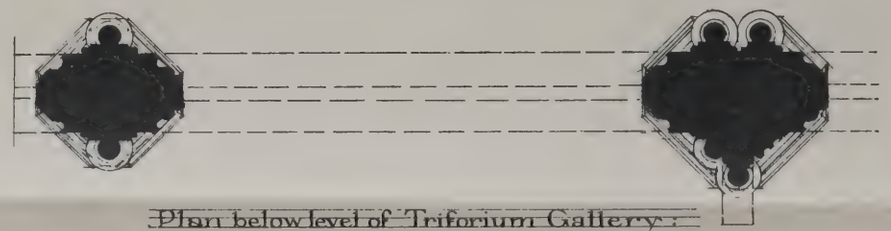
Section, showing elevation of Screen across West end of Nave.



Elevation of one Bay on South side of Nave.



Plan above level of Triforium Gallery.



Plan below level of Triforium Gallery.

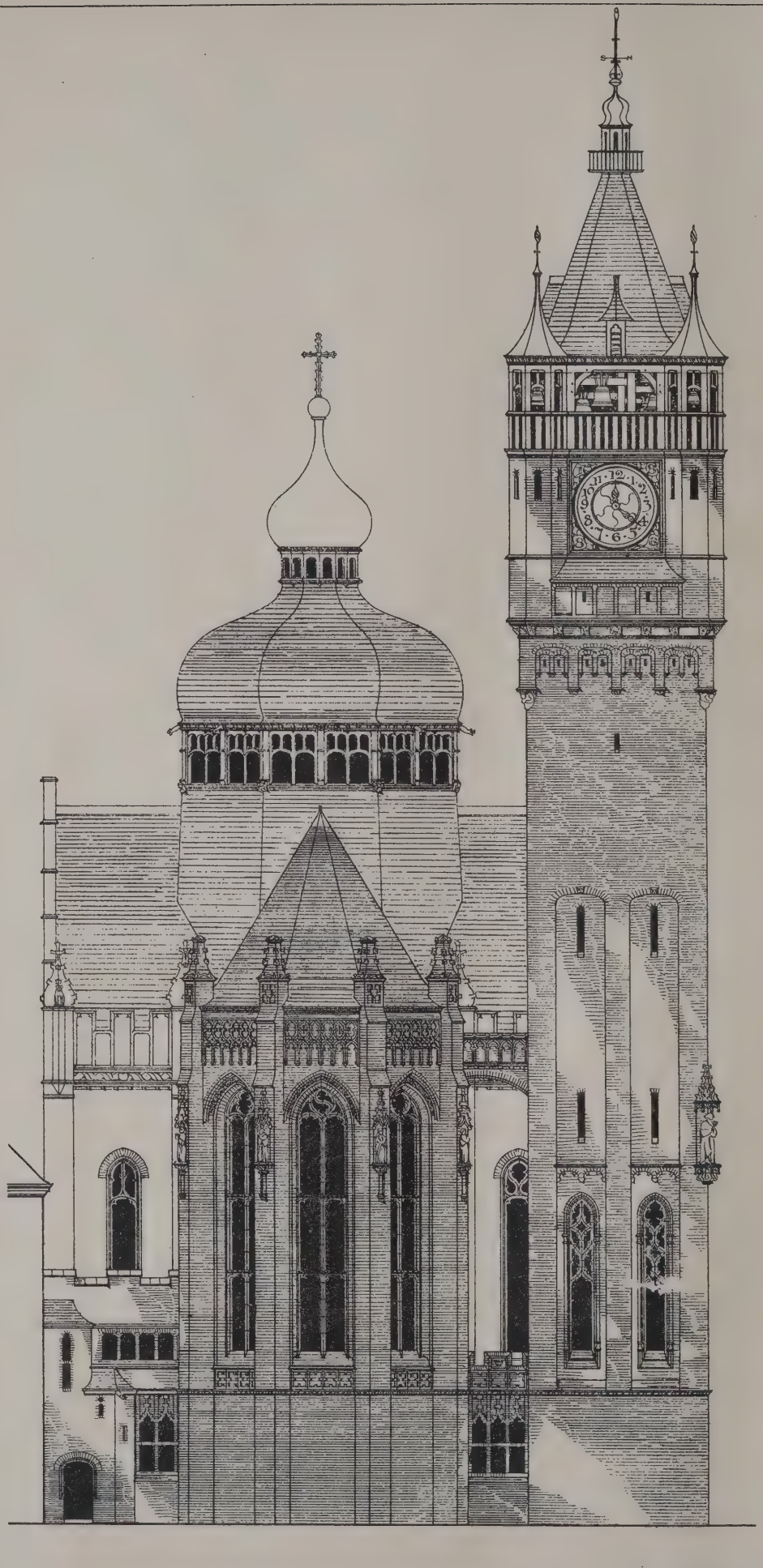
Scale of feet 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Printed by Sprague & Co 22, Martins Lane, Cannon St. E.C.

DESIGN FOR A TOWN CHURCH.

By R.W. SCHULTZ.

The Architectural Illustration Society. Plate No. 17.

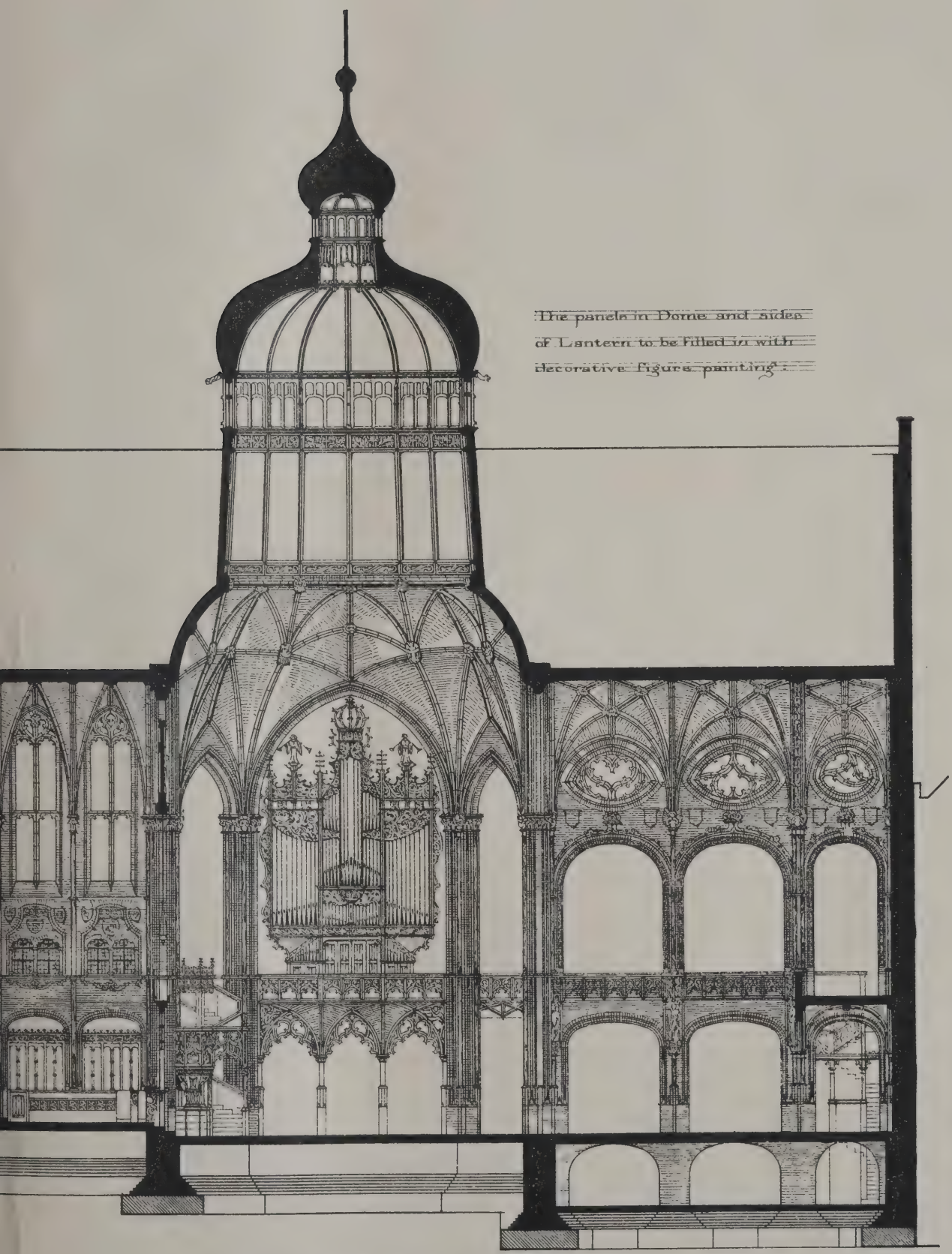


EAST ELEVATION.

A figure of the Virgin Saint of the Church to go in niche in angle of Tower

DESIGN FOR A

By R.



LONGITUDINAL SECTION.

Printed by Sprague & Co 22, Martins Lane. Cannon St. EC

TOWN CHURCH.

CHULTZ.

ILLUSTRATIONS.

PORTRAIT OF JEAN CHARLES DE CORDES. BY RUBENS.

DESIGN FOR BIRMINGHAM LAW COURTS. BY WILLIAM DOUBLEDAY.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NOS. 16 AND 17. DESIGN FOR A TOWN CHURCH.

ARCHITECTS' CERTIFICATES.

AN ingenious attempt to override an architect's certificate was made during the hearing of a case at the Birmingham Assizes on Tuesday. The plaintiffs, William Smith and Thomas White, of West Bromwich, builders, claimed from the defendant, Herbert Ault, of Birmingham Road, West Bromwich, whitesmith, 169*l.*, balance of amount due on a building contract. The plaintiffs contracted to build two houses at West Bromwich for the defendant. The contract was entered into on August 4, 1885, and a clause in the contract was to the effect that if the work was not completed by December 1885, 2*l.* per week was to be paid as a fine for every week that elapsed thereafter. The buildings were not finished until March 1886, and on the 26th of that month the architect made an inspection of them, and certified them completed. A counterclaim for 300*l.*, in respect of breach of contract was raised, on the ground of defective work and delaying the completion of the contract.

Mr. Jelf, for defendant, contended that the architect's certificate was not sufficient to entitle the plaintiffs to the amount claimed, inasmuch as the contract was worded so as to make the satisfaction of the defendant, as well as the approval of the architect, a necessary condition of the payment of the instalments. Mr. Jelf relied upon the existence of the copulative "and" in the contract between the statement of these two conditions as evidence that both were intended to be complied with, instead of, as was usually the case, the architect's certificate being considered evidence of the satisfaction of the person employing the contractor. His lordship overruled Mr. Jelf's contention.

Another allegation made on the part of the defendant was that the extra work done by the plaintiffs was not authorised by a written order by the defendant. His lordship said that in that case the plaintiffs were not entitled to recover under the contract, though they might perhaps be able to give evidence of a special contract with regard to these portions of the work. The parties, at the suggestion of the judge, consulted with the view of arriving at a settlement, but at length decided to go on with the case.

Evidence was given by the plaintiff, William Smith, and by the architect, who, in examination, denied that the work had been executed in a faulty manner. It was said that the houses were not weather-proof, but he examined them after a storm, and failed to find any trace of the leakage that was said to have existed in the roof and window-sashes.

After the case had proceeded for some time, the parties agreed to withdraw it and refer the dispute to a professional man.

HISTORICAL ST. PETERSBURG.

SOME interesting articles are being published in the *Novosti* regarding the historical sites and monuments of St. Petersburg, from which we make the following extracts :—At the beginning of the last century the Fontanka was a little rivulet deriving its name from the fountains of the Summer Garden, which it supplied with water. The Empress Elizabeth had it cleared, widened, and banked in with planks, which Catherine II. replaced with granite in 1780. Peter the Great had made free gift of the adjoining land to his favourites, on condition of their building suitable mansions. Many of these were, indeed, handsome and surrounded by extensive gardens ; but until the middle of this century the locality retained a suburban character. The construction of the Fontanka Quay was due to General Baur, who lived in a house at the junction of the Neva and the Fontanka, near the Bridge of the Bleachers ; it is still called Baur House, and is occupied by Court servants. On the site of the present Polytechnique Museum Peter the Great established a private dockyard for the building of ships on the newest models but of reduced dimensions, large numbers of which he presented, with adequate crews, to persons of quality, that they might learn the art of navigation. To habituate the citizens to nautical practices the modern Romulus decreed that aquatic promenades should be held every Sunday on the Neva.

On the spot where the Engineers' Palace now stands, at the confluence of the Moika and the Fontanka, there was a wooden palace on stone foundations which was destroyed in 1797. It was in this palace that Paul was born and passed his childhood, and his mother Catherine II. at first resided after her accession to the throne. Not far from the church of St. Simeon, on the Mokhovaia, a large space of ground was set apart for the purposes of a zoological garden, but the collection of animals was very poor for a long time. The ancient Simeon bridge was situated lower down than the existing edifice. Opposite to it stood the oldest house built on the Fontanka banks ; it belonged to Count Scheremetief. The chapel attached to it was consecrated in 1733, and is considered by reason of its rich images and decorations the most beautiful private church in the city. Close at hand stands the Catherine Institute, originally a palace destined by Peter the Great for the use of his daughter, the Grand Duchess Anne Petrovna, but never occupied by her. On the opposite bank of the river rose the vast mansion of Dmitri Naryschkine, Master of the Hunt, celebrated for its fine picture-gallery and noble suite of salons. In 1834 the nobility of St. Petersburg gave a magnificent *fête* within its walls in honour of the coming of age of the heir apparent, who afterwards became the unfortunate Alexander II. The Anitchkov bridge was constructed in 1715 ; eleven years later it was transformed into a drawbridge which no one was permitted to cross without producing a passport in due form. Not only this bridge but all the streets were guarded at their extremities by pickets of soldiers who stopped all circulation after nightfall. Exception to this rule was made in favour of physicians, priests, officials, and imperial servants, on condition that they carried a lighted lantern. The first historical bridge at St. Petersburg was over the Idanovka and joined the port of Petrovsky to the town. Catherine II. reconstructed the Anitchkov Bridge in stone, embellished it with four towers 20 feet in height, and lighted it with eight lamps. Near it stood the dwelling of Tatistchev, minister and historiographer, and close by upon the Nevski Prospect was to be seen a triumphal arch surmounted by a statue of Anne Ivanovna in Imperial robes ; it was erected on her elevation to the throne in 1732. Among the houses facing the Fontanka there is one which belonged under the reign of Catherine II. to the Minister Glebov, and it still bears his name. In the time of the Emperor Paul it formed a barracks, at first for two squadrons of the Horse Guards, and subsequently for the regiments of Moscow and Lithuania. One of the trophies treasured in its chapel was the bâton of a drum-major taken from the Grand Vizier in the Turkish war of 1829. Near this spot dwelt in the days of the Empress Anne the chief of the secret chancellerie, that Ouschakov whose sinister exploits form one of the darkest pages in the history of Biren.

DURSLEY CHURCH, GLOUCESTERSHIRE.

THE members of the Bristol and Gloucestershire Archæological Society visited the village of Dursley and the neighbourhood last week. The Rev. Canon Madan read a paper on the history of the parish church. Extracts were introduced from the parish registers, which extend from 1566 to 1805. The oldest and most interesting register was, however, missing. It had been lent to Mr. Blunt when he was writing the history of the church in 1877, and it was uncertain whether it was returned or not. He read quotations from Mr. Blunt's book, from which it appeared that the Archdeaconry of Gloucester had been long connected with the rectory of Dursley, and they continued attached until 1865. The original church was not so large as the present structure, and the western tower was surmounted by a spire. The two larger aisles were built in connection with chantry chapels which occupied the ends. The south chantry was known as the foundation of Thomas Tanner, or as Tanner's Chapel. This was perhaps the most interesting portion of the church. Mr. Blunt said the oldest portion dated from the fourteenth century. The tower of the church was not built centrally with the nave, it standing to the south of the central line. The church was rebuilt in 1707, but there was no reason for supposing that it was built upon any other than the foundations of the original. It did not appear that there ever was any chancel arch. The extension of the chancel westward was only marked by the projecting stonework, and by the roof of the old chancel, which was of higher pitch than the nave by 5 feet or 6 feet. The head of the effigy in Tanner's Chapel was missing. Under where the head was, an inscribed piece of lead was found bearing the date 1789. He read extracts from the registers showing expenditure for bells, repairs, &c. In 1688 the safety of the tower was suspected, and some timber was bought for 30*s.* to prop it up, but in 1699 the tower and spire fell, happily outwards, and not on the church to any great extent. Bigland, writing in 1791, said the spire fell while the bells were ringing, and several lost their lives by the accident. In March in the same year, the inhabitants petitioned King William to grant

letters patent to ask for collections through the kingdom towards the great charge and pious work of rebuilding the church. These were declined, and nothing was done for several years; but when bountiful Queen Anne came to the throne, the parishioners gave her credit for a more tender heart, and applied for the permission with better success. Some 509*l.* was obtained towards the required 2,000*l.*, but the careful parishioners cut their coat according to their cloth, and contented themselves with a tower only, without a spire. After paying for this and a bell, clock, and chimes, a balance remained of 5*s.* 9*d.*, which the churchwardens appear to have put into their own pockets. Several other extracts from the churchwardens' registers were read by Canon Madan. From these it appeared that in 1639 a new ring of bells was cast out of the old ones on the spot, the tower being temporarily turned into a bell foundry. In about 1774, the tenor bell being cracked, was recast by Rudhall for 49*l.* 7*s.*, and a new set of wheels, &c., were put up. The present bells, numbering eight, were inscribed "Mears, London, 1824" There was a tradition that at one time there was a public right of way through the church from north to south, to enable people the more readily to fetch water from the Broadwell. The chancel was rebuilt in 1738, the same year in which the Market-house was built. Canon Madan said in the restoration of the church which had been carried out since he had been rector, every effort had been made to preserve all the points about it which would be interesting to the archæologist, consistent with the necessary improvement of the building. In 1817 a gallery was constructed across the church from north to south. In 1828 the churchwardens paid 1*s.* 3*d.* for the carriage of a marble basin for a font from Bristol. In 1829 there was a curious entry of a charge for an oak font, the churchwarden having placed the old stone font in his field for use as a horse trough, no doubt thinking he was entitled to it in exchange for the marble basin he had obtained. The old font was afterwards discovered, repaired, and restored, and re-erected on a new base and placed on the north side of the central passage. At the last restoration in 1866 it was removed to the south aisle. In 1832 the church was repewed, at which time the whole church was appropriated except twelve or fourteen double pews, where kneeling was almost impossible. The pulpit was the usual "three-decker" then in vogue, but it was not long lived. Canon Madan gave a number of details connected with the history of the church, and the improvements which had been made in it.

THE ARCHÆOLOGY OF CHESHIRE.*

BY HIS GRACE THE DUKE OF WESTMINSTER, K.G.

IT is my privilege as Lord-Lieutenant of the County Palatine to welcome to the ancient city of Chester the Royal Archæological Institute of Great Britain. The associations of this city in which we are assembled, the "heir of all the ages" as we regard it, remind us that archæology, "the science of past time," is, after all, a comparative term; for, though we can carry back our history for several centuries, such antiquity is comparatively modern by the side of the antiquity of Egypt, Assyria, and China, which were at the pinnacle of greatness when the Roman power was yet in the womb of time. It is not my purpose in this address to enlarge upon the value and importance of archæological study, the position it should hold in a well-planned system of liberal education, its relation to historical study, the light it throws upon the past ages, the bearing it has upon politics, which appear so essentially a science of the present time, though a moment's thought will suffice to show that the present cannot be dissociated from the past out of which it has grown, and that the study of the past can at least teach us what to avoid, if we cannot always find something to admire and imitate. Archæology has been often the subject of some pleasantry, because at times its too ardent students have given rein to their speculative genius in the region of the absolutely unknown. There is, however, abundance of work, interesting and valuable, in seeking to establish accuracy about facts supposed to belong to the region of the known, and in discussing the conclusions drawn from those facts in the light afforded by recent discoveries. This we may do with advantage as regards Chester, which is very much more than a mere name. A glance back over the facts known of the history of this old city shows how important a place it was, as might be expected from its commanding position, and what stirring scenes it has witnessed during the last nineteen centuries.

We are told how, so early as A.D. 43 and 48, it had its share in the military arrangements of the Roman commanders Aulus Plautius and Ostorius Scapula—how it was the *point d'appui* of Suetonius in his expedition against the Druids of Anglesey—the headquarters of the Victorious Legion, the legion whose vexillarii took an important part in the defeat of Boadicea, the brave British Queen. We know that while Jerusalem, the Holy City, was being besieged and destroyed (A.D. 70), Chester streets resounded with the tramp of Roman legions; that tribute was being brought from the conquered British tribes, some never reaching the Roman treasury, but sinking on its way thither to the bottom of the river, only to be found some 1,800 years afterwards, like the pig of lead discovered the other day by the gasworks at Chester, the exact counterpart of that preserved at Eaton, and stamped with the date of the Emperor Vespasian, and with the name of the tribe Ceangi, whose tribute it was. Our archæological friends find traces of this occupation, not only in the name Chester, Castra, the camp *par excellence* (the Welsh called it Caer Lleon Vawr—*i.e.*, the camp of the Great Legion), but also in the arrangement of the streets. St. Peter's is on the site of the Prætorium. The inscribed altars which have been dug up, the hypocaust, the crocks of coins, the great roads leading to and from the city which, in a manner so characteristic of those who constructed them, still strike like arrows over hill and plain, unswervingly and perseveringly, to their point.

I might be expected to have added to this list of the relics of Roman occupation the Walls. We shall hope to hear this week some authoritative opinion on the question of the Walls—how far they are Roman. The city must have had some walls. But do any traces of those Roman walls remain, and are they to be found *in situ*? We shall hope to hear from our learned visitors about the Ceangi, whose home comprised three of the North Welsh counties, Carnarvon, Denbigh, and Flint; about the long dark period (476–900) which followed when the Roman occupation ended, and the 20th Legion and others were withdrawn finally from Britain because of the troubles near at home. Was that withdrawal (the end of the military occupation) an advantage to this country? We imagine not. The strong hand was needed then, if ever. They were troublous times, we may conjecture, from the two or three facts which are known to the ordinary reader (the references to civil war among the several chieftains, and the appeals to the Romans for assistance, "The Groans of the Britains"). Then, again, about the Irish pirates (or Scots, as they were then called) who devastated the western shores. How often must they have come with fire and sword, harrying and carrying! Was there, then, any other connection or traffic with Ireland? Was Chester as important a trading centre in the second century as York is said to have been at that time, when the wines of the Levant, woollens of Asia Minor, the purple of Tyre, the cambric of Cos, the spices of India, the slaves of Africa, the silks of China, were as abundant on the Ouse as they were on the Tiber? What about the laws and institutions after the Roman withdrawal. Were they Roman or Celtic? What was the language spoken? Did the Latin language take any hold upon the country at that time? Was the religion Christian or heathen? Were any left in Britain of those Christian soldier converts to whom St. Paul had preached as a prisoner at Rome?

We come down to the Danish occupation. The desolation when the Danes came on the scene must have been sad and pitiable. Chester was a ruined city in 895, when the Danes, flying before Alfred the Great, took refuge in it, and attempted to defend the place against the king. They soon retreated to North Wales, and left it ruined—they were no restorers. In this ruined state Chester continued until the Amazon Ethelflœda, Alfred's daughter, "Lady of the Mercians" (who built castles at Eddisbury, Runcorn, &c.), restored and beautified it, and repaired the walls, following the line of the Roman fortifications. How far are the existing walls hers, or even of later date?

Some seventy years later (971) we come to a grand epoch in our city's history. Will archæologists come here to tell us that the tale is not true which is so flattering to our pride? Did Edgar, "the Emperor of Britain," make his six or eight feudatory princes (Kenneth, King of Scotland, Malcolm of Cumberland, Macceus of the Isles, and five Welsh princes) row him (as we read in Campbell's "History of British Admirals") up the Dee in a barge to St. John's Church? Again, what have they to tell us of the course of the Dee—was it (as in some old maps) one with the Mersey, and did it cover, near the city walls, a wider area or follow a different channel? What light is thrown by the name Ince (Ynys, Welsh for island) and the claim of the Abbot of St. Werburgh in Edward III.'s reign to the sea?

We come to a better known period—the time of the Norman Conquest. We are proud to remember that Chester stood out to the last—"the one great city"—against the Norman invader, but it was at last taken and given to Hugh Lupus on condition that he should keep the Welsh marauders in check. But even here we have to ask, (1) What are we to believe about the story of Harold's surviving his wounds at the battle of Hastings and spending his remaining days as an anchorite in a cell near St. John's Church? His wife, Algitha, we may remember, was the granddaughter of Leofric, Earl of Mercia, and Lady Godiva, and in this way he had some connection with

* An address delivered on Tuesday at the meeting of the Royal Archæological Institute.

Cheshire. (2) Were the forests which covered so large an extent of Cheshire (not only the great Delamere Forest [of Mara], but that which made Wirral a desolate waste) until they were cleared away by the energetic prudence of Edward III. in his campaign against the Welsh—did these exist in Roman and Saxon times, or were they planted by the forest-loving William? Such a question suggests the difference between the Cheshire of that reign and the Cheshire of to-day. Instead of trim, well-cultivated fields, and pastures for cattle and sheep, and comfortable homesteads, a wild, half-reclaimed country with few habitations, and those few miserably built—a huge forest reaching from above Worcester to meet Delamere—the wild bull and boar, wolf and bear, its dangerous tenants.

Stoutly though Chester resisted William the Conqueror, once brought under Norman rule it became intensely loyal and a strong bulwark of his power. Few places so far distant from the metropolis have been more highly honoured by visits from royal and distinguished persons, or have received more frequent marks of favour than Chester. It was a port when Liverpool was a creek. Pennant speaks of Chester as "a constant rendezvous for troops and *place d'armes* for every expedition on this side." Thus Edward I. visited Chester in 1282–3–4. Here in 1300 he received the final submission of the Welsh. Edward II. in 1312. The Black Prince in 1353 to protect the justices. In 1394 Richard II. selected 2,000 Cheshire archers as his bodyguard.

But loyal as Chester folk were, we must not forget that the population became somewhat mixed. An asylum or sanctuary was established to which felons flocked. So great a nuisance did it become that in Henry IV.'s reign complaint was made to the king of "the many murders, robberies, batteries, and other riot done by the people of the county of Chester to divers of the king's liege people in divers counties of England." Lewis Glyn Cothi, a Welsh bard, describes Chester as "the habitation of the seven deadly sins." We may well congratulate ourselves on the peaceful times of Queen Victoria—thankful that law and order prevail; that the intolerable miseries and sorrows of the poorer classes in these times have been abated, the sense of insecurity removed; that it would not be necessary now to fear, as in 1130, the irruptions of the Welsh, which made Pulford so unpleasant a residence for the monks that they migrated to Dieu Lacresse, or to qualify leases and warranties (as may be seen from deeds in the muniment room at Eaton of the time of Edward II.) with the condition that "peace continued." [The lessee in 1299 was bound to keep up the building *nisi tempore guerre fuerint combusta* (unless they were burnt in time of war); and rents were payable only *tempore pacis*].

The arrangements for the excursions of the members remind me that the present area of Cheshire is much circumscribed. Once a part of the great kingdom of Mercia, ruled at one time by Penda, the champion of heathendom, before whom one Christian king after another had fallen, later by Offa (757–819), on equal terms with Charlemagne, by whom he was styled "the mightiest potentate of the west," then by Edgar, of whom we have spoken, this city could not fail to have been the scene of many battles and sieges. Under the Palatine Earl, if not before, the county included a portion of Wales within its jurisdiction. When, therefore, we visit Rhuddlan Castle, we shall not be going out of the boundaries, if we may say so, of Old Cheshire. Rhuddlan was given by Hugh Lupus to his warlike lieutenant, and in later days was held by a Cheshire knight, Randal, with a motley following of fiddlers and musicians, against Llewelyn and his Welshmen.

Mold, too, which was another dependency of Hugh Lupus, came into unpleasant collision with Chester on more than one occasion. In 1465 it was held by a daring marauder, Reginald Meredyth Griffith, who plundered all who were obnoxious to him, and who made the Chester people the special objects of his unwelcome attention. A number of tradespeople from Chester repaired to Mold fair to dispose of their wares. This was an excellent opportunity for Griffith. A quarrel was raised—swords were out at once—blood spilt. Griffith captured the worthy Mayor of Chester, Robert Browne, who had attended the fair as a draper. Mr. Browne paid the penalty for his fellow-citizens. Hurried up to the Tower after the fight, he was hanged without ceremony on an iron staple fixed in the ceiling of the great wall. Shortly afterwards an attempt was made by Chester men to avenge this murder. Two hundred stout and active men left Chester, but they were entrapped into Griffith's house, which he himself set on fire, and they were all but a few killed without mercy. Such were the relations between Chester and Mold in 1465. Our proposed visit will be much more peaceable. If we carry back anything, it will be, I hope, some voluntary offering for the museum which was opened yesterday.

We have succeeded at last in raising a commodious building, which will be most useful as a receptacle for curiosities and antiquities connected with the district which might otherwise be lost. Architecturally it will be a handsome addition to our public buildings, and if the well-considered designs of the committee in connection with the teaching of science and art in their various branches are carried out, it will enable Chester to take a high position as an educational centre, and thereby confer a great benefit upon an extensive district.

I have said nothing in this address about the ecclesiastical or the literary history of the city, the Mystery Plays of Higden, the names of the eminent and famous men who have been born in the county—Chancellor Egerton, Prynne, Bradshaw, and Jeffreys. But may I refer to the able work on "Roman Cheshire" which is being brought out by Mr. Thompson Watkin, author of "Roman Lancashire," and which promises to be a valuable supplement to the standard works of Ormerod, Earwaker, and Baines, and the useful pamphlet on "Inscribed Stones" brought out by Mr. Williams. I will conclude by repeating the cordial welcome which it gives me great pleasure to offer to the members of the Archæological Institute on behalf of the county of Chester, and to assure them that we shall look with interest for the instructive papers which they are doubtless prepared to read before us.

Bygones.

"*Antiquity after a time has the grace of novelty.*"—Hazlitt.

SAMUEL BEAZLEY ON GOTHIC ARCHITECTURE.

THE paper on "The Rise and Progress of Gothic Architecture" which was read by Samuel Beazley, jun., at the meeting of the London Architectural Society on December 12, 1806, has a sort of historical interest, for it is about the earliest evidence of a change in the feeling that prevailed among architects in respect of Mediæval work. Up to the close of the eighteenth century Gothic was under a cloud, but, thanks to Warton, Milner, Britton, and Dallaway, it was able to emerge to some extent from the prejudice which overwhelmed it. The appearance of the "Lay of the Last Minstrel" in the bookshops was the sign of a new era for the style. Scott was able to move people to feel for Gothic ruins as if they were forms which at one time were living and glorious as the Douglas himself. In Beazley's essay, which was written in the year after the publication of the poem, we can observe the alteration in sentiment. In his own practice he did not seem to have cared much about Gothic, for his theatres and railway stations show that he preferred Italian models. The essay is therefore the more remarkable, as the author might with reason be supposed to have a prejudice against a style which he was not wishful to adopt.

The struggle which was then in progress among men who hitherto had believed only in Classicism is seen in an essay by Mr. Edmond Aikin, which was read at an earlier meeting of the Architectural Society. It is evidently the work of a man who was trying to oppose the new ideas in his own mind by maintaining that the impressiveness of Gothic was due to all kinds of ruses. The conclusion Mr. Aikin came to was as follows:—

"Considering the Gothic mode in a general view, we find a system of bold and ingenious construction, producing a grand, consistent, and admirable style of architecture; but this praise cannot be extended to the details and ornamental parts. The arch, as it is the element of construction, is made the foundation of decoration, and repeated in various forms and proportions to a most unmeaning excess. The smallest shrine is a miniature of the façade of a cathedral, and the eternal repetition of minute parts and frivolous ornament rather confuses than enriches the effect. It must be allowed that the outside of a cathedral is generally inferior in beauty to the inside, the reverse of which is the case with a Grecian temple. The Gothic style of construction is adapted to produce a grand interior at the expense of the exterior, which frequently presents a huge pile of unconnected parts, picturesque but not beautiful—a forest of buttresses, a collection of extravagant decorations, which spread over every part, leave the eye no repose among the tawdry profusion."

Beazley also was not well able to resist the thought that there was too great profusion of ornament in Mediæval buildings. He had read in Dallaway's book that Gothic architecture might be as clearly and distinctly characterised as the Grecian, that is divided into distinct orders. He could not go so far in respect of a style in which he said so much ornament was mingled, and in which luxuriance of fancy seemed to be the only guide that was ever followed. He promised, however, to recur to the subject, but apparently he was diverted from it. About 1806 there were tougher battles to be fought than those which took place over two old styles. Beazley was among the volunteers who fought under Wellington until the end of the campaign. He had, we believe, the honour to be named in one of the Napoleonic proclamations as a particular enemy of the

cause of the Empire. Before the war was over another man had entered the field, and demonstrated the possibility of dividing Gothic into periods. That was Thomas Rickman, whose dissertation appeared in Smith's "Panorama of Science and Art" in 1812.

It was inevitable that Beazley should at the outset consider the origin of the pointed arch. Some, he said, traced it to the Spaniards; others, to the Italians, and held it to be a corruption of the Grecian and Roman styles; and a few to the Goths. His own notion was that the name was suggested from the irregularity in design, which bore some affinity to the wildness of the Goths as a nation. The grand characteristic of the style is, he said, the pointed arch; and the particular difference in the principles of erection consists in its arch springing directly from the capital of the column, instead of from an horizontal architrave and entablature, and this difference, although it may not appear to have so great a degree of solidity, yet, perhaps, displays much more excellence in the art of construction, both as to the lightness and nicety of the works of the arch and the strength of the pillar supporting it. But with this characteristic there were local varieties.

Each country appears to have a style of Gothic peculiar to itself. Thus, the more northern nations have been distinguished by a redundancy of ornament; in France it was light and simple, while Spain presents nothing to the eye but the gigantic and the massive; and in Italy, again, contrary to all ideas of beauty and propriety, we find circular arcades and porticoes forming a mixture of the two styles, as in the cathedrals of Pisa and Orvieto.

The Saxon churches were, he believed, made to resemble the Roman basilica, but the tower he derived from a different source:—"The appearance of these towers producing such a grand and striking effect, they were adopted in most of the religious buildings erected subsequent to this period. Their first introduction has been, naturally enough, attributed to the invention of bells, which made the addition of a high raised edifice for containing them necessary; but as some of the oldest buildings in Denmark have a sort of wooden tower supported by posts, rising considerably above the other parts of the church, I should rather suppose them to have been introduced by the Danes, who, after their invasion, left us many relics of the architecture of their own country, which were adopted according to the convenience or taste of the Saxons. Thus when I am speaking of the Saxon style I shall always include the Danish innovations of the times as forming a portion of it, whether they are considered as improvements or defects."

Beazley held that at first the Saxons, either from ignorance of decoration or from a natural simplicity of taste, used little or no ornament, while afterwards there is found a profuseness of decoration that appears little analogous to the principles of their style. But the influence of Rome was still to be recognised, especially "in the embattled and triangular frettes, which scarcely differ in form from those so frequently used among the ancients." Norman work resembled Saxon, being always distinguished by the same characteristics, and using in most instances the same ornaments, though perhaps with superior execution, from the circumstance of masons being brought to England from the continent, and the ease with which the Caen stone was worked on account of its softness—a stone to which they were attached from a national partiality, and which they accordingly imported from Normandy to use in most of their buildings in this country. In fact, until just before the last king of the Norman line ascended the throne, not the least deviation from the circular to the pointed arch had taken place. Accident, he considered, gave rise to the change in form:—

"For my part," he says, "I should rather suppose the idea of the pointed arch to have been presented by the accidental intersection of two semicircles, which I believe will be found to give that angle which was used in our earliest instances; and a range of semicircular arches intersecting each other at the church of St. Cross, where the parts between the intersections are alone perforated, seems to corroborate this opinion. These, as well as the whole of the east end of that church, were constructed in 1130, and appear to be the earliest example in this country, and to have given the first idea of the style which has since been called Gothic, and which from this time began to be generally adopted in all the new buildings throughout the kingdom; at first forming little variation from the Saxon and Norman, except in the point of the arch, but by degrees attaining a much greater delicacy and more frequent use of ornament, both in the capitals of the columns and every other part of the building, till, towards the end of the reign of Henry III., about 1272, it appears to have become completely a different style. The short massive column was changed for a cluster of small pillars (sometimes bound together by an ornamented band)—

> To slender shafts of shapely stone,
> By foliag'd tracery combin'd;

part of the projections of the shafts continuing through the capital formed the moulded rib of the light groined arches of the nave."

In the spires Beazley saw a resemblance to the sacred pyramids of Egypt, and he said it was but natural to suppose that they were used as a kind of symbol of the destination of the building, and adopted from the same ideas that led to their erection in Egypt. "I mention Egypt," he goes on to say, "as having been particularly famous for its pyramids; although, in tracing the history of architecture in the East, we shall find that the buildings in every country tended to the pyramidal form, which was first used as having a resemblance to a flame of fire, an element so generally worshipped in the Oriental world; in Persia under the Mithraic devotions, and in Hindostan under the name of Surya."

The carved work in a Gothic building appeared to have most attraction for Beazley, and from the bosses of the vaulting ribs he with some ingenuity derives a refutation of the theory that the arch was suggested by a forest glade. He writes:—"The ornaments that we find used in these groined arches, generally consisting of a grotesque head or one large flower, is, I think, the most conclusive argument against that idea which derives the Gothic church completely from the origin of a grove. For had that been the case it is but natural to suppose that these ribs, which doubtless were intended to form the branches of the trees, would also have resembled their imagined original in its ornaments as well as in its outline; but we seldom, if ever, find that they were in the early examples at all ornamented with foliage, which would certainly have been the most natural decoration for any ceiling intended to imitate the overhanging branches of an avenue of trees."

The roofs of Gothic buildings are not, according to Beazley, to be matched in any other style. Among the forms which were used for decorating them, as well as other parts of the buildings, he distinguishes the quatrefoil and the trefoil, and he considers they must have been derived from something that had a Saracenic origin:—"The grounds upon which I have formed this opinion are, that it does not appear to have been used till some few years after the First Crusade, and that if correctly analysed, it will be found to be merely the connection of three, or of four crescents, joined at the extreme point of the horn. Nor will any person think this conjecture totally without foundation, when he considers the almost constant use of the crescent among the Saracens, both as a sacred symbol and as an ornament in all their works of art, wheresoever it can be introduced with the least degree of propriety. The other principal ornament that we can with any degree of probability trace to the same origin, are those leaves whose outlines so frequently grace the capitals of columns in many of our ancient cathedrals, and which upon a correct and comparative inspection appear to possess a great resemblance to the leaves of plants that grow in Palestine and Arabia, and which were as naturally adopted in those countries for an architectural ornament as the foliage of the acanthus was borrowed by Callimachus to form the beautiful capital that decorates the Corinthian column."

The carving of the statuary might be supposed to be enough to overcome the admiration of a man who was satisfied with the floral ornament. Samuel Beazley appears to have recognised that the figure-sculpture was wrought rather rigidly in order that it might be in keeping with the lines of the building. In the following passage he anticipated much that has since been said on the same subject:—

"When I consider these various instances of their statuary, I can never suppose that author totally divested of prejudice who has chosen to denominate these mitred abbots and other venerable statues of the Gothic style 'monkeys,' and to distinguish the elegant and variegated tracery of their ceilings by the terms of 'gaudy sculpture' and 'trite and busy carvings, which glut the eye rather than gratify and please it with any reasonable satisfaction.' Surely a person criticising with such severity could never have troubled himself to assimilate the sculpture that he condemns with the structure which it was intended to ornament, or had forgotten that there should be an accordance through the whole of the building, and that the decorations should never differ from the general style by which the main body of the construction was characterised. Indeed, when we consider that most of their statues were sculptured from so rude and frangible a material as freestone, we are sometimes surprised at the great effect which they have given to many of their works in this art. . . ."

"Numberless faults have been found, and many errors undoubtedly exist, in Gothic statuary, when compared with the wonderful sculptures in porphyry and alabaster with which those skilful and sublime artists Phidias, Praxiteles, Apelles, and Lysippus adorned the public buildings of ancient Greece. But the fastidious critic whose eye turns with disgust from everything that does not possess the classical beauties and proportions of the antique, and who supposes every figure unworthy of the least admiration which does not, like the statue of the Olympian deity, seem to

> Shake his ambrosial curls, and give the nod,
> The stamp of fate and sanction of the god,

should consider before he indulges in such an illiberal and general condemnation of those which adorn our cathedrals that the refined and polished sculpture of the Greeks, which certainly possesses such just claims to his admiration, would have been as much out of character if placed in the rude niche of a Gothic structure as the half-formed but expressive figures of Aaron, Moses, or the Twelve Apostles would have appeared ridiculous had they obtained situations on any of the elegant pedestals of ancient architecture. A critic in his observation on the ornamental parts of a building should only consider them relatively with the character of the building itself. For though beauty in a great measure depends upon smoothness and just proportion in a single statue, yet in its connection and relative situation in a building, where it becomes a subordinate object, its principal beauty must consist in its coincidence with the general character of the structure in which it is placed; and I believe that no one will ever deny that there are ideas of beauty attached to the preservation of uniformity in the character of any composition, whether of painting or architecture."

We cannot find space to notice our essayist's remarks on tabernacle work, stained glass, wood-carving, &c., and must pass to what is said about the strength of the pointed arch.

"Monsieur Gautier has asserted that the pointed arch is stronger than a semicircle; this assertion is, however, too general, as this is only true in particular cases; that is, when the radius by which it is described exceeds the span in a certain ratio. In all other cases it is weaker, in proportion, as the centres from which it is described approach or recede from the ends of the horizontal line which forms its base. In an able calculation by Dr. Young, at this moment before me, of the equilibrations of the different arches that have been used in our Gothic edifices, it is proved that if the radius of the pointed arch be three-fourths of the span, or forms that arch which is called the sharp arch of the fourth point, the strength of a semicircle will be to the strength of the Gothic arch of the same span as 1,257 to 1,000. And if the radius be two-thirds of the span, or form an arch of the third point, the strength of the semicircle will be to the Gothic arch of equal span as 1,210 to 1,000. From this we see that the Gothic arch, whose radius is equal to the intervals between the pillars, is the weakest; and that, according as the centres from which it is described move on either side in a horizontal line, the strength of the arch increases."

For the proportions of Gothic cathedrals he adopted the theory which is figured in Murphy's book on the church of Batalha, namely, that the standard was the figure of a man. But in a question of this kind much allowance should be made in favour of Samuel Beazley. When the condition of inquiry on the subject at the time is considered—when it is remembered that after eighty years the question is not determined, his defects will then appear trivial. We have printed sufficient extracts to make it clear that so remarkable an essay does not deserve to have fallen into oblivion.

LIVERPOOL ART WORKERS' GUILD.

A MEETING for the purpose of aiding in the development of the Liverpool Art Workers' Guild was held on Tuesday, at the rooms of the Liverpool Architectural Society, Mr. A. T. Squarey in the chair.

The Chairman said he should call upon Mr. Bare to explain the objects of the guild, and he should then invite those present to discuss points of detail as they might desire.

Mr. H. B. Bare said:—I think we may venture to congratulate ourselves upon the progress of domestic decorative art during the last quarter of a century. Mr. William Morris, in lecturing on this subject some time since, said that "twenty-five years ago the public were as blankly ignorant of the history of the art as the designers were of its first principles. The whole subject was treated with general contempt. What individual talent there was could only show itself in eccentricities that deserved to be called by any other name than decoration." Since then we have made some advance from ugliness towards beauty, and it is not now difficult to find in shops all over the country goods at commonplace prices which are intended to be—and are—beautiful, and are more or less marked by artistic individuality, and it is possible for any one who so chooses to make the interior of his house comely and pleasant without any very unreasonable expenditure. There may nowadays be found furniture sensibly designed, combining comfort with elegance of form; fabrics with patterns and dyes which commend themselves to the educated taste; and so on through a variety of manufactures. But I fear we must admit that the general public have very little knowledge of decorative art, and that a few of the upper and middle classes only have learnt that there is such a thing as decorative art, which should be popular art. I had a forcible illustration of this some months ago, when, looking over the pattern books of a leading firm of calico printers, I was assured that the ugly patterns sold quite as well as the undoubtedly pretty ones. Now, if the decorative arts were in a healthy condition, instinctive good taste would shun the ugly patterns and demand the pretty ones, and the manufacturer would be saved what must be considered as a degrading waste of time and money; for what can be more wasteful than using the accumulated knowledge and skill of centuries in spoiling a piece of good white cloth by putting a pattern on it which you know to be ugly? Well, to try and get at the root of the matter, we have to endeavour to interest the whole public in decorative art. We have to instruct ourselves and improve our own taste, and to give greater support and encouragement to the art worker and the manufacturer to produce only that which is commendable. We shall find that we have in our midst ample material to work upon in carrying out such a project, and that the chief thing necessary is some combined effort, so that by association in one body we may be enabled to meet and to mutually assist one another, and to discuss the means best adapted to the beautifying of our homes and surroundings. First, we have an ever-increasing number of people interested in the general subject of domestic decoration, not merely for the sake of mere selfishly luxurious living, but from the growing consciousness that what is done towards elevating and beautifying our home life has a humanising and refining tendency which goes to increase the sum of happiness through all sections of the community. Working in this spirit are some who have devoted themselves very nobly to the task of teaching their poorer brethren the simpler kinds of decorative work which may be undertaken in their homes, and have thus succeeded in planting a new pleasure in the midst of their listless lives, and, moreover, of finding useful and remunerative occupation for the leisure hours of the artisan, who would otherwise have simply wasted the time idly. It is not surprising, however, if to the eye of the artist and professional designer many amateur efforts appear to need directing into a better channel. Here the Liverpool Art Workers' Guild could point the way to improvements in design, and adapt them to varied and varying requirements. The superior quality of work thus obtained would produce a growing demand for it. Other amateurs there are who show good technical skill in various branches of artistic work, such as in wood-carving, metal *repoussé*, painted decoration, needlework, &c., and who do much in this way towards the embellishment of their own homes. Here again may frequently be seen the want of better direction in the style and methods adopted and evidence of a general lack of harmony and consequent waste of effort. In such instances the guild would be in a position to advise and assist by suggesting a decorative scheme, the details of which could be leisurely worked out by the amateur, aided, where necessary, by trained craftsmen for such portions as would be beyond the powers of the amateur to perform. Ladies who are capable of doing needlework up to a good standard of design, or who are willing to undertake to work out special designs prepared by the guild, will have the opportunity of exhibiting and disposing of their work. As has been already announced, there will presently be formed a class for the study of wood-carving, and those who desire to avail themselves of it are invited to send in their names. The amount of subscription to such a class would mainly depend upon the numbers who came forward, and at the earliest possible moment particulars will be issued to those who give in their names. One of the objects of the guild is to establish a collection of good examples of design and workmanship, including the following:—Household furniture, wood-carving, decoration of friezes, panels, &c., metal *repoussé* work, embroidery and all kinds of needlework, painted glass and mosaics, &c., and artistic printing. Bolder and simpler forms might frequently be adopted, for instance, in decorative needlework, in lieu of the elaborately overwrought chair backs and other smaller pieces of work of this nature that one so frequently sees; less labour would be required to cover larger surfaces with increased decorative effect, if suitable designs are chosen. Many good examples of what I am referring to will be remembered by those who have seen such specimens from South Kensington, Macclesfield, Leek, and other schools where they have succeeded in reviving admirable examples from elder work. Again, there is much that may be accomplished by the amateur in the simpler modes of wood-carving, if this were studied in the spirit of the excellent work which has descended to us from our great-grandfathers, or if we learn something from the hamlets of Germany and Switzerland, or gather up a portion of the skill displayed by the Swedish peasant. We need not fritter away our efforts in carving mere knick-knacks when bolder designs might almost as easily be worked out to cover the surface of our ceiling and wall panels. Such carving, together with *repoussé* work in metals, also worked out on this bolder scale, could be so introduced as to give great distinction to our rooms, and the labour of it not be above the attainment of the amateur. The proof of this last statement may be found in several specimens of work entirely done by amateurs, and now displayed in the rooms of the Liverpool Art Workers' Guild at the Liverpool Exhibition. Especially noticeable is some of the beaten brass and copper-work, and

the carving and modern needlework, some of it being executed in the bolder style just referred to. The work of the professional artist and art-worker is also well represented in the admirably-painted folding screen by Mr. Robert Fowler; the painted majolica plaques by Signor Torquato Castellani, of Rome; the beautifully-drawn and highly-finished cartoons for painted glass by Mr. Walter Lonsdale, illustrating subjects from Shakespeare and Tennyson, are most worthy of close inspection. The examples of old needlework which have been lent for this collection show great variety of methods of working and great patience and skill in execution, and these examples well deserve to be studied. It may be considered that it is the duty of a municipality of the importance of Liverpool by every means in its power to foster the growth of its art productions, and it is to the interest of every citizen to see that such aid and encouragement as it is within his individual power to bestow should be given in this direction. Speaking as an architect—and I am sure my professional brethren can bear me out—the difficulty has frequently been felt of finding local craftsmen competent to carry out special designs or able to work out a suggestion embodying a fresh idea. And because it is more convenient and it involves less trouble to go where it is known that work of this nature can be undertaken, we employ workers in London and other cities. This involves further difficulties, however. Frequently greater expense is incurred than is justified by the result, and the architect, by reason of the distance between himself and the workman, has not the immediate supervision that he would desire to have over his work. It has, nevertheless, been found subsequently in some instances I could name, that the capable man has been existing within your district without your knowledge, and on searching for the reasons why he is not better known, he tells you he has rarely had the opportunity of doing the better kind of work for which he is undoubtedly fitted. He knows that the superior work goes elsewhere, and he has come to despair of any encouragement from his fellow-townsmen. The unwisdom of this state of things is palpable. Then, should we not set ourselves to try and improve matters? Those who accumulate their wealth in Liverpool, when they are expending some of it upon artistic objects ought in fairness to give every opportunity to local talent, indeed, to think of that as a duty—not that inferior work need be the result by any means. The delicate plant cannot live unless it is duly watered, and art will grow and improve where it is most encouraged; then why not in our midst? Liverpool may acquire a reputation as an art centre quite as readily as smaller places have done, if her citizens look to it. Architects will readily concur in any movement which would tend to foster a group of art-workers and skilled craftsmen ready more fully to carry out their views. Ornamental treatment of a design not unfrequently has to be rigidly curtailed, because under the pressure of daily work, time cannot be spared to search out your capable handicraftsman who can work up to the required standard. Bring into prominence your art-worker, and there is work for him to do; give opportunity for the work, and your superior craftsman can be found—supply and demand will react on one another in this instance. In these rooms are held classes attended by the student members of the Architectural Society, and many of them show great aptitude as draughtsmen and designers. It would be a tolerably easy matter to turn their attention especially to the decorative character of work to be encouraged through the guild. Their previous training naturally fits them to participate in its work, and to introduce a freshness and novelty of design, because in several instances these students—the coming practitioners, we may hope, in this city—have searched out, sketch-book in hand, the get-at-able places of interest both at home and abroad, and the opportunity is only wanting that they should work out the ideas they have thus imbibed to some good use. Beyond bringing forward this subject for your favourable consideration at the present moment, I do not venture to lay down the exact lines for the entire working out of the scheme. Many questions will have to be asked and answered, and the fullest discussion is invited in order that the most practical form may be given to the constitution of the guild; that it has a *raison d'être* I hope has been sufficiently shown, and I believe that the formation of a council to discuss and carry out the suggestions here offered will be the best means of furthering the object.

Mr. James Hay, architect, said that what they had just heard explained as to the objects of the association he considered fully justified them in making a commencement with it, and that when it was more fully known he believed it would have the support of the architectural profession as well as that of many influential citizens, and that he would be happy to give any assistance towards the promotion of such a guild.

The Chairman said the first practical step would be to inquire what were the rules of similar societies or guilds which had been formed elsewhere, as these would form a basis for their procedure. He then moved as the first resolution—"That, in the opinion of this meeting, the establishment of a Liverpool Art Workers' Guild is desirable, with a view to the diffusion of sound principles of decoration, and to the encouragement of workmen and others desiring to undertake decorative work of all kinds."

This having been seconded by Mr. Ernest Peel, was put to the meeting and carried.

Mr. Sydney Style said the main point in connection with the work of the guild was to bring the capable workman into connection with those people who want first-class work. Art is the idealisation of fact, and there are three processes which the artist of every kind performs, whether he be the simplest worker in wood or the poet picturing for the nobler states of society. The first is observation, the second idealisation, and the third execution. Now which of these processes can the Art Workers' Guild assist? They can assist the artist in his observation by bringing together a collection of beautiful objects of the kinds in which the different workers will be carrying on their work, and I hope that we shall see in the guild hall a collection of the best models of work of all kinds for the assistance of the workers. The second part (the idealisation) must take place in the mind of the artist himself. He must compare together the different things that he has seen, and, after due meditation, see within something superior to them all. The third process (the execution) may be assisted by providing the aid of competent teachers in the different kinds of handicrafts, and this is work which can very properly be aided by the guild. Mr. Style concluded by proposing that the following ladies and gentlemen be requested to act as a provisional council to consider in what manner the first resolution could be best carried into effect:—Mr. Clarke Aspinall, Mr. and Mrs. H. B. Bare, Mr. Edgar Browne, Mr. and Mrs. H. Clare, Mr. John Finnie, Mr. and Mrs. G. E. Grayson, Mr. James Hay, Mr. F. W. Holder, Mr. and Mrs. E. Peel, Mrs. F. H. Picton, Mr. E. R. Russell, M.P.; Mr. T. C. Ryley, Mr. and Mrs. A. T. Squarey, and Mr. Sydney Style, with power to add to their number.

The resolution having been carried, the meeting concluded with a vote of thanks to the chairman.

THE CHESTER MUSEUM.

THE Grosvenor Museum of National History and Archæology, with Schools of Science and Art for Chester, Cheshire, and North Wales, were opened on Monday last by the Duke of Westminster, K.G., who gave the greater part of the site, and subscribed 4,000*l.* towards the building fund. A view of the museum appeared in *The Architect* on May 31, 1884, from a drawing which was at the time exhibited in the Royal Academy.

The façade on the Grosvenor Road is in a style peculiarly suited to the general picturesque character of the ancient city of Chester, being designed upon the lines of the old Dutch Renaissance so prevalent in the street buildings of Holland in the seventeenth century, before the Mediæval mullions had given way to the more stately but less picturesque characteristics of the severer Classic style. The quaint form of the gables and the cupola to the octagon window at the end of the building also help to diversify the character and add to the picturesque outline of the building. The front entrance is through a semicircular archway nearly 8 feet wide, filled in with wrought-iron gilded gates, and surmounted with carved and enriched archivolt, having its spandrel filled in with bas-reliefs of female figures representing science and art; the frieze over this has carved and ornamental panels with the arms of the county and city inserted, whilst the pediment over contains the Grosvenor arms. The slight projection of the porchway is carried up to the top of the building, and is there finished by a quaintly-formed stone gable filled in with bold carving suited to its position, flanked on each side by carved griffins. The whole of the windows are of great width for abundant lighting, and are broken up by mullions and transoms, with internal divisions of window bars, which accord with the style. The upper lights, excepting those to the art school, are filled in with leaded lights and stained glass. The upper storey of the building is divided into bays formed by stone pilasters with carved capitals, and the cornice surmounting the whole is bold in character finished with balustrade on the top, and a carved and enriched frieze below, the whole being broken up by the two gables before named and the octagon turret, which also serves to veil what would otherwise be an awkward angle caused by the irregular shape of the site. In the front a good balance of colour is shown by the variety and adjustment of the materials, which are of red Ruabon brick for the walling, whilst the cornices, pilasters, and other ornamental features are of Grinshill Hill stone, which form a pleasing contrast in colour. The whole of the carving and sculpture to the front and throughout the building has been well carried out by Mr. Edward Griffith, of Chester, from the designs of the architect, and its execution is of a very high character.

The entrance to the building is through a vestibule 9 feet in width, up a flight of seven steps, upon the landing of which is placed a screen filled in with lead lights and stained glass of good colour and character. Immediately beyond is a large entrance hall and staircase, 23 feet in width, with circular end. This staircase hall gives a pleasing importance to the building, and is of a highly ornamental character. The floor is laid with mosaic tesselated pavement of small tesseræ, with ornamental border round the hall, with a central ornament in which the arms of the city are introduced, a small mullioned window at the end giving light to the ante-room through stained glass in which the arms of the city and county are emblazoned, with a quaint motto wrought into the lower panes—

'Tis education forms the common mind ;
Just as the twig is bent the tree's inclined.

The staircase, which goes round the circular end of the hall, is deserving of a passing notice. It is formed of concrete, supported internally by means of wrought-iron girders built into the wall in the centre of each step, and is thereby much stronger than if built of solid stone. Each step is covered with a hard York stone tread. The balustrade is specially designed and ornamented in a characteristic manner. The entrance hall and the first flight of stairs are finished with a dado of mosaic work in quiet tone, to harmonise with that in the floor beforenamed. The stairs and hall are well lighted by a top light from roof, which yields abundance of light and gives a cheerful impression on entering the building.

The accommodation provided for the various societies in the building may be briefly described as follows, and is comprised on three floors, besides a number of good, well-lighted rooms in basement available for stores and mechanical work required for the various schools, &c. :—On entering the building there is a reception or reading-room, 21 feet by 19 feet, on the left, and on the right is a natural history museum, 36 feet by 25 feet—a well-lighted room, with stained glass in the upper portions filled in with mottoes appropriate to this department. Beyond this is the lecture theatre, 45 feet by 30 feet, having two distinct entrances from entrance hall, besides platform entrance and preparation room behind on the lower storey. The theatre is well lighted by large windows filled in with lead-lights, and the auditorium specially arranged in steps so formed that all may have a view of the demonstrator's table at the bottom ; the seats are most convenient, each being separate, and having a small falling desk to enable students to write their notes upon. From this room there is a lift to the chemical laboratory on the floor over.

On the ground-floor there is a large room opening from the main hall devoted to the exhibition of pictures, for which it is specially contrived, being lighted by a good top light, and boarded all round to enable pictures to be easily attached. This room will be temporarily used as an archæological museum. The first floor is devoted entirely to science, excepting one room, 20 feet by 19 feet, to be used as library and committee-room, and one room, 25 feet by 14 feet, used as a model-room for school of art. The chemical laboratory is 30 feet wide, and has an area of 520 square feet, and there are two classrooms with an area of 1,170 feet. The upper floor is entirely devoted to the school of art, and consists of a large room 66½ feet long and 25 feet wide, and 20 feet in height, lighted from the northwards ; besides this there is a master's room, 14½ feet by 12 feet, formed with a bay, commanding a view of the whole of the teaching space, and also a small room with top light for the use of the master.

The whole of the floors are fireproof, with wrought-iron beams and Dennett arching, which prevents the transmission of sound between the various floors. The artificial lighting is by means of the Wenham patent gaslight suspended from the ceiling of each of the rooms, which gives a brilliant light at a most economical consumption of gas. Special provision has been made for warming and ventilation by means of Haden's system of low-pressure hot-water pipes, with coils of pipes placed in various places, and the ventilating system is by means of a large extraction shaft into which air ducts from the various rooms are conveyed.

The contract for the building has been most satisfactorily carried out by Mr. Edmund Gabbutt, of Liverpool, the general contractor, the special work being executed by the following sub-contractors :—Fireproof construction by Messrs. Dennett & Ingle, of London and Nottingham ; warming and ventilating by Messrs. Haden & Son, of Trowbridge ; carving and sculpture by Mr. E. Griffith, of Chester ; wrought-iron gates and grilles by Messrs. Thomas Wood & Son, of Chester ; stained and ornamental glass by Messrs. Shrigley & Hunt, of Lancaster ; locks and ironmongery by Messrs. Charles Smith & Sons, of Birmingham ; mosaic floors and dados by Mr. Ludwig Oppenheim, of Manchester ; gasfittings by Messrs. Box Bros. of Chester ; the whole work being carried out under the direction of Mr. Thomas M. Lockwood, architect, of Chester.

LEGAL.

Birmingham Assizes.—August 10.

(Before Mr. Justice Wills.)

Crouch *v.* Beesley & Co.—Architects' Fees.

The plaintiff in this case, Mr. Joseph Crouch, is an architect living in Birmingham, and he sued Messrs. D. S. Beesley & Co., engineers, Bracebridge Street, Birmingham, for 37*l.*, commission. In September 1884, defendants proposed making alterations in their factory in Dartmouth Street, and plaintiff prepared sketch plans. Afterwards defendants decided to abandon the project, and to erect a new factory in Bracebridge Street. For this building plaintiff prepared plans, and obtained estimates. It was agreed that the commission should be 2½ per cent. on the cost of the work. The usual charge, plaintiff stated in his evidence, was 5 per cent., and the fee was calculated on the builder's estimate, plus the cost of any extra work that might have to be done. A considerable amount of extra work was incurred in consequence of the foundations having to be carried deeper than was at first intended, the site turning out to be made ground. Plaintiff also did a great deal of work, such as measuring up the timber, which was usually performed by a clerk of the works. The claim included 3*l.* 3*s.* for the preliminary plans and estimates for Dartmouth Street. The defendant had declined to pay the full amount of the commission on the ground that some of the buildings for which plans had been prepared had been dispensed with. Plaintiff and a professional witness estimated the cost of the building actually erected at 1,500*l.* After some discussion, the parties adopted a suggestion from the Judge that they should agree to a verdict. A verdict for the plaintiff for 32*l.* 10*s.* was accordingly agreed to, and his lordship gave judgment for this amount. With regard to the question of costs, his lordship said that though all the buildings had not been erected, the plaintiff had prepared the plans for all of them at the request of the defendants, and was entitled to be paid for his work. The refusal of the defendants to pay the bill was a shabby business, and although, as a matter of fact, the plaintiff was only entitled to County Court costs, in the circumstances he would allow costs on the higher scale.

Liverpool Assizes.—August 5.

(Before Mr. Justice Cave.)

Trustees of Paton *v.* Emmett & Sons.

LIGHT AND AIR CASE.

The plaintiffs in this case were trustees of certain land and property in Oldham, and sought to recover damages for "light and air" from the defendants, who are manufacturers in that town. Defendants paid 175*l.* into Court as ample compensation for any loss sustained by the plaintiffs. The defendants had built a large wall close to the plaintiffs' cottages, which are situated on a piece of land enclosed, near Cromwell Street, in the centre of the business portion of Oldham. Opposite the cottages was formerly an old weaving shed, and it was upon this site that the plaintiffs built and completed this year a five-storey mill. The old weaving shed did not affect the light and air of the cottages, but it was alleged by the plaintiffs that since the erection of the mill the cottages could only be let now at a reduced rental. The question was as to the amount of compensation to be awarded plaintiffs. A number of witnesses were called on behalf of the plaintiffs, and stated that since the erection of the mill the light in the cottages had been very bad. The defendants submitted that the erection of the mill increased the letting value of the cottages. No witnesses were called for the defence, and the jury returned a verdict for the plaintiff for the amount paid into Court. Judgment accordingly.

NEW BUILDINGS.

Poplar Baths.—The baths and washhouses at Poplar have been reopened after reconstruction, which was carried out under the direction of Messrs. Clarkson, architects. Previously the plunge bath had a water area of only 42 feet by 26 feet, including the spaces under the boarded gangways. Now, the clear open water area of the new bath is 75 feet by 26 feet, or nearly double the size of the old bath. The depth of water at the south end is 3 feet 6 inches, and at the north end 6 feet 9 inches. The sloped floor is of glazed bricks, with blue Staffordshire bricks placed at intervals, so as to form a pattern and give foothold. The walls of the bath are lined with white glazed tiles, with a pattern border of blue and brown tiles under the slate curb. A continuous safety rail is placed round the bath just above the water level. There are passage-ways round the water on all four sides, that at the north end where the diving board is placed being about 9 feet wide, the others being narrower. In a gallery, at the height of about 10 feet above the water level, the passage-ways are repeated : this

gallery is reached by two stone staircases. There are dressing-boxes in the gallery as well as below, making up fifty-four in all; also the necessary latrine arrangements. This arrangement seems to have been resorted to in order to avoid the necessity of purchasing land for an extension of the site—a suggestion pressed by the architects, but not adopted by the Commissioners, who have been reluctant to sanction any expenditure which could be avoided—but no doubt a finer effect, though much more costly, would have been obtained if the extension had been made. The gallery floors and the floors of the dressing-boxes are of granolithic paving, by Messrs. Dennett & Ingle, of Whitehall Place. The lighting is by a lantern and roof-lights of considerable size; the whole of the side-lights are hung to open, and are controlled from the gallery level. The gas-lighting is by sixteen star pendants, each of six burners (carried out by Mr. T. Gaisford, 6 High Street, Poplar). The height from the water level to the ridge of the lantern is 34 feet. This ridge is also a ventilator. It is a copper trough turned bottom upwards, and heated air thus collects at the highest point inside the building, and finds its way out through louvred ventilators. A large amount of ironwork has been used; the cast-iron stanchions, &c., were supplied by Messrs. Young, Dowson & Co., of Emmett Street, Poplar, and the wrought-iron work by Messrs. Evans, Young & Co., of North Street, Poplar, all being from special details supplied by the architects. A subway runs outside the walls of the bath, and in this subway are drains, water-pipes, &c. The system followed for supplying the bath is that now most approved, viz., passing all the water through a tank into the bath, and then heating by establishing a circulation of the water, bringing it into the tank or heater at the bottom, and warming it by contact with copper pipes filled with steam. The top of the heater is placed at the level of the bottom of the bath, so that the warmed water strikes upwards through the mass of water in the bath, and renders the temperature high and even. Two new Cornish boilers have been introduced. Each boiler is 5 feet 6 inches in diameter and 24 feet long, and set with a wheel draught, all the appliances and the setting being of the most modern kind. The private baths have been remodelled, Rufford's porcelain baths having been used for the first class, and Stevens Bros.' enamelled iron baths and others for the second class. New fittings and water supplies have been supplied by Mr. Busby. The roof coverings have been renewed throughout, and several of the roofs have also been improved in form. The drainage of the whole of the buildings has been overhauled. Mr. J. Walker was the contractor for the building, and Messrs. Hodge & Sons for boilers, &c. Mr. Buck was clerk of works.

Estate Office, Greenock.—The new building in Ardgowan Square which is to serve as the estates' office of Sir Michael Shaw Stewart, Bart., has been completed. The style of architecture is that which prevailed in Scotland at the beginning of last century. The principal front is to the square, and the entrance door in the centre of this front is reached by an outside stair. Over the entrance doorway is carved the coat-of-arms of the owner, while the panel of the staircase window is filled with the Schaws of Greenock arms, and the circles in the window pediments with the crests of allied families. The new offices are arranged on two floors. On the first is Sir Michael's room, which is entirely panelled with oak. In a panel over the fireplace is an oil-painting of the old mansion-house by Mr. Pollok Nisbet. Adjoining is the factor's room, and behind this rooms for the surveyor and surveyor's clerks are provided. To the west of the entrance is the cashier's room, with a waiting-room attached to it. Entering off the cashier's room is a spacious safe, 16 feet square and two floors in height, and fireproof in construction. The entire upper floor is given up to the legal department. Off the chief clerk's room is a fireproof safe, 14 feet square. Ample lavatory accommodation is provided on each floor, and rooms for the housekeeper in the basement. In the yard at the back are stables and a coachhouse. The architect is Mr. R. Rowand Anderson, LL.D. The building has been erected by the following contractors:—Messrs. Beattie & Sons, masons; Messrs. Meikle & Sons, carpenters; Messrs. P. Bell & Co., plumbers; Mr. Andrew Swan, slater; Mr. Michael Slaven, plasterer. The grates, gasfittings, and safes have been fitted up by Messrs. Finlay & Co., of Glasgow. Mr. George Kermack acted as clerk of works.

ARCHÆOLOGY.

Explorations in Susa.—A vast quantity of relics, the results of the excavations carried on for a long time on the site of ancient Susa by M. Dieulafoy and his companions, have arrived at the Museum of the Louvre. They were brought to Toulon in a transport from Bassorah, and filled 215 chests, that weighed over 40,000 kilogrammes (nearly 40 tons). The chief contents are:—1. Two fragments of a frieze of enamelled earthenware adorned with lions in bas-relief, from the principal entrance to the palace of Artaxerxes Mnemon. Both fragments are over 13 feet high by nearly 30 feet long. 2. A similar fragment of a frieze from the palace of King Darius Hystaspes, adorned with twelve figures of the loyal body guard, the famous "Immortals." This piece is 11½ feet high by nearly 40 feet long. 3. Two fragments of a staircase in same material. 4. Two fragments of terra-cotta friezes, showing fantastic animals. They are together over 20 feet long by nearly 6 feet high. 5. The capital of a pillar from the palace of Artaxerxes, representing a two-headed monster. It is over 16 feet high by 13 feet in width. 6. A collection of cut gems, numbering about 300, which seems to date from the earliest period of the Sassanide dynasty. 7. A large number of arrow-headed inscriptions on stone or glazed earth, mostly from Susa. 8. A considerable collection of bronze coins from Susa and the neighbouring districts, from the time of the Parthians and the Sassanides. 9. A quantity of bronze ornaments and mountings of the outer doors of the palace of Artaxerxes. 10. A number of statuettes of bronze, ivory, terra-cotta, and marble; a quantity of vases and toilet ware. 11. A mass of objects of comparatively small value, enamelled Sassanide vases, Parthian urns for the dead, iron and bronze weapons, instruments, and skeletons. Besides these things the expedition took plaster casts on a large scale of portions of the palace of Artaxerxes, also photographs of the neighbourhood of Susa, the sites of the explorations of various old monuments and ruins in other parts of Persia. It is believed that five or six months will be required to get all the things in order. Diszful, the modern village on the site of Susa, is about 400 kilomètres from Bassorah. At first the expedition encountered much opposition from the natives, owing to a report that the Frenchmen wanted to carry away the body of the prophet Daniel, which is supposed to be buried in a cave in the neighbourhood, a great object of pilgrimage.

GENERAL.

The Design by Messrs. Maxwell & Tuke has been adopted for the Manchester Exhibition building.

Mr. Horace Jones, the City Architect, is to receive the honour of knighthood.

The Collection of Pictures by Old Masters, in Brussels, is to be transferred to the Palais des Beaux-Arts in the Rue de la Régence. The cause of the removal is an apprehension of the consequences of a fire occurring in the old building.

An Autumn Exhibition of Pictures has been decided on at Dundee, and the Town Council has granted the use of the picture galleries at the Albert Institute for the purpose.

Mr. W. C. T. Dobson, R.A., and Mr. G. Clausen are assisting the Hanging Committee in the selection of works for the exhibition at the Walker Art Gallery, Liverpool.

The Committee of the Manchester Art Gallery have secured the assistance of Mr. Phil R. Morris in selecting and hanging the works submitted for the autumn exhibition.

A Marble Memorial of the late Mr. S. Pountney Smith, mayor of Shrewsbury in 1873, has been erected in the cemetery. The design was chosen from a number prepared by Mr. Smith for monumental carvings.

Plans have been prepared by Mr. Noot for a museum and art school at Tunbridge.

A Dome is about to be erected above the main entrance to the Edinburgh University Building, a bequest for that purpose having been left by Mr. Cox, W.S. It has been designed by Dr. Rowand Anderson, architect.

Mr. Charles Cobham, of Gravesend, has been appointed surveyor of the Local Board of Grays.

A Stained-glass Window has been erected, as a memorial of the late Dr. Fraser, in St. Chrysostom's Church, Rusholme, under the direction of Mr. Redmayne, architect, Manchester. The work was executed by Mr. W. F. Dixon, University Street, London.

An Oak Chancel Screen and chancel side screens are to be erected in St. Wilfrid's Church, Standish, at a cost of about 300*l.*

Holy Trinity Church, Smethwick, is to be enlarged. The cost of the work is estimated at 3,000*l.*

A Choir Vestry is to be erected at St. Mary's Church, Oldham, at a cost of 190*l.*

Plans have been prepared by Mr. Naden, architect, for adapting the Imperial Arcade, Dale End, Birmingham, which was originally erected as a commercial building at a cost of 25,000*l.*, for the purposes of a music-hall.

The Linlithgow Town Council propose to purchase the old Fleshmarket, and to obtain plans and estimates from Mr. J. Russell Walker, architect, of Edinburgh, for the erection of a town hall on the site.

The Glasgow Architectural Association on Saturday visited Kilwinning Abbey, and after a short description had been read by Mr. W. J. Anderson, a couple of hours were spent in sketching and measuring the old remains. Passing on to Kilbirnie, the company visited the interesting old church there, with its quaint woodwork in roof and gallery fronts and canopies.

The Architect.

THE WEEK.

M. Alphand's proposals for the Paris exhibition of 1889 have been approved by the Minister. The Champ de Mars will be disposed in the following way. At the end which faces the Seine the colossal iron tower will be erected as a detached structure. The lower part will be arranged to serve as the principal entrance. Along the left side of the plain which is now bounded by the Avenue du Suffren, the Palace of Fine Arts will be constructed, according to the design of M. Formigé. On the right side will be the Palace of the Liberal Arts (architecture, industrial art, decorative art), of which M. Formigé will also be architect. It is an innovation to remove architecture from among the fine arts, and the French architects should certainly insist on a better classification. If allowed to pass, it will be more difficult to obtain the recognition hereafter and in other places. The industrial and commercial products of France will be exhibited in a building running along the right side of the plain, and bounded by the Avenue de la Bourdonnaye. M. Baudu is the architect for this part. Opposite will be the range of buildings for the products sent by foreigners. At the south side, near the Ecole Militaire, will be the section for machinery, designed by M. Dutert. The central space is to be laid out as an ornamental park, and the gardens of the Trocadéro on the right side of the river will be appropriated to an exhibition of horticulture.

Birmingham lost one of its worthies on Tuesday by the death of Mr. Peter Hollins, the sculptor. As he was in his eighty-sixth year, he was the witness of many changes in the town. His father, William Hollins, was an architect as well as a sculptor, and other members of his family also acquired reputation as artists. Peter Hollins was taught drawing by J. V. Barker, and among his fellow-students was Thomas Creswick, afterwards an admirable landscape painter, who was elected a Royal Academician. For sculpture his father was his principal teacher, although he spent a short time in Sir Francis Chantrey's studio. Peter Hollins removed to London, and about fifty years ago exhibited in the Royal Academy and elsewhere. He returned to Birmingham in 1844, and became his father's successor. The statue of Sir Robert Peel in New Street, and of Sir Rowland Hill, in the hall of the Post Office, are his works. He produced many busts of eminent inhabitants, and executed a large amount of architectural sculpture. Mr. Hollins was the oldest member of the Birmingham Society of Artists, and for a time served as one of the vice-presidents.

The results of the voting among the purchasers of the catalogue issued in connection with the *Pall Mall Gazette* are in general satisfactory, as they show that the public do not fall into gross errors when judging pictures. About two thousand people assumed the office of critics. That the best picture in the whole exhibition (as well as the best classical picture) was Mr. Alma Tadema's *Apodyterium* was testified by the majority, and this shows the value of a deceptive representation of marble. Decorative art is so much of a stranger in England, it is satisfactory to find that 265 voters were of opinion that the President's painting for a ceiling should come first. Mr. Burne Jones's *Depths of the Sea* was supposed to meet with little favour, but it found about the same number of supporters. Mr. Orchardson comes fourth and Mr. Long fifth. In historical pictures Mr. Lucas is first with his *Peter the Great at Deptford*, as it received 150 votes over the *Cromwell at Dunbar* by Mr. Gow. Mr. Frith's *Dr. Johnson's Tardy Gallantry* takes third place before Mr. Boughton's *Councillors of Peter the Headstrong*. Mr. Leader's *With Verdure Clad* gains first, and his *End of the Day* second, place among the landscapes, while the third, fourth, and fifth are assigned to Mr. Vicat Cole. Mr. Moore's *Mounts Bay* rightly is put at the head of the marine pictures, Mr. Brett's *Argyll Eden* being second, and Mr. Hook's *Broken Oar* third. *Union is Strength*, by M. Rivière, is considered the best animal picture. In portraits Mr. Holl is first with his *Duke of Cleveland*, second with *Sir John E. Millais, Bart., R.A.*, and third with the *Right Hon. J. Chamberlain*. The best domestic picture is Mr. Dicksee's *Memories*, for which 702 votes were awarded, while for the *Mariage de Convenance*, by Mr. Orchardson, there were only 256. There seems to have been a nearer approach to unanimity about the classical pictures than about the remaining classes. The *Apodyterium* gained pre-eminence with 873 votes; 372 were given for the President's *Ceiling Decoration*, and 327 to Mr. Solomon's *Cassandra*. Mr. Calderon's *Ruth and Naomi* is placed before Mr. Watts's *Cain* and Mr. Long's *Pharaoh's Daughter* among religious pictures. The merit of the water-colours was apparently difficult to decide, for no more than 194 people could agree about one drawing, that being M. Roussoff's *Angioletto*. Mr. Faed wins second and Mr. Waterhouse third place. Mr. Sant was considered to have painted the "prettiest baby." There could be no question that any one of Mr. Herbert's numerous works was entitled to be recognised as the worst of all the pictures; the *Judgment of Daniel* is, however, assigned the lowest place. Mr. Sargent's portrait group found 171 people to condemn it. It will be observed that with the exception of the water-colours an Academician or Associate stood at the head of the different sections.

The committee who have charge of the arrangements for the proposed Fine Art Gallery in Leeds have agreed to obtain designs by competition for the building, which is to be erected beside the new municipal office. The competition will be restricted to local architects, and, indeed, it would be well if that principle were more often adopted by local authorities. A prize of 50*l.* will be given for the best design, and one of 25*l.* for the second best.

It is not often that contractors are so unlucky as to find their claim rejected by an arbitrator. This has just happened to Messrs. Pattinson, of Ruskington, after a three days' hearing before Mr. Henry Law, C.E. They claimed 1,948*l.* 19*s.* from the Hinckley Local Board, partly for extra materials and work caused by meeting with running sand in connection with the construction of a sewer, and partly for sums which had been deducted for surface damage claimed by the occupiers of land. Mr. Law has just announced his award, and finds the contractors are not entitled to a penny in respect of their claim. The case is remarkable, and more should be made known about the circumstances which led to the decision. We cannot imagine two contractors inventing an account for 2,000*l.*, or solicitors and barristers conducting an entirely fictitious case.

It is not unlikely that the dispute between Mr. Hawksley and the Liverpool Corporation will sooner or later be settled in the law courts. Some months ago he declined to participate in a dual responsibility for the construction of the great reservoir which is in progress in Wales. It could hardly be expected, however, that by resigning his office of engineer-in-chief, Mr. Hawksley made a present of his past services to the Corporation. His account was sent in, but remains unpaid. It was proposed by Mr. Hawksley's solicitors that a settlement would be facilitated if his accountant went over the bills with the accountant of the Corporation. The Water Committee, in reply, say they do not admit that Mr. Hawksley has any claim against the Corporation under his agreement or otherwise. This is a new way of paying old engineering debts, which will cause some surprise in Westminster. Mr. Hawksley is not the man meekly to accept a rebuff of the kind, and for the sake of his profession he is, moreover, bound to fight the case to the end.

The handbook which has been prepared in connection with the approaching visit of the British Association to Birmingham will, from its character, be of more than temporary interest. Among the contents will be chapters on "Old Birmingham, Modern Birmingham, Literary, Scientific, and Artistic Societies," by Mr. S. Timmins; "Libraries," by Mr. J. D. Mullins; "Architecture," by Mr. J. A. Cossins; "Painting," by Mr. E. R. Taylor; "Sculpture," by Mr. W. Wallis; "Music," by Mr. W. B. Marshall; "Manufacturing Industries," by Mr. C. J. Woodward. The geology, zoology, botany, &c., of the district will also be described. The volume will contain over four hundred pages.

A HISTORY OF DERBYSHIRE.*

THE third volume of the new series of county histories is a good exemplification of the spirit which inspired the undertaking. It is impossible to put all that can be related of any county in a volume of moderate dimensions, but at least the most important local events can be described in three hundred pages. The "Popular County Histories" carry out the title by the avoidance of everything that belongs to the Dryasdust school. In narrating events the background is not forgotten, and the volumes are topographical as well as historical. A tourist will find them to be an agreeable companion to the ordinary guide books, and they may rightly claim to belong to the class which is indispensable to every gentleman's library.

Life is so multiform in England, it is never easy to plan a history of any district that will be illustrative of the general progress. Too often the historian fixes his eyes on the Court, and considers everything in relation to it as a centre. In that way, Derbyshire would at one time be made to have importance, because MARY QUEEN OF SCOTS happened to be a prisoner in some of the houses. Now, it will be admitted without much hesitation that the county has a stronger reason to be proud of the residence of "GEORGE ELIOT," who, in Derbyshire, saw a few of the best of her characters. There are many high-sounding names associated with the county, and a legion of romances could be made out of the histories of the Derbyshire castles, but the world is more indebted to the natives of a humbler class, who invented the "spinning-jenny," who introduced the manufacture of silk, and who devised improvements in pottery making. In treating of a district which was parcelled out among a few families, writers are apt to be subjected to the glamour which accompanies everything that is supposed to be chivalric, and we are accordingly glad to find the author of this new history reminding his readers that the Derbyshire miners often reveal as dauntless a courage "as that of the bravest knight who ever rode with visor down and lance in rest to perilous encounter." When so true a note is struck in the introduction, we need not fear to find in the pages which follow anything that will be suggestive of a chronicler in livery.

Mr. PENDLETON begins with Derby, a town so thoroughly modern that people are likely to forget that it was a royal borough in the CONFESSOR'S time, and was long before a place of importance. The Free School dates from A.D 1160. St. Peter's Church is of the thirteenth century, St. Alkmund's of the fourteenth, and All Saints of the fifteenth, and there are remains of a few old houses. The sandstone used in the churches has not, however, stood well. The tower of All Saints is the most remarkable example of old work. It dates from A.D. 1527, and bears the inscription "Young Men and Maydens," which might have been invented to puzzle archæologists. The town has had its share of celebrities. Among the artists are JOSEPH WRIGHT, who preferred to paint figures under artificial light in order to display his chiaro-oscuro; and EDWARD BLORE, the architect. The most eminent of the townsmen is Mr. HERBERT SPENCER, whose papers on the mathematics of construction—in the days when he was a civil engineer—are generally dated from Derby. According to the historian, the town is "developing daily, it is extending its industries, replacing narrow ways and tumble-down houses with fine broad streets and handsome shops."

If the capital is entitled to first place, what town should come second? We can imagine Mr. PENDLETON pondering over the question, and then getting out of the difficulty by simply taking the county map for a guide, turning to the west instead of the east, and in this way pitching on Ashbourne. There is, apparently, no other reason why it should come second. The town is exactly the kind of place that confounds a historian. It seems too sleepy to be the scene of any event worth relating, and we can understand the difficulty of the antiquarian who, for the want of something better, recorded that in Ashbourne he was sworn in as a militiaman. The parish church is, however, of great importance, and was founded by Bishop PATISHULL in 1241. There are old monuments of great interest, and BANKS'S figure of a little girl is one of the masterpieces of modern sculpture. The neighbourhood makes up for the dulness of the town. Dovedale is near, and it was to Mayfield TOM MOORE emigrated from London drawing-rooms, when he was compelled to invent something that would pass for Eastern life in "Lalla Rookh." ROUSSEAU and HUME, the historian, lived near Ashbourne, and in Dovedale WALTON and COTTON terebrated worms on hooks in the loving way enjoined in their book. SAMUEL JOHNSON and CANNING were also visitors to the district.

Wirksworth, from its lead mines, must have been a place of note from time immemorial. It was known to the Romans, and, according to our historian, it "has the honour of being the place where the first Derbyshire county match was played." "GEORGE ELIOT" visited the town in 1837, and there met the man and woman immortalised as DINAH MORRIS and ADAM BEDE. In the same part of the county is Matlock, which, it appears, was discovered as a "health resort" in 1690. The builder of the earliest bath was named FERN.

The first of the historic houses described by Mr. PENDLETON is Chatsworth. We are told that the existing building "is not the house Sir WILLIAM CAVENDISH began to build, and which his widow, the famous 'BESS OF HARDWICK,' completed. That old English house, which superseded the more ancient hall of the LECHES and AGARDS, was a quadrangular building with square towers, rude and Mediæval in look compared with the modern fabric." Chatsworth would need a volume to do it justice. The best artists that could be obtained have helped to its adornment, and it is to the credit of the owners that the works were never intended for ostentatious display or to secure a reputation for taste. The CAVENDISHES seem to have always enjoyed the art that was around them.

Haddon Hall comes next, and is very different in character to Chatsworth, which is remarkable for its modern spirit and grace. Certainly there is picturesqueness in all that remains of the old baronial mansion, but the work does not do much credit to the Mediæval craftsmen. The doors especially are badly framed and hung. According to the "Archæologia," they were all concealed by hangings, and the contractor took advantage of the opportunity. Mr. PENDLETON says that "visitors linger longest in the lord's parlour, through which DOROTHY VERNON stealthily glided with fluttering heart in her flight from home." That is to say, Haddon, with all its charm, would not be much of a success if the story of an elopement had not been forthcoming.

The VERNONS appear to have exercised an almost absolute power in the district. Sir GEORGE VERNON was known as "King of the Peak," and it is related that on one occasion without any trial he had a man hanged who was afraid to undergo the ordeal of touch. But in their way the owners appear to have acted up to the motto which is seen over one of the fireplaces, "Drede GOD and Honor the Kyng."

Sir THOMAS WENDESLEY, who lived in the district, was another of the monarchs of Peakland. His manner of acting is seen from the petition to the Crown of "a poor and plain esquire," one GODFREY ROWLAND, who complained that he was carried off by Sir THOMAS and his retainers, that he was imprisoned in the Castle of High Peak for six whole days without meat or drink, and that afterwards he was brought out and his right hand was cut off. Whether the victim obtained justice is apparently unrecorded.

There are many interesting villages in the north part of Derbyshire, and Mr. PENDLETON tells us a good deal about the quaint customs which at one time were found in them. The nature of the country has given rise to legends, and the local poets have amused themselves in turning them into verse. Mr. PENDLETON'S book contains a good many, we might even say too many, attempts of that kind.

Invalids have a kindly feeling towards Buxton, and it shows the shrewdness of the Romans when we learn that "they greatly valued the warm springs that issue from the base of St. Ann's cliff." In the Mediæval age Buxton was not supposed to depend for success on the chemical constituents of the water or the salubrity of the air, and it was, therefore, one of the places inimical to Lord CROMWELL when carrying out his reforms. His agent, BASSETT, informed him how he had "locked up and sealed the baths and

* *A History of Derbyshire.* By John Pendleton. London: Elliot Stock.

wells of Buckston, that none shall enter to wash until your lordship's pleasure be further known." The waters continued to flow in spite of Cromwell, and people could not be restrained from utilising them. The Earl of Shrewsbury soon afterwards erected a bath-house. Great folks and humble alike went there to be cured. Leicester, Burghley, and Sussex were among the visitors in Elizabeth's time, and Mary of Scotland was brought there from time to time during her captivity. Buxton was one of the places selected by Macaulay to illustrate his third chapter. He tells us that in the seventeenth century the gentry were crowded into low wooden sheds, and regaled with oatcake and meat which was called mutton, but which was suspected to be dog. Mr. Pendleton declares that Buxton cookery now is of a different kind, and is as useful as the waters in conferring happiness.

Sheffield comes so near the county boundary that Mr. Pendleton does not hesitate to include the town in his book as if it were a part of Derbyshire. He has much admiration for the town and its inhabitants. The staple manufacture of Sheffield is comparatively recent, for it was not until 1624 that the Hallamshire cutlers were able to acquire sufficient standing to allow of the formation of a worshipful company. In 1749 the annual feast cost only *2l. 2s. 9d.*, and half the money was expended on ale and punch.

It must be owned that few towns have less to show that is interesting to the archæologist, and the inhabitants do not encourage architecture in proportion to their wealth and needs. Sheffield is always disappointing to a visitor. When Mr. Ruskin set up his museum at Walkley, he may have thought that no town stood in more need of something that would suggest the value of beauty, and the unpretentious little house in which his treasures are placed merits to have more visitors than it receives.

Mr. Pendleton, after leaving Sheffield, takes his reader through the east side of Derbyshire. First he comes to Norton, where Chantrey was born, and the sculptor receives more than his due share of praise. Then we pass Dronfield to Whittington, where a good deal of trouble is taken to magnify the meeting between Cavendish and Danby, as if it were the principal cause of the success of the Revolution of 1688. Macaulay simply says:—"The two noblemen had met at a village in the Peak, and had exchanged assurances of goodwill." The position held by the Devonshire family was, however, enough to have the centenary of the meeting celebrated with great pomp in Chesterfield. There was a sermon in Whittington Church on the text, "This is the day which the Lord hath made;" there was "an elegant cold collation," and there were dinners at all the principal inns for the crowds. It is no wonder that people look forward to a second celebration of the kind in 1888, when, as the song says, with "A flowing bowl they'll sing to the Glorious Revolution."

Chesterfield is best known by the crooked steeple of the parish church:—

> Whichever way you turn your eye,
> It always seems to be awry;
> And while it stands must ever be,
> An emblem of deformity.

Various reasons have been offered to explain the phenomenon, Satan himself being described as the malefactor; but the real cause is a commonplace twisting of the woodwork. The town is ancient. It was part of the property given to his son William Peveril by William the Conqueror, and subsequently could claim to be a royal burgh, for it was held by the kings. Since then it has had many vicissitudes, but it is now a thriving place, and, as it owes much to railways, the townsfolk acted in good spirit when they raised a building as a memorial of George Stephenson, the engineer, who lived during his latter years in Chesterfield.

Bolsover is not an important place now; still, "nearly every inch of ground is historic, from the little Norman church with its alabaster and marble tombs of long-dead celebrities to the lofty castle, rising, foliage fringed, high above the precipitous rock." The castle is not the original fortress built by Peveril, but an imitation that was erected by Sir Charles Cavendish. It is still habitable, and a story is related that the wall-paintings in one of the bedrooms, which are partly defaced with whitewash, met with that fate through the uneasy conscience of a former occupant, who, "cursed with an uneasy conscience, was rendered so uncomfortable by the contemplation of these very differently situated seraphs, that he took a lime-brush and ruthlessly wiped out sinners and saints." The later building on the south of the castle, which has fallen into decay, was the mansion where the Marquis of Newcastle entertained Charles I. A masque was composed by Ben Jonson for the occasion.

Hardwick Hall can be seen from the roof of Bolsover. It was one of the castles raised by the famous "Building Bess," Countess of Shrewsbury, who, according to Fuller, was a builder, a buyer and seller of estates, a money-lender, a farmer, a merchant of lead, coals, and timber. The origin of her passion for building houses is said to have been a gipsy's prophecy. The strong-minded dame was told that so long as she continued to build she was safe from death. In this way Hardwick, Oldcotes, and the older Chatsworth were erected. It is a pity gipsies cannot be utilised for such a purpose in our time. Hardwick Hall might serve as a model for people who believe in the curative power of light, for, according to one writer, it "seems to have been designed to ascertain how little of stone and how much of glass might possibly be combined together in the formation of a splendid edifice." The gallery has eighteen windows on one side, each having 1,500 panes. The hall, if of less architectural interest, would derive value from its historic portraits and tapestries. The remaining buildings described are Wingerforth Hall and Wingfield Manor, the latter being known as one of the many prisons of Mary Queen of Scots.

In taking leave of this interesting book we again recommend the series of which it forms a part to the attention of our readers. The "Popular County Histories" will afford both pleasure and profit to readers.

THE MEDIÆVAL BAPTISMAL FONTS OF ENGLAND.

[By a Correspondent.]

THERE is scarcely a single feature in English Mediæval architecture where a more extraordinary variety of design is seen than in the baptismal font. This country is, in fact, remarkable in this respect as compared with the rest of Europe. Those who are in the habit of examining the interiors of our English churches find in this one detail an ample and practically unbounded field for either the exercise of the pencil or the study of architectural composition.

For the Mediæval men, with loving and willing hands, have expended on the font a very large part of their labour. Taking the Norman period, for example, there is a greater amount of sculpture preserved to us in the fonts than in the doorways. Often as the latter have been reset in the later buildings, when the Norman church had been pulled down, yet the specimens of fonts of this date are more numerous. If we compare a number of examples of the Mediæval pulpit, for instance, with the Mediæval font, it will be found there is much less variety in the former than in the latter, not only in the general composition but in the materials used. It is true that the old pulpits still remaining are very few indeed as compared with the multitudinous array of fonts, the preservation of which, even to the most ancient, is accounted for by the reverence accorded to that great sacrament for the celebration of which they were erected. And this is likewise true, while admitting that the pulpit for the parish church is most rarely to be met with of earlier date than the fifteenth century, except in the case of those erected in monastic refectories (such as the beautiful specimen of the thirteenth and fourteenth century respectively, at St. Werburgh's, Chester, and at SS. Peter and Paul, Shrewsbury, formerly), which might just as fitly be called lecterns as pulpits. For from them devotional writings were read while the monks were at meals. There is a greater variety in, say, a dozen Perpendicular fonts selected at random than in a dozen pulpits of the same period. The Mediæval pulpit was always made of wood or stone, whereas the font was either of granite, marble, stone, or lead, or even in one example, at Chobham Church,

Surrey, of wood and lead. While thus comparing fonts with pulpits, it may be worth while to remark that the former were square, circular, and octagonal sometimes, though seldom hexagonal, and of other forms exceptionally. The latter were in plan hexagon, heptagon, nonagon, and in one specimen at least (Long Sutton Church, Lincolnshire), sixteen-sided.

This essay can make no pretence to enter very deeply into the matter, but must be looked upon rather as an attempt to touch the fringe of a vast and greatly interesting subject. It is surprising that more should not have been written on so attractive a topic.

In English churches built in the Italian style there is very little variety in the font, as is shown in the churches designed by WREN and his successors in the City and other parts of London. The normal type is a tall vase-like form, the proportions of which are very different to most of the more ancient fonts. It seems remarkable that with the wealth of Mediæval specimens to be met with in every part of England, the Renaissance architects could have learned so little.

The interesting and well-got-up works by Mr. PALEY and Mr. SIMPSON give us a large number of examples of English fonts of all periods and of very diverse design. Yet those therein illustrated form but a small proportion as compared with those not delineated, many of them quite as remarkable and original in design.

At the present time it seems considered almost *de rigueur* on the part of the architect to make the font octagonal in form. The octagon is called the type of regeneration, and a very appropriate figure too. Another advantage the writer has found in it is that this form with its eight angles is very suitable for inexpensive fonts, being decorative in itself, even with very simple ornamental panels. A circular font, on the other hand, looks plain unless it has a series of panels around it.

Though the square plan is very characteristic of Norman fonts it is not out of harmony with details of a later period, and in Cornwall, where all the changes of style, owing to its remote isolated position, came very late, there are specimens of fifteenth-century fonts of this shape. The square bowl is not necessarily heavy-looking, if carried on a circular or octagonal central stem with smaller shafts under each angle. This is very much better than a certain feature of some modern octagonal and circular fonts, where the shafts spring outside the line of the bowl and are carried up to the top, supporting—nothing. In Classic architecture engaged or detached columns are often carried up a façade to the top of the building; but there they support the entablature, and may be said to be in the nature of buttresses, or, at any rate, suggestive of them. This is not so in the case of fonts or pulpits where no entablature or buttress is needed. In the former there is commonly only a plain splay at the top of the bowl. It must, however, be acknowledged that, in the case of the bowl to the Early English font at Weston Church, near Spalding, Lincolnshire, there are shafts without base mouldings, and bracketed out, which carry nothing. In some examples of ancient fonts with square bowls there are nook-shafts flush with the general face, and to these the before-mentioned objection cannot apply, any more than to the nook-shafts of Transition-Norman buttresses, or the columns, obviously in lieu of buttresses, in some of the early Romanesque churches of France, as at St.-Remi, Rheims. In old examples, octagonal fonts with detached shafts at each angle and a central stem are rare, but where they exist are effective features. In many of the ancient specimens the transition in plan from the bowl to the stem produces, it may be said, mitreing, or what perh aps might more fitly be called "interpenetration" in a Flamboyant-like fashion, more curious than beautiful. A well-devised sculptured leaf or bunch of foliage or floweret then becomes of service to remove the awkward join, and is an expedient quite in the true spirit of the Middle Ages, turning what might prove a blemish or deformity into "a thing of beauty" and "a joy for ever." In complex vaulting how awkward-looking in some cases would the junction of several ribs of various curves and radii be but for the carved bosses which prevent this being seen!

The writer, as before stated, does not profess to go fully or exhaustively into fonts; but it may be well, before proceeding further, to briefly tabulate the various plans of fonts. It is not at all infrequent to find the bowls, bases, and shafts not of the same period. Broadly speaking, of course the square bowl, with four circular shafts at each angle, is the most typical form in the Norman period. The well known examples at Winchester Cathedral, East Meon Church, Hants, and the old font to the Priory Church, Christchurch, Hants, are specimens.

In the Early English style the bowl may be said to be the most characteristic, but there are comparatively few examples left to judge by. In the Decorated and Perpendicular fonts the octagon is the most usual plan of bowl. All these plans, however, may be said to be interchangeable in the different styles, except perhaps the circular bowl, of which there seems hardly an example in the Perpendicular period. Octagonal Early English, circular Decorated, and square Perpendicular are to be found.

Though the diameter of ancient fonts of all dates varies considerably, as well as the height, yet the canonical rule of the font being sufficiently capacious for the total immersion of infants was well kept. In many cases the fonts are now too low for the convenient celebration of the baptismal rite, but this arises through the shafts having been modernised or truncated, or owing to their being of later date than the bowls. It is, indeed, far more common for obvious reasons to find the latter the more ancient. In some of the earlier and ruder fonts the shafts seem to have been set direct on the platforms without base mouldings. In some instances the welding together of bowls and shafts of different dates has been so successfully accomplished that the eye at first fails to detect the junction, though a closer scrutiny reveals the fact of there having been no attempt to intentionally conceal the alteration, but only to prevent any appearance of discordant elements.

Before criticising in detail various examples of fonts, the writer would draw attention to certain characteristics generally found in fonts, whether Norman, Early English, Decorated, or Perpendicular. For instance, it is far more usual for the top of the bowl to be square or slightly rounded than to have a bold projecting moulding or cornice. In some later examples a suggestion of embattlement is found, or perhaps a small carved boss or patera in a hollow moulding, but is not so common as the square-edged top. This is not to be wondered at, as the font, not generally being more than three or three and a half feet high, a cornice is scarcely needed unless the design be of a very ornate character. Again, it is rare that the bowl is divided into half vertically by any projecting moulding or necking, and, as a general rule, the bowl is straight-sided in section, not convex. In practice it was no doubt found that this was the most convenient arrangement for ornamentation, and the most fitting form to surmount the pedestal or shaft. No more interesting study can be found than the analysis of the architectural composition of these beautiful memorials of our ancestors' piety, and the dissection, metaphorically speaking, of their anatomy.

(*To be continued.*)

THE PROTECTION OF STONEHENGE.

THE following report of a deputation appointed to examine into the present state of the stones at Stonehenge was read at the annual meeting of the Wilts Archæological and Natural History Society:—

In the course of last autumn and winter urgent appeals were made from time to time to the Wilts Archæological and Natural History Society to lift up its voice with all the authority it possessed in defence of Stonehenge, which was reported to be undergoing daily injury at the hands of an unchecked public, whereupon the Society resolved to send some of its own officers to see for themselves, and report its condition.

Accordingly a deputation (consisting of the two honorary secretaries, a former honorary secretary, and one of the curators of the museum) visited Stonehenge on July 20 last, and carefully examined every stone in order, noting down on the spot its exact condition, with special reference to injuries of recent date, and now desire to finish their task by submitting the following detailed report to the Society. The numbers refer to the very handy plan of Stonehenge in its present condition, appended to Mr. Cunnington's "Notes on the Fragments," printed in 1884, in the *Magazine*, vol. xxi., p. 141:—

No. 1, slightly injured by recent chipping and cutting of letters; 2, untouched of late years; 3, two very small chips of

recent date; 4, chipped in several places recently; 5, chipped in two or three places; 6, much chipped; 7, very much chipped; 8, original surface not only injured, but completely gone, though not much damaged of late years; 9, injured in two places; 10, slightly scratched; 11, slightly scratched; 12, surface very much damaged; 13, surface considerably damaged; 14, uninjured of late; 15, very little injured; 16, worn by constant walking on, but otherwise not recently damaged; 16 L., not much injured of late; 17, very badly chipped, and lately (one piece taken off measuring 10 inches by 8 inches); 18, not seriously damaged; 19, very badly chipped, large pieces gone in many places; 20, damaged by footmarks only; 21, also injured by walking on; 21 L., badly worn by footmarks; 22, in good condition; 23, initials recently cut, and stone chipped on the outside (this stone, on the north side, has a crack, which has recently increased very much, and should be at once stopped with cement or otherwise); 24, in good condition; 25, badly chipped; 26, no damage, stone too hard to be cut; 27, no damage, but rabbits at work beneath it; X., much walked upon, and so injured; S. 28, underground, and not visible; 29, not damaged; 30, a little pecked by some sharp instrument, but not much injured; 31*a*, not much injured, though slightly chipped; 31*b*, two chips on this stone; 32, not damaged; 33, chipped, but not very recently; 34, not damaged lately, but a large piece was broken off about fifteen years ago (rabbits at work below); 35, worn by feet; 36, much worn by feet; 37, not much damaged, except by feet; 38, damaged by feet, otherwise uninjured; 39, also damaged by feet; 40, very much worn by feet; 41, much worn by feet; 42, slightly chipped, otherwise unhurt; 43, chipped a little, otherwise in good condition; 44, chipped, and also worn by feet; 45, in fair order; 46, very slightly damaged; 47, very slightly damaged (these two stones are in pretty good order); 48, very little injured (this stone has a curious diagonal vein of infiltrated silex across it); 49, letters recently cut on it, and otherwise chipped; 50*a*, very much worn, the surface entirely gone from walking on it; 50*b*, surface gone by feet (rabbits burrowed below); A, very much worn by feet; 50 I., mortice worn by feet, otherwise in fair condition; 51, one recent chip, otherwise in good order (this stone does not appear to have gone any further in the incline from what it did many years ago); 52, very much damaged by feet, and by boys making a slide down it (rabbits burrowed below); 52 I., not recently damaged, excepting the edge, which is worn away by many feet; 53, surface worn by feet, otherwise in good order; 54*a*, damaged by footmarks, otherwise not injured of late (rabbits burrowed below); 54*b*, in fair order; 54*c*, in fair order; 54 I. *a*, slightly injured on surface; 54 I. *b*, very badly worn on surface; 54 I. *c*, somewhat injured, but not very materially; 55, very badly chipped; 56, very slightly chipped, otherwise in good order; S. 57, underground, therefore protected from injury; 58, chipped, cut, and badly scratched; 59, in good order; 60, very much injured by feet; 61, also much injured by walking on; 62 (under 50*b*); 63, very much damaged by feet; 64, upright and in good order; 65, recently injured by the carving of initials and scraping; 66, likewise recently carved and chipped; 67, under a stone, therefore not damaged; 68, worn by feet.

In addition to these stones within the area there are certain outlying stones which require notice.

(*a*) An outlying stone, lying to east-south-east. About nine years since a fire was lighted against this stone, when a large piece was split off, by some accounts as large as a horse's head; otherwise computed at three-quarters of a hundredweight.

(*b*) The Slaughtering Stone; an attempt has evidently been made (whether in ancient or modern days is uncertain) probably to remove a corner of this stone by means of six holes cut in a line, after the manner of breaking sarsens now practised.

(*c*) The Friar's Heel, otherwise known as the Devil's Heel, much chipped, and very much inclined.

In addition to the injuries detailed above, it should be added that scribbling with chalk all over the stones has been indulged in to a large extent, and, though such chalk marks may not be positively injurious, they are very disfiguring, and should not be permitted.

It should also be mentioned that rabbits have burrowed beneath several of the stones, as has been already noticed; and this would form a very serious item of danger but that steps have been taken for the banishment of that mischievous rodent, and it is sincerely hoped that, by continued vigilance on the part of the keeper, no injury need now be apprehended from that source.

The practical question now arises, what (under the circumstances detailed above) is the recommendation of the deputation; and on this point we are of opinion that, owing to the increase of visitors, and bearing in mind the irreparable injury to the stones constantly going on at the hands of thoughtless or mischievous tourists, the time has come when the monument should be properly protected. First, by a fence which should exclude all carriages and horses from the area; but in lieu of any unsightly railing, which would destroy the wild character of Stonehenge, a sunk fence, or ha-ha, is the barrier strongly recommended, and that too at a considerable distance beyond the trench which encircles the precincts proper. Secondly, by the appointment of a caretaker, who should be in responsible charge of the monument, with power to enforce the regulations with which he would be provided; who should admit all visitors through one entrance only near the stone known as the Friar's Heel; prevent all picnicking within the precincts, and, above all, prevent all injury to the stones, whether by chipping or marking, or scratching or standing on them. Whether the salary of such caretaker should be provided by a small entrance fee, or otherwise, would be a matter of after consideration.

So far as regards the protection of Stonehenge.

The deputation has no desire to see the restoration of Stonehenge, and with this view is not in favour of the replacement in an upright position of the tall leaning stone, which is so remarkable a feature of the monument, and whose readjustment has been advocated by many leading archæologists. At the same time perhaps means should be used to secure it in its present position, for the fall of such a stone would be a dire calamity. The deputation does, however, recommend very earnestly the following precautionary measures to be carried out as early as possible. (1) The stones 6 and 7, with their lintel, to be pushed back into their original position, and secured there, when the unsightly wooden props and buttresses could be removed. (2) The stones 25 and 1, with their impost, to be in like manner pushed back into position and secured there, before they lean further towards the outside and fall, as they threaten to do at no distant date, unless previously attended to. (3) The stone known as the Friar's Heel, which is very much inclined, to be carefully examined, and, if pronounced unsafe, to be securely fixed. The deputation desire to direct special notice to the three points named above, as requiring immediate attention; but they cannot conclude their report without advocating with all their might the re-erection, at the same time, of the great trilithon which fell in 1797, whose exact position is undoubted, and whose replacement has been so often urged by the most distinguished antiquarians, notably by the Royal Archæological Institute, when it met at Salisbury in 1849, under the presidency of Mr. Sidney Herbert. Should the proper appliances for readjusting the stones 6 and 7, and 25 and 1, mentioned above, be procured (whether, by permission, from the Royal Dockyard at Portsmouth, or elsewhere) it would seem an opportunity not to be let slip, now, if ever, to re-erect the great trilithon, which, if replaced in position, would add so much to the grandeur and imposing appearance of Stonehenge, and whose prostrate condition is lamented by so many.

We would, in conclusion, disclaim any intention of interfering beyond our province. Stonehenge is a national monument, of such world-wide renown, and its well-being and protection from injury are so intimately connected with the work of the Wiltshire Archæological Society, that it appears to us a paramount duty on the part of the Society to speak out boldly on this question, and we have therefore not hesitated to express our decided opinions.

A. C. Smith, H. E. Medlicott, } General Honorary Secretaries.
W. Cunnington, } Formerly Hon. Sec.; now Vice-President.
H. Cunnington, Curator of Museum.

TESSERÆ.

Operating on Da Vinci's "Last Supper."

James Barry, R.A.

When I came into the refectory I found a scaffold erected, which, on ascending, I saw one-half of the picture covered by a great cloth. On examining the other part that was uncovered I found the skin of colour which composed the picture to be all cracked into little squares of about the eighteenth of an inch over, which were, for the most part, in their edges, loosened from the wall and curling up; however, nothing was materially lost. I saw that the picture had been formerly repaired in some few places, yet, as this was not much, and as the other parts were untouched, there was nothing to complain of. The wonderful truth and variety of the expressions, so well described by Vasari and Rubens, and the admirable finesse of finish and relievo taken notice of by Armenini, were still remaining. Whilst I was examining this part of the picture, two gentlemen came up the scaffold and drew aside the cloth which covered the other half, which, to my great horror and astonishment, was repainted. One of those men seemed to be at great pains to show the vast improvements the picture was receiving by this repainting; but the repainting and the discourse so kindled my indignation,

that I was no longer master of myself. "What, sir," said I, "is it possible that you do not perceive how this painter, if I can call him a painter, has destroyed the picture in every part on which he has laid his stupid hands? Do not you see that this head is distorted and out of drawing; that there is no longer significance or expression in it, that all his colouring is crude and wants accord? Do, sir, open your eyes, and compare it with the other half of the picture, which he has not as yet buried under his wretched colours?" He answered me that this was only a dead colour, and the painter was to go over it a second time. "Oh, confusion," said I, "so much the worse; if he has thus lost his way whilst he was immediately going over the lines and colours of Leonardo's work, what will become of him when he has no longer any guide, and is left blind and abandoned to his own ignorance?" And turning myself to two friars of the convent who stood by, "Fathers," said I, "this picture and the painter of it has suffered much by the ignorance of your order. It was whitewashed over some years ago, it has been again hurt in washing off the white, and now you have got a beast to paint another picture upon it who knows no more of the matter than you do yourselves; there was no occasion for thus covering it over with new colours, it might be easily secured in those parts that are loosening from the wall, and it would stand probably as long as your order will." The friar told me that he did not understand those matters, and that he spoke but very little Italian, that he was Irish, and that it was by the order of the Count de Firmian, who was Secretary of State, that this picture was repainted, and that the convent had no authority and had given no order for it. "Indeed, then, countryman," said I, "the world will be very little obliged to Count Firmian; it were to be wished and it will be for the interest and honour of your convent, if you can prevail upon the Count to spare, at least, what is remaining of the picture, and take down the scaffold immediately."

Vignola.

PROFESSOR COCKERELL.

Vignola has been deservedly regarded as a master of the first merit, and has been hitherto the great authority in the French school, as Palladio has been of the English. His stereotomy, profile, proportion, and composition are admirable; his orders are generally subordinate, often at the top of his buildings—they are never coupled as in Bramante and Raphael, but he reconciles the wide intercolumniation by a panel which gives proportion and sustains the pilaster with excellent effect. This expedient, much followed in Italy and in France, was original with him, as was also his modillion cornice, extending to the frieze, and giving extent and importance to the entablature, proportioned to the whole height of the building, in a better mode than that of Peruzzi. This beautiful invention is recommended without ostentation:—"Questa cornice," says he, "la quale ho mesa più volte in opera per finimento di facciate, ho conosciuto che riesce molto grata." This cornice was made the termination of the fabric, on which he never permitted a blocking or balustrade. But Vignola was chiefly remarkable for an artifice of composition, which, by subordinating the parts, gave apparent vastness to the whole. His doors and windows are remarkably small, the latter 3 feet 8 inches by 7 feet only in Capralola—but, being finely proportioned and complete in their members, deceive the spectator into the belief of actual scale. This artifice has been much used by his successors, especially in the upper portions of churches, with good effect, where no means of comparison or admeasurement are offered, just as a man becomes a giant when seen upon a hill and against the clouds.

St. Mary Overy, Southwark.

SIR G. G. SCOTT.

When I first knew this church the whole of it was standing: externally, it is true, the aspect it presented was not very pleasing, for it had been cased almost throughout with red brick, and the lady chapel was little else than a ruin. The choir was then in course of restoration. The interior was a most noble structure, and was almost perfect, and nearly all of this century, though some small portions westward were earlier, and the south transept possibly a little later. The whole was on a very symmetrical design, that of the nave being very much on the same with the choir. Its character may easily be judged of from what remains. It was nobly massive and grand, not of lofty proportions, but still such as to satisfy the eye. The pillars were alternately round and canted squares, flanked with attached shafts, the triforium consisting of arcades, interrupted only by the vaulting shafts. At the east end is a beautiful lady chapel, vaulted on light clustered pillars. The restoration of the choir was carried out by the late Mr. George Gwilt, aided by his sons, and it is impossible too warmly to praise the zeal and ardour with which they pursued the work, their study of the style then so little understood, or the untiring pains they took to render their restoration accurate. All these ardent lovers of ancient art are now deceased, and I feel a melancholy pleasure in bearing witness to their merits. I was intimately acquainted with one of the sons, and never did I meet a man more enthusiastically devoted to the style on which his artistic education had been founded. He absolutely adored everything which was Early English, and in carrying out restorations—in one of which he aided me—so faithfully did he reproduce the whole work, that nothing could induce him to alter even the positions of the jointing of the ashlar work. The pains which Mr. Gwilt took in restoring the choir disgusted the heartless parishioners, who, on proceeding to the transepts, placed the work in other hands; but on the lady chapel being undertaken by private individuals, Mr. Gwilt nobly undertook the work gratuitously, and carried it out with the same care he had bestowed on the choir. Shortly after this a report having arisen that the nave roof was decayed, a surveyor was employed to examine it, who, recklessly condemning it as unsafe, it was taken off, and none put on in its place. The walls, being of chalk, became shattered by exposure to the frost of several winters, and when the restoration of the nave was proposed to the parishioners, that enlightened body of men negatived it, and taking down the glorious old structure, erected the present monstrosity in its place. Happily, however, the interiors of the choir and lady chapel are still perfect. Let us hope and pray that their widowhood may not be of much longer duration, but that a reproduction of the noble nave may be substituted for its unworthy supplanter. I should mention that the nave was entered on the south side by a very noble double doorway, of great height and depth, though when I knew it its decorative features had perished.

Prototypes of Hollow Beams in Nature.

EDWIN CLARK.

We have many instances, in the vegetable kingdom, of the extreme rigidity and strength of circular tubes: the stems of the grass tribe generally are remarkable for their lightness and strength; the common wheat-straw and the river reed are familiar examples in our own climate; but in the tropics the gigantic stems of the bamboo and other grasses tower 60 feet above the jungle, and are extensively employed as beams for covering buildings, and even, in some cases, as the transverse bearers of light suspension bridges. The angler's bamboo rod is the most perfect of tubular beams. Tapered off in proportion to the strain, its silicious coat (as in all the grasses) defies compression, while it is internally lined with woody fire to resist extension in every direction. Its strength, lightness, and stiffness are thus equally marvellous, and we cannot fail to be struck with the provision of diaphragms throughout the whole tribe, to preserve the circular form, which addition would certainly have much modified the results obtained from thin circular and elliptical tubes of wrought iron. The bones of animals are oval, the depth being always in the direction of the transverse strain. But the more special province of the bones appears to be their action as pillars or struts, in forming immovable fulcra for the reaction of the muscles; and since any yielding would involve a great increase of motion in the muscle itself, we find bone among the most incompressible of known substances. The square form of stem characterises a very extensive natural family of plants—the labiate tribe, of which the beautiful dead nettle of the hedgerows is an example, though it is difficult to assign any mechanical reason for this peculiarity, which appears rather to be typical of the general development of these plants. But in the feather-bearing part of the ordinary quill we have a most remarkable example of the strength of the rectangular form. Here, again, every dimension is tapered down in proportion to the strain, with an accuracy defying all analysis; the extended and compressed portions are composed of a horny substance of prodigious strength, though extremely light and elastic. The beam is not hollow, but to preserve its form it is filled with a pithy substance which replaces the clumsy gusset pieces and angle-irons of the tube without interfering with its pliability. The square shaft is peculiarly available for the attachment of the deep vanes which form the feather, and, as the angular form would lacerate its active bearer, an exquisite transition to the circular quill at the base is another striking emblem of perfection. The imitation of such mechanics, so wonderfully adapted to such a medium, appears hopeless; but we are indebted to the flying philosopher, if his attempt only calls attention to such design, and induces us instructively to contemplate the beauty of a feather.

Roman Tesselated Pavements.

F. O. WARD.

The materials of the best and costliest pavements at Rome (such, for example, as those still remaining in the baths of Caracalla) are coloured marbles of various kinds, differing considerably from each other in hardness and durability. The inferior pavements found scattered through Britain, France, and other parts of Europe, and along the northern coast of Africa, are usually made of such coloured stones as the neigh-

bourhood happened to supply, with the exception only of the red tesseræ, which are almost invariably of burnt clay. Thus in the celebrated Roman pavement which was discovered in 1793 at Woodchester, in Gloucestershire, the grey tesseræ are of blue lias found in the vale of Gloucester—the ash-coloured tesseræ of a similar kind of stone, often found in the same masses with the former—the dark brown of a gritty stone met with near Bristol and in the Forest of Dean—the light brown of a hard calcareous stone, occurring at Lypiat (two miles from the site of the pavement)—and the red tesseræ, as usual, of fine brick. These materials differ from each other in point of hardness even more than the coloured marbles of the costlier pavements at Rome; and it is evident that a surface composed of such heterogeneous materials must wear unequally at different parts, and ultimately fall into hollows wherever colours produced by the softer kinds of stone are employed. If this remark should be met by a reference to remains of ancient pavements discovered in this country after a lapse of sixteen centuries from their first construction, and still retaining a level unworn surface, it is obvious to reply that the mere length of their duration gives no force to the objection, seeing that, during by far the greater portion of the time, these pavements have lain buried; and further that even when in use they formed floors to the baths and best chambers of the residences of Roman provincial governors, and were, therefore, doubtless, subject to very inconsiderable traffic. The entrance hall of a modern club-house would afford a much more trying test of durability; and it will hardly be disputed that a pavement composed of heterogeneous materials would in such a position be liable to wear unequally. The next point to be observed with reference to the Roman tesseræ is the want of uniformity in their size and shape, and the consequent irregularity of their junctures, especially in the more minute portions of the design. Whoever will take the trouble to examine the choicest specimens of old pavements at the British Museum (as, for example, one presented by Mr. Lysons, which formed part of the Woodchester pavement referred to above) will perceive that the tesseræ, instead of coming into contact by smoothly ground and equal sides, are in many places separated by broad uneven lines of cement. In some parts the intervals are of such width that the cement, which in a good pavement should be scarcely seen, forms at least a fourth of the visible surface.

Modern Architecture in Germany.

F. Eisenlohr.

The present age is engaged in seeking a something which at present does not exist, viz., unity in a sort of universal architecture. It seems to me that no immediate and direct imitation in any style of architecture already existing, complete in itself, will lead to the desired result as long as the present age demands its rights, and the existing state of society requires something arising more from its own nature. When I consider also that hitherto in our art we have acted in a manner too little abstractive and scientific, and have imitated too much, still, on the other hand, it is not to be denied that we cannot and ought not to disregard history and its effects, that we must have some point in history at which to begin, a root from which a new stem may shoot up into blossom as from the soil of the present. It is quite clear that here also theory and history must go hand in hand, whereby we must with consciousness attain to that new and unprejudiced position which, in childlike innocence, unconsciously existed at the commencement of all previous epochs in art. The difference between our age and its problem, as regards architecture, and indeed every branch of the arts, consists in this, that we ought to strive, so to say, with manly innocence, with manly knowledge and power, to attain to that point at which former periods in art have in their infancy begun of their own accord. Where there is nothing but an empty and groundless adherence to forms, where architectural fallacy and pretension, or a certain coquetry is manifested, there an art of a peculiarly creative nature can never be looked for. It is true that many grand buildings have recently been erected in the Roman, Grecian, and so-called Byzantine and Gothic styles, as, for instance, particularly at Munich. But they all want the enlivening principle of belonging to the present, and are only silent records of bygone styles of architecture. In the same way that we collect pictures of different schools in galleries, so King Louis has collected buildings of all possible periods; and as he had not got them at Munich, neither could he transport them thence from other parts; he had them built, and thus made a grand collection of buildings at Munich, but which is still deficient in historical authority. If, therefore, we would draw a comparison we must say that the modern collection of buildings at Munich is, as far as regards the arts, worth about as much as a picture gallery containing a number of more or less successful copies from different masters and schools. If it be true that the spirit of the times is truly expressed in its buildings, that the architecture of every period is, as it were, a fossilised history, future generations will say that the present period was utterly devoid of character. By means of a more intimate acquaintance with the history of architecture we have been provided with a vast quantity of subject matter, which has hitherto quite overwhelmed us from its variety and quantity, so that we were quite robbed of our senses. Of this we must first get the mastery, and impelled by a careful observance, as well as by an artistical and inventive spirit, regain our consciousness, without at the same time suffering the experience of history to remain useless. We must, on the one hand, investigate from a theoretical and scientific position how far our architecture and its elements answer to the conditions of its purpose, of the building materials, climates, and so forth; and must, on the other hand, in looking back upon history, endeavour to find some point which presents constructions and forms similar to those which result from our abstract investigations, and thus a fruitful germ may be found for a modern and, in itself, harmonious style of architecture—a style which would gradually come into general use, and supersede all the lifeless imitations and mere whimsical changes of fashion. In this, it appears to me, consists the great architectural problem of the present age, which can only be solved by united efforts.

Flint Walls in France.

J. H. Parker.

Walls faced with flints, cut or split, which are common in some parts of England (especially in the low countries and chalk districts where stone is scarce), are seldom found in France. There is an example at Bec, where it is used in the form of patterns and inscriptions, but this is the only one that has been observed. At a later period in some districts flint facings are frequently used in squares, alternately with black and white stone like a chess-board, and called "checquers" in the same manner as in some parts of England.

The Foundations of the Dublin Custom House.

J. Gandon.

As the ground altered in its texture towards the river, becoming more loose, with small sandy gravel, like that of the south-west angle, to which depth we had sunk, we deemed it prudent to bore it in several places which were near the angles of the front of the portico, but particularly where the walls of the cupola were to be erected, to the depth of 8 feet below the then surface, and it appeared to be much of the same substance as that already described. A pile 10 feet long and 1 foot square was driven down in the centre to 9 feet depth; but after twenty strokes of the ram it could be driven no further, which assured us that we had got to the firm ground. Upon consulting with the principal artificers on the spot, it was thought advisable to desist from sinking any more, but to make an artificial foundation, in order to sustain the great weight of the cupola; but whether by piling or otherwise was submitted wholly for my consideration. This part of the work had long occupied my thoughts, and to it I had given every attention, my conjectures having led me to expect great difficulties on this subject. I had nearly made up my mind as to the means I should adopt, and was the more strongly confirmed in my intentions, having remarked a circumstance which escaped the notice of those around me. Immediately after the pile had been driven I perceived a small stream of water arising up close all around it, as if it had pierced a spring; and recollecting an observation in Labelye's account of Westminster Bridge, "that piles sometimes loosen and open fresh springs, which often make it very difficult to get rid of the water," I was now apprehensive of just such an impediment. The great expense of preparing the piles, and the very long time it would take to drive so great a number as would be required, presented a strong objection to the use of them. I therefore gave directions to have a grating of Memel timber prepared, the timber to be one foot square, to have the upper ones notched down 3 inches in the ground pieces, which were to be bedded on a layer of cut heath, the whole ground being first correctly levelled; the interstices of the grating to be filled in with hard sound stock bricks, up to the level of the timbers, swimming in mortar composed of pounded roach lime and mortar well mixed, which answered nearly as well as tarras, over which was laid 4-inch fir plank fastened down on the grating with oak trennels, which was all completed. The foundation walls were then set out on September 17. The part directly under the cupola was laid with rough blocks of mountain granite in regular courses; in the first course was sunk an iron chain of flat bar, 4 inches wide and 2½ inches thick, into collars which were run with lead, but the bars were only covered with a cement of wax, resin, and stone dust. The rest of the foundation was done with the usual black stone, and was carried up to the plinth by October 16, 1782, thereby completing the whole of the foundations in one year and four months from the opening of the ground.

The Severn Tunnel is to be opened for traffic on September 1.

NOTES AND COMMENTS.

IF the collection of paintings in the Louvre can be said to have a defect, it is in the insufficiency of works belonging to the English school. During the last Empire much might have been done to supply what is needful to support the claim of the museum to be called universal. M. DE TANZIA, the Conservator of Paintings, has lately added one work—a portrait by RAEBURN—which was acquired at a sale in Paris for about one hundred pounds. It will form a pendant to the portrait by LAWRENCE, which is one of the works most admired by amateurs for dignity and brilliancy. We hope that a long time is not to elapse again before another picture by an English master is acquired by the French Government.

M. JULES COMTE, Inspector-General of the French Art Schools, has been appointed director of civil buildings and national palaces in succession to M. POULEN, who was connected with that department for nearly forty years. M. COMTE is known as an art critic, and he was the projector of the series of manuals known as the Bibliothèque de l'Enseignement des Beaux-Arts.

THERE were many interesting places besides Chester to occupy the attention of members during the meeting of the Royal Archæological Institute. At Carnarvon Castle the Deputy-Constable, Sir LLEWELLYN TURNER, gave the visitors an abstract of his study of the building. He set aside the theory that the first Prince of WALES was not born in a room in one of the great towers. Sir LLEWELLYN said that the tower was the most eligible place for the birth to take place, as before any invading host could get there they would have to fight the whole length of the castle, and in a case of emergency Queen ELEANOR might have been able to escape by means of a ship at the bottom of the staircase —the sea in olden time coming up to that spot. Sir LLEWELLYN TURNER, with his chief mason, JOHN JONES, have done much for the conservation of the historic pile. In Eaton Hall a building of a different class was opened to the members, and there was but one opinion about the architecture of the mansion and the beauty of the decorations. A third interesting secular building was Hawarden Castle, where Mr. W. H. GLADSTONE assumed the office of guide. When visiting the churches of the district the party had the advantage of the knowledge acquired by Mr. R. P. PULLAN, who also read an essay on "The Discovery of the Artemisium at Memi." The whole week was one to be remembered.

IN order to insure a reverential reproduction, the French Government have long restricted the performance of the "classical drama" in Paris to the Théâtre Français and the Odéon. But the rule does not prevent either theatre from taking liberties with foreign masterpieces. It will scarcely be credited that the only version of "Hamlet" which has been seen on the stage of the Théâtre Français is that of DUCIS, where everything is turned topsy-turvey in a surprising way. Finally, HAMLET becomes King of Denmark:—

> Mais je suis homme et roi : reservé pour souffrir
> Je saurai vivre encor ; je fais plus que mourir.

The brave ALEXANDRE DUMAS appreciated SHAKESPEARE more truly than any of his countrymen, and, with the aid of M. PAUL MEURICE, he produced a version of the tragedy that kept fairly close to the original. But no Paris manager would make the experiment of representing it, and the play had to be tried in the Saint-Germain Theatre. M. CLARETIE, the new administrator of the Théâtre Français, takes a broad view of his duties, and the version of DUMAS and MEURICE is now being rehearsed. The caste is arranged. M. MOUNET-SULLY will be HAMLET, which he is likely to play well. His defects will serve him, for his inequality (arising from the extent to which he is mastered by emotions) may suggest HAMLET'S twofold nature. M. GOT, the *doyen* of the company, is to be POLONIUS, and we hope he will depart from the English routine and remember that the chamberlain was a gentleman. M. MAUBANT, the last of the old school of tragedians, assumes the part of the Ghost. M. SILVAIN, who is an admirable and genial actor, will be King, and he had also better forget the English tradition, which declines to recognise that CLAUDIUS had witchcraft of wit. M. COQUELIN the Younger is First Gravedigger, and the speech of the First Player is sure to be given with declamatory power by M. DUPONT-VERNON, one of the actors who are kept down in the theatre. Mdlle. REICHEMBERG will be OPHELIA, and Mdme. AGAR—a late addition—takes the exacting part of GERTRUDE. The costumes are to be designed by M. BIANCHINI, who has a reputation for work of the kind; and it deserves to be noted that M. AMBROISE THOMAS, the composer, has composed music for the snatches of old ballads sung by OPHELIA and the Gravedigger. During the performance the curtain will not be lowered—an arrangement that is sometimes adopted with the old French tragedies. We hope the experiment may be more successful than the Porte St.-Martin's "Hamlet" in the early part of the year.

THE report by Mr. J. A. CROWE, of the Paris Embassy, on commercial museums in France, gives some information about industrial designs. In Lyons, for example, there are specimens of all the best designs for textiles created in past centuries, and these are not only choice but abundant and much consulted. Yet practically textile designs are not made in Lyons but in Paris, and commercial men and manufacturers seem not to feel the want of a commercial museum at all. If one asks why this is so, the answer is that in spite of schools and museums and in spite of tradition, which favours the weavers, Lyons designers only get good ideas if they go to Paris, and after they leave that capital they rapidly become exhausted, and are obliged to return thither for fresh artistic inspiration. In the Rouen Museum (Rue St. Lô) there are a great many volumes of stuffs and patterns, which are of great interest to the designer and historian of art. But the Société Industrielle have what is supposed to be better for the manufacturer, viz., an abundant supply of cuttings of Lyons silks, St. Etienne ribbons, and Alsace prints, besides other articles of less importance of French manufacture, all of the spring season, 1886; not exhaustive nor perhaps of sufficient size, not comprising any registered patterns probably, but being such as might be brought together, for example, by a private firm like that of Messrs. CLAUDE, of Paris, who, it is said, contract to deliver the patterns of novelties of a season for sums varying from 35*l.* to 80*l.* a year. There are about 800 subscribers to the society, most of whom are residents at Rouen, but not a few are foreigners, who, on payment of 20 frs. a year, enjoy the privilege of receiving the bulletins or transactions, and the right to take home and copy from volumes of samples. The general public can only come in as visitors, and not as copyists. It is the rule when the novelties of one season are superseded by those of another season, that the older samples are taken out of the frames where they were displayed, and mounted in volumes, which thus form a valuable set of archives.

THE systematic way in which the Germans endeavour to understand foreign markets is seen from an exhibition which has just been held in Coburg. With the view of ascertaining the class of European articles most in favour and commanding the readiest sale in the Chinese markets, the German Consular authorities in Canton and elsewhere were instructed to purchase on the spot, and send home, specimens of European goods of every nature, forming the staple commodities most in vogue, together with observations based on local knowledge as to the marks, mode of packing, and other minutiæ which specially induced the Chinese purchaser to favour one class of goods more than another. The people appear to have peculiar fancies which must be humoured by Western traders. Thus, for example, much depends on whether goods are wrapped in blue or red paper, or fastened with a black or white cord. Chinese purchasers regard any goods wrapped round in an unaccustomed manner, or with a hitherto-unknown mark, with great suspicion, and are apt to condemn such goods as valueless without trial. On the other hand, whenever they recognise on a bale of goods a familiar mark and the accustomed wrappings, they never think of examining it, or measuring it before purchase.





Michl. Angelo pinx. Ad Didier sculp

THE LIBYAN SIBYL.

Sketching from Nature.

Printed by Sprague & Co. 22 Martins Lane Cannon St EC





NY. PHOTO. "PRAGUE & Co" 26, MARTINS LANE, CANNON ST., LONDON, E.

CATHEDRAL CHURCH OF NOTRE DAME, BOULOGNE.

FROM A WATER COLOR DRAWING BY R.J. CORNEWALL JONES, ARCHITECT.





South East View of S:MICHAEL's: Bournemouth: R.NORMAN SHAW, R.A. ARCHITECT.

Printed by Spreadbury & Co., Mitchell Lane, Cannon St. E.C.

ILLUSTRATIONS.

THE LIBYAN SIBYL.

AMONG the plates which appear in *L'Art* the great Italian masters are not overlooked. We give this week one of the *Sistine Sibyls*. It will be seen that M. Didier has done justice to the largeness of style that characterises the original, and that in this case there is no evading the difficulties offered by the hands and feet.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 18. S.E. VIEW OF ST. MICHAEL'S, BOURNEMOUTH.
Mr. R. Norman Shaw, R.A., Architect.

CATHEDRAL OF NOTRE DAME, BOULOGNE.

THE Cathedral of Notre Dame at Boulogne is a prominent mark when seen from land or sea. The dome has been stilted for that purpose, and there is no doubt that the designer's object is fully attained. The building is about sixty years old. Our illustration is taken from a fine water-colour drawing by Mr. R. J. Cornewall Jones, architect, which was exhibited this year at the Royal Academy.

EDINBURGH MUNICIPAL BUILDINGS.

IT will be seen from the advertisement in *The Architect* that the magistrates and council of Edinburgh have instituted a competition for the proposed municipal buildings, and invite architects to send in designs before the last day of the present year.

Three premiums are offered, viz. 250*l*., 150*l*., and 100*l*. It is not, however, guaranteed that the author of the first premiated design shall have the carrying out of his own work, as the authorities reserve the right to employ any architect they think proper for that purpose. The site which the new buildings are to occupy is that on which the present City Chambers stand, with the adjoining property.

The conditions specify that each design must be illustrated by geometrical drawings of the plan of each floor and of the roofs; the elevation of each external façade; one longitudinal and one transverse section, showing the façades of the internal court or courts; a block plan, showing the proposed buildings with reference to the adjacent streets and houses, and detail drawings of the principal features of the design. Further, each competitor is to submit a probable estimate of the cost of the entire structure according to his design, and it is stated that the element of cost must form an important consideration in judging of the merits of the designs. It is laid down that the main staircases, corridors, and internal spaces must be of ample though not excessive dimensions, and the courts, rooms, staircases, and corridors must have lofty ceilings and be well lighted and ventilated. All external façades and those to the courts are to be of stone, the floors of fireproof construction, the roofs to have their constructive portions in iron, while the stairs are to be of stone. Ample lavatory accommodation, thoroughly ventilated and on the most approved sanitary principles has to be provided, as also a pair of passenger elevators and a hoist for lifting coals from the level of Cockburn Street up to the highest floor.

In the indication of general requirements it is stated that the town clerk's, chamberlain's, collector's, and Water Trust offices should be specially easy of public access from the High Street level; that the burgh court-room should be on the same level, that the collector's office should be arranged with reference to the special requirements of the public, who come in large numbers at a certain period of the year to pay their rates; that the offices for the inspectors of gas meters and of weights and measures should be on the lowest floor entering off Cockburn Street; and that each department should have in direct communication with it a safe for books. In the part of the building above the offices a library and museum, it is suggested, might be introduced; also rooms for the housekeepers. The Clydesdale Bank branch office occupies, it is stated, an important position in the front part of the existing building, and it is proposed to provide accommodation of at least equal extent for it in a similar position in the new building.

A separate schedule gives approximately the amount of floor space required for the different offices. This schedule shows that it is desired to make the public office of the burgh assessor the largest within the buildings. Its area in superficial feet is given at 1,500. The council room ranks next in size, with an area of 1,300 superficial feet; while for the public office of the collector of police a superficial area of 1,200 feet is wanted. The desired area of the burgh court room is set down at 1,000 feet, and so is that of the city chamberlain's public office. Among the other approximate areas are—Dean of Guild court-room, 816 feet; public office of the superintendent of works, 600 feet; Water Trust public office, 700 feet; burgh engineer's public office, 550 feet; public office of the Heriot Trust, 400 feet. It is estimated that the building should contain an internal available space for rooms of 36,095 superficial feet, divided as follows among the different departments which would be housed in it:—Council and committee-rooms, 4,320 feet; town clerk, 2,270 feet; city chamberlain, 2,390 feet; burgh court, &c., 3,010; procurator-fiscal, 1,250; Dean of Guild court, 1,371; superintendent of works, 1,120; head gardener, 180; Water Trust, 2,250; collector of police, 2,300; burgh engineer, 1,634; medical officer of health, 760; burgh assessor, 2,400; city roads department, 1,320; Heriot Trust, 1,900; weights and measures office, 1,370; gas meter inspector, 1,100; Clydesdale Bank, 1,200; registrars' offices, 3,500; officer's room, 350; porter's lodge, 100.

All canvassing of the magistrates and council or of their assessors in favour of any particular design is not to be admissible. After the prize award has been made public, the magistrates and council take power publicly to exhibit all the designs.

THE RESTORATION OF THE DUCAL PALACE, VENICE.

IT is many years, says a correspondent of the *Times*, since anyone saw the Ducal Palace free from hoarding, and it will be two years more before it will be seen so again. But, at last, the entire façade towards the Piazza, from the Porta della Carta to the fifth arch beyond the south-west angle (with group of *Adam and Eve*), has been completely restored and freed from scaffolding and repairers. Of course, like those on St. Mark's, the restorations have caused great outcry and much protest. Of their necessity anyone may still satisfy himself by examination of the unrestored part of the upper arcade on the canal side, between the repaired portion at the angle and the works now going on to repair substantially the damage caused by the conflagration of 1577, after which the five arches next the angle of the Porta della Paglia were filled up with masonry by Antonio della Ponte to prevent the fall of the whole structure, or its demolition, according to the advice of the other architects, and its reconstruction in a Renaissance style.

The necessity of the repairs which have been going on for so many years arose in part from the defective construction of the original work, but much more from the ruinous manner of making repairs. As in St. Mark's, the south-west angle was the worst damaged by weather and time; but many of the arches of both storeys and the capitals almost without exception were giving way more or less, and the former method of applying the iron rods which were expected to hold the broken capitals in place or prevent the columns from yielding to the outward pressure was such that it often increased the damage. Almost all the capitals still remaining are split by the insertion of the iron bar which was intended to keep them in position, and iron clamps introduced to prevent the capital separating more widely in some cases caused new and complicated fractures. The water standing under the bases of the columns had dissolved the stone in parts so as to throw the weight on one side of the base, whence splits in the columns, and every crack let in more water, which by corrosion and freezing carried on the destruction of the building. The Adam and Eve corner had reached that stage of decay that a relatively moderate shock of earthquake would have sent the whole angle of the building, from base to battlement, down into the Piazza, and, being in the greatest danger, the repairs began there, and then were carried on to the Porta della Carta; the arcade was shored up, all the defective stones of arch, capital, or column removed, where defects could be repaired they were restored, and where too far broken replaced by new ones. Where, as in many cases, the capital was simply split in two, the halves were cemented together, and a circular groove below and another above having been cut, a copper ring was fitted to it, and, after a leaden lining had been placed in the groove with cement, the copper was heated and shrunk into its place, the lead and cement preventing unequal pressure and excluding water absolutely. The bases of the columns of the upper arcade had, with few exceptions, yielded to the pressure, and were entirely unserviceable. These had been, in the restoration, cut from the same block of marble as the cornice (on which, in the former construction, it rested); and in the corner columns, where the pressure is greater, the frieze was also made in the same block, so that these three blocks of marble are replaced by one.

Where capitals were so crushed as to be irreparable—

and I saw one broken into more than thirty pieces—they were put together carefully and a plaster cast made from them, and this copied by a competent sculptor, each one of the lower capitals occupying one man from eighteen months to two years. On the lower arcade, now restored, the number of the old and new capitals is nearly equal; and I defy any person not an expert in restoration to distinguish the new from the old by the quality of workmanship or the appearance of age. I failed entirely to select a single one, so perfectly had the appearance of age been imitated. The capitals removed go into the museum. The examination of the iron braces which have been extracted from the broken capitals shows that in some cases the rust on each side of what remains of the bar is equal in thickness to the remnant of the solid metal; and many of these braces were so reduced by oxidation that they no longer were fit to bear a strain even a fraction of that which a slight movement of any part of the subsoil might cause. Thirteen of the capitals of the southern façade in the upper arcade were poor restorations of the sixteenth century, and repairs seem to have been as regularly or irregularly successive from the time of the completion of the palace in A.D. 1463 or 1464, as construction and alteration were from the ninth century (when the earliest palace, of which the tower near the Porta della Carta was probably part) down to the completion of the palace as we now have it.

Through the whole of the work so far done in the present restoration every defective stone has been removed from its place—if plain, a new one substituted, if sculptured, returned after repair, if capable of repair, and no capital has been rejected except for imperious statical reasons. The iron braces or strengthening rods, instead of being put through the capital, are inserted in the foot of the arch above it; and this, after the arch is *in situ*, by boring in and inserting a bronze socket, into which the iron bar is screwed, so that if at any future time it becomes defective it can be removed, and all iron which is placed in contact with the stone is tinned.

The workmen have just now replaced the stones of the south-east corner, that over the Ponte della Paglia, and the day before yesterday I saw the triple stone, the base, cornice, and frieze of the corner column of the upper arcade in its place, and yesterday the column restored to its old position—being still serviceable. Work is at the same time going on on the five filled-up arches, the stones cracked by fire and water being replaced, and the arches reconstructed; and when this is done the filling-in of Antonio della Ponte will be removed, and the façade restored to the condition in which it was prior to the conflagration. The entire work is to be concluded in about two years, and will then be more solid than when first constructed, and will be good for centuries, barring accidents.

It has been to me a great pleasure to be admitted so freely into the works and allowed to follow every step of the progress of restoration, and the opportunity of making the acquaintance of Master Luigi Vendrasco, charged with the direct supervision of all the work—a splendid example of the master-workman, no degenerate successor to the *maestri* of four centuries ago, if one may judge from his work as well as his personality—has been most instructive to me, and for his technical history of the palace I am for ever indebted. To the architect-in-chief, Forcellini, and his assistant, Boni, I am under obligation for unmeasured courtesy and indulgence. Boni's studies on the materials and foundations of Venetian buildings are probably known to English architects, and throw strong light on the state of the arts in the best days of Venetian architecture. And here I may say that the whole official world in Italy connected with the Department of Antiquities, from Senator Fiorelli and his *sostituto*, Professor Felice Barnabei, to the architects in charge, have, so far as I can see, merited nothing but eulogium for their zeal in the preservation of everything of early work that is capable of preservation, and the thoughtless strictures on the restorations of Venice would never have been made by men who had taken the pains to examine the work as I have. Whenever, in my visits to the Italian cities, I have found a case of neglect or maltreatment of any ancient structure, a word to Professor Barnabei has set matters right at once. Generations to come will have cause to thank the present Department of Antiquities at Rome for the pleasure which the sight of the most beautiful structures of Italy can give, and all I can say in grateful recognition is less than it deserves.

The last three centuries of unintelligent and often unconscientious repairs have left a difficult task for restorers who wish to preserve the work of the good epoch, for it is often disfigured almost beyond recognition; but the public interested in old Italian architecture may be assured that whatever traces of it may still exist will only be dealt with as the necessities of structural permanence require. And I say this having just visited Orvieto, Prato, Florence, Verona, and various places of minor importance in the history of art. Vague and general denunciation is out of place; but I am sure that any responsible intelligent indication of injury being done to any monument of antiquity in Italy given to the department of Senator Fiorelli will receive instant attention, as I have proved in one case since I have come here, and as was shown when the renovation—*i.e.*, scraping and rechiselling—of the Duomo in Florence was attempted a few years ago.

THE ROYAL ACADEMY.

THE following letters from Academicians on the subject of the letter signed by Mr. Holman Hunt, Mr. Walter Crane, and Mr. Clausen have appeared in the *Times*. The first is from an anonymous Academician, who says:—

As the recent decision of the Royal Academy in regard to their exhibition has been the subject of comment in the press, I will ask to be allowed space in your columns to correct some misconceptions which are afloat regarding it, and to say that the explanation of that decision is to be found in the belief held by a large majority of Academicians that the proposals before them were adverse to the public interests.

That the vote could not have been due to selfish motives a reference to our catalogues will show, as it will there be found that a largely preponderating number of Academicians, whether from interest or convenience, do as a matter of fact confine their contributions within the limitation which was then proposed, and were therefore dispassionate in their judgment of the question as it affected the welfare of the institution committed to their charge. That question was whether the proposed limitation of contributions would lower the quality and attractiveness of our exhibitions, the profits from which are our sole revenue for carrying on the public work of the institution.

There was no thought or pretence that the exhibitions would benefit by the change, and those who advocated the measure had to be contented with arguing that the result would be less disastrous than its opponents anticipated. This damning with faint praise was in itself a sufficient justification for the rejection of the proposal.

Unlike your three correspondents who desire, for its own sake, a "National Exhibition of Art in England," enabling artists to exhibit their productions at the expense of the taxpayers, the sovereign founder of the Royal Academy designed that its exhibitions should give the means for carrying out two further objects which he had in view, viz., a school of art free to his subjects, and the bestowing of benevolences upon artists and their families. This design has certainly been justified by its success, and the Royal Academy is entitled to point to the wide-spreading tree which under its fostering care has grown from the acorn planted by the King as a proof that the body has shown itself deserving of the trust which was placed in it. The schools, which, since their foundation, have given to the country most of its chief artists, are now maintained on a vastly increased scale at the cost of several thousands of pounds annually; the benevolences have increased in the same way, with the result that our expenditure on public work has been stretched to the very extreme of prudence. It is evident that at such a time the Academicians are more than ever bound to be jealous of any tampering with the source of their revenue, and I am sure the general public, when it realises that in defending our trust and in refusing to bar works more worthy of exhibition to make space for those which are less so, we are first and foremost consulting their interest, will be disposed rather to praise than to censure us for our present action. But while in guarding our trust we find ourselves charged with closing our doors against our brother artists, no account is taken of the exhibition space that has been obtained through that guardianship, nor is the public told that for every non-member who had accommodation in the early years of the Royal Academy ten are received at the present time, and that we have exhibited the works of 1,200 artists who are not members of the body.

The great expansion of our exhibitions, schools, benevolences, and hospitalities has been brought about without the Academy receiving one shilling of public money (the site of Burlington House having been given to remove from the nation the lien of the King's gift to the Academy), and is due not merely to good management, but to the unselfish way in which generations of Academicians have devoted themselves to the service of the institution, taking only a peppercorn scale of remuneration, and foregoing their rightful claims in this respect in order that the funds might increase and be used in extended operations. Like our predecessors, we of the present day have been called up to our posts from the ranks of the profession, and in those same ranks our successors are now to be found. Without doubt the public spirit of our artists, of which our institution is a monument, will not die out, and those who succeed us will act upon the traditions of their predecessors who built up the Academy. Let us hope that they will have some encouragement besides the lash, and that artists selected for their eminence and giving years of loyal service to the institution may not suffer from the bitter, cruel words which are

sometimes levelled against respected veterans of our own time.

From what I have said of the nature of the Academy's work it will be clear that it is for the interest of the public that a steady continuance of it should not be prejudiced by any financial difficulties, an eventuality which a want of strength in the exhibitions would most certainly bring about.

There is, however, no disguising the fact that danger is ahead, although exactly in the opposite direction to that from which the shouts come. Until lately the best artists of the country—who were members—gave their undivided aid to the exhibitions. Rivalry to the institution was made impossible, and, indeed, under no other conditions could its present financial position have been attained. Now it is otherwise. Great allurements are held out from other quarters, and eminent members of the Academy who may succumb to them are sure to find themselves applauded as men who do not take an undue advantage of their privileges, as though the question were not one of service to the institution rather than of privilege.

Already this dispersion has gone so far that of the nearly 2,000 works in our exhibition this year only 179 were contributed by the members of the body, and yet under these circumstances it is brought as a charge against us that we will not legislate to further reduce our numbers. As most of the driven off works would be welcomed elsewhere, we may fairly surmise that the attacks are not always above suspicion, and it has been my endeavour to place such facts before your readers as will enable them to test the quality of these attacks, which hitherto have remained unanswered and unexplained.

My colleagues will doubtless recognise who is the writer of this letter, but, as there is nothing in it of a personal bearing, I will not separate myself from the body with which I act, and will subscribe myself simply as "R.A."

II.

Mr. E. Armitage, commenting on the foregoing, writes :—

Your correspondent "R.A." pleads powerfully in favour of the past and present conduct of the Royal Academy, but seems to me to have avoided discussing the actual question at issue.

The real reform which is desired by the great mass of the profession does not at all affect the privileges of the Academicians. What non-members demand is the reduction from eight to three of the number of their own works permitted to be sent in for exhibition, allowing the members to retain their present privileges.

The object of this proposed alteration in the law is to reduce largely the total number of works sent in, and thereby to give the Committee of Selection more time for the consideration of each individual work, and therefore a better chance of coming to a just decision.

This simple reform would perfectly satisfy the profession generally. Of course, there are a few Anarchists or Nihilists in art as well as in politics, but these exceptional individuals are (like their political prototypes) either hopelessly visionary or savagely revolutionary, and their opinions may be safely ignored.

It will doubtless be asked, "Why, then, was such a modest and inoffensive petition not granted by the Academy?" The reasons were two in number, the first being that the reform in question was strongly and persistently urged by a portion of the press which has been notorious for its virulence against certain Grand Old Members, and, human nature being the same everywhere, the aforesaid Grand Old Members could not resist the temptation of crushing the buzzing fly which for some time had been teazing and goading the team of the Academic waggon. The second reason for rejecting the proposed reform was, to my mind, even less excusable than the first. It was contended by many of the members that whatever reduction might be agreed to respecting the intended exhibits of outsiders, the same reduction must be made respecting their own, strict equality having always been the law at the Royal Academy since George III. granted their charter. This sounds very fair; but how can there be anything like equality when every picture sent by a member must be hung, and every picture sent by a non-member may be rejected? The argument, to my thinking, is ludicrous, and reminds me of Dr. Johnson's

Who drives fat oxen should himself be fat.

However, this argument, fallacious as it is, had great weight with the majority, and the assembly, after negativing several proposed modifications of the scheme, decided to leave the rules unaltered.

I think I have shown that the question of reducing the number of works sent in by members is, in the eyes of the great body of artists, quite insignificant. It might, if carried, relieve the exhibition of perhaps half a dozen weak pictures, but at the same time it might banish fully that number of fine portraits to the walls of other exhibitions, and at the present day, with so many rivals in the field, we can ill afford to deprive our galleries of any of their attractions.

May I be permitted, before closing this letter, to say a word respecting a proposed national exhibition on the model of the Paris Salon? Those who talk glibly about the "liberté, égalité, et fraternité" of the Salon are entirely ignorant of the number of privileged exhibitors—that is, of exhibitors who are exempt from the jury—a number compared to which our privileged class sinks into insignificance. They seem to be equally ignorant of the jobbery and bribery which go on every year with the carpenters, who have practically the whole hanging entrusted to them. Members of the jury drop in occasionally to look after their friends, but this is about all they do. I am convinced that the Academy, with all its shortcomings (for I am not one of those who hold the venerable old Georgian corporation to be faultless), deals more fairly with art and artists than any other institution in Europe. Its decisions, as expressed by the Council, are often held up to scorn by the critics of the press, but I have yet to learn that these censors are more likely to form a sound judgment than the ten experienced artists who compose the Council.

III.

Mr. Holman Hunt, in reply to "R.A.," says :—

I will not presume to inquire who is the gentleman signing himself "R.A." in the *Times* of Saturday. The letter is, without doubt, sufficiently authoritative to be taken as representing the true sentiments of the majority of the Royal Academicians and Associates. I will beg you, therefore, kindly to allow me space to justify the trio who protest against the imperious position and course of the institution.

I thank the writer heartily for having so fully revealed the spirit of the body; without such explanation the dispute could not be understood by the public who are invited to judge the matter. The letter is one blast of infallibility from the first word to the last, varied only with regret that the sublime superiority of the genius of the body was ever allowed to shine outside the walls of Burlington House. The institution sprang perfect from the head of George III., perfect for all time (although then there were perhaps not five hundred artists in the whole of England, and now there are fifty times this number who profess the art of design). It is still absolutely what it should be, and the interests of the whole world of art may be left safely in the hands of its members, without care for the unreasonable malcontents; the schools are everything that could be desired, although they are producing thousands of students who, according to the showing of "R.A.," are undeserving of due opportunity to exhibit their works (with the exception of the infinitesimal number who are to be future members). Our difficulty might have been to account for the fact that because the Council rejected the petition of outsiders these last should forthwith invite combination for the establishment of a truly national institution. It might have needed much argument to account for the rebound to such an extreme measure, but the lofty tone of "R.A." will convince the world that no hope would be held out of reformation of the power which at present "stops the way" of English art. The question as to the number of works for a member to contribute has disappeared. This is now a past test case. We must look for a national school of art to ourselves alone. The distortion of our views in "R.A.'s" statement, that the money for such exhibition must come out of the pockets of the taxpayers, is a flight of genius, but it is too imaginative for the business-like world, and need not be answered.

Now, with the general ground better understood, let us proceed to details. "R.A." says that Burlington House was given in place of a lien on the benefactions of George III., but he does not say that it was given with conditions or recommendations which have never been observed.

He studiously ignores the pent up force of public opinion behind the Royal Commission, as did his predecessors, and, as he assures us, his successors will do. With the august honours he enjoys, he has forgotten the feelings of outsiders, and the power which they may exert if they will but be united. I will try to recall to his memory some of the facts of the date referred to. I can remember that in my evidence I had to prove my charge of injustice in the hanging of pictures of outsiders. I chose the case of F. Leighton, whose works had recently been placed most unworthily; and I added that one of the Royal Academicians had said in my hearing that if he had his will they should be put in still worse positions. Knowing that the gifted painter in question happily had means at his command to continue the struggle, and that he had openly declared his intention to avoid all opposition to authority, I added that in a short period the Academy would be obliged to elect him. At that time, the institution having elected Millais to the rank of A.R.A. while he was still very young, proved that it was from no appreciation of his genius, but only to break up the band of independent artists to which he belonged; for they kept him in the lower grade of honour while year after year they put very inferior men over his head; until it was known to

others, if not to them, that the future pride of their Academy had come nigh to a decision to leave them in all their narrow glory. At that time Watts had received nothing but contempt at their hands, Rossetti had been deterred from exhibiting altogether, Armstead, Woolner, Brett, Stacey Marks, Hodgson, and many others now in the Academy, and some still outside its walls (in fact, every one with new blood), were struggling against the hindrances which the ennobling for life of some of the most incapable of artists had occasioned. The decision which many of my friends had come to was to rely nothing at all upon the Royal Commission; we recognised that the Academy would find a way of evading all such recommendations as would detract from its power of usurping to itself all the influence, the glory, and the emoluments of the profession; and I was implored by certain of those whose names I give above to bind myself by honour to refuse all overtures from the institution. I had never made secret of my independence, but, on the contrary, only recently had obtained opportunity for exhibiting the rejected works of the victims of arbitrariness in the rooms of the Cosmopolitan Club, thus increasing my offence to the Academy. It was by this time convinced of the need of reducing the number of its opponents; and so, with knowledge of the feebleness of human nature to reject personal riches for the sake of public good, my fellows in revolt were invited separately to go over, and they all accepted without a moment's demur. The revolt, therefore, apparently did but little at the time, for with the new blood exactly the same traditions were kept up, and it was only when it was seen that Burne Jones could not be ruined by persistent opposition, that last year he was elected member of the body.

There has been but one principle adopted by the Academy during the whole of my experience. Over respectable nonentities there is no fighting. Why should there be? These are assiduous admirers, and are not dangerous. But towards young men with original force, of whatever form, everything is done by the Academy and its friends to make the struggle an impossible one. Painting and sculpture are very expensive professions. Without due recognition a man must give up the effort to do ambitious work. Some true men fall and disappear altogether; others take to very humble and private work, and the Academy says triumphantly, "Look at the glorious roll of genius we can show," implying that they have judiciously fostered all that the country has produced. Let me ask them, with all candid admiration for the great men they have had among them and still have, whether the infamous roll would not be appallingly long and hideous; whether the men comprising this last have not kept honest and noble artists from their best work and from a fair chance of gaining the wherewithal to live; whether the traditions of the Academy have not put their thoroughly incompetent members into posts which none who had not done the State due service should hold; whether they have not been appointed teachers of drawing without being in the slightest degree qualified for the office, greatly to the injury of the next generation of artists; whether the "benevolences" have not been given to these, to their widows and children, to the loss of more worthy claimants? I would ask also whether a truly strong man, who has been opposed and almost ruined until he is fifty years of age, has not often succumbed to the temptation to make the period of life that remains to him a means of enriching himself, rather than of doing what he might have done to raise public taste had his life been a calmer and more equal one, enabling him to work unhampered by daily cares and without temptation at the last to repeat himself *ad nauseam*, and thus to bring upon himself "the bitter cruel words" which "R.A." very properly reprobates as vulgarly inflicted upon veterans of the institution?

My conclusion is that as at present constituted the Royal Academy is a perpetual injury to art. It helps to dazzle the feeble judgments of the world as to what is true merit. As Hogarth said, when its establishment was contemplated, "More will flock to the study of art than what genius sends; the hope of profit or the thirst of distinction will induce parents to push their offspring into the lecture-room, and many will appear and few will be worthy." Of late the influence of the institution has silently been extended far beyond the bounds its founders ever contemplated. On continental great exhibitions it has its officers ready to enforce its judgment about the placing of the works of our country, and the prizes are given in exact order of Academy honour. In the colonies it exercises its influence, having—at least till lately—one of its members to choose works for their permanent galleries. In the provincial towns at home it controls the hanging of pictures, sending down one of its members to insure the placing of the Royal Academy works in posts of honour, and taking care to put the works of rebels in ignominious positions. Is it a wonder that few men dare to refuse its favours? or is it astonishing that with such protection it should be found that these often paralyse their recipients?

The remedy to be preferred (I speak here singly) would be to make the present institution thoroughly representative, with members elected from without by exhibitors of certain standing, each batch of members to remain in office for a fixed number o years, and on retiring to carry with them the title of honour o their service. The hanging I would have performed by a second representative body, elected for the year only, to relieve the first for other duties. The schools should be conducted by teachers, permanent so long as they were considered satisfactory by the existing body of control, who would strive to perfect the system of instruction, and thus render needless the exodus of students to Paris—this a most desirable point, because with the good so often obtained in France much evil is done to English taste in the contemplation of the sanguinary and brutal pictures of continental schools. There would be effort also made to honour those branches of English art which are now treated as though beneath national recognition. Effort also would be made to render every artist better acquainted with his materials, and better able to procure the soundest and best. Each party would strive to make its tenure of office compare nobly with that of other representatives, and so all would be living and healthy. The responsibility of refusing such a scheme will rest with the Royal Academy. I hereby make a last appeal to its members, so eager for reform before their election, to prove that their discontent was not only a selfish one. I will trust yet they may respond generously. But if the decision is made finally, as "R.A." would seem to say, we must turn to the realisation of the alternative opportunity declared in our joint letter—unless, indeed, Government will exercise its power to do what it can to save the existing institution from its internal foes, and to save English art itself, for both, indeed, are in imminent peril.

IV.

"R.A." replied in a second letter as follows:—

Mr. Holman Hunt, in his letter in the *Times* of to-day, writes:—"'R.A.' says that Burlington House was given in place of a lien on the benefactions of George III., but he does not say that it was given with conditions or recommendations which have never been observed."

As Mr. Holman Hunt has misunderstood what I did say I will ask you to allow me to give this further explanation on the subject referred to.

At the date of the foundation of the Royal Academy the old palace of Somerset House was the private property of George III., but subsequently the King parted with this property to the nation, subject to a reservation in favour of the institution he had recently founded. In accordance with the conditions of the conveyance, galleries and rooms were specially constructed for the Royal Academy in the new Somerset House (the present one), and in due course it was installed in the apartments appropriated to its use. At a later date, after permission had been asked of and granted by William IV., the Royal Academy accepted the rooms at Trafalgar Square in place of those at Somerset House; and lastly, received a site at Burlington House in compensation for the habitation at Trafalgar Square; thus, as I said in my letter, removing "from the nation the lien of the King's gift to the Academy."

It will thus be seen that the Royal Academy was founded by the King upon property which was his own. It was founded for public objects, which are defined in the instrument of our foundation; and in fearlessly claiming judgment upon the stewardship of its trust, the Royal Academy has to be tested by the objects thus defined, and not by the schemes of Mr. Hunt and his friends.

With regard to the "conditions or recommendations which," Mr. Holman Hunt says, "have never been observed," can he inform your readers what conditions laid down by Government have not been observed? Recommendations even endorsed by Government can scarcely be held in judgment over the institution.

THE SCIENCE AND ART DEPARTMENT SCHOOLS.

THE new Directory (revised to July) exhibits a few changes. The grants to a school will be so restricted in the future that the lien of the Department on fittings shall at no one time exceed 300*l.*, or that on apparatus and examples 200*l.* The scheme of local scholarships is extended "to enable the committee of the local fund to maintain the successful competitor while pursuing his studies for one, two, or three years," and the Department will supplement the local contributions of 5*l.* each year by grants of 4*l.* for the first, 7*l.* for the second, and 10*l.* for the third year; also, in connection with this, the restriction whereby payments on results cannot be made on account of the same student in the same year in more than three subjects, in addition to geometry and mathematics, is relaxed in the case of registered second year's students in organised science schools, in which case six subjects are allowed. An important change is announced with reference to the rewards to students, as it is now enacted that to be eligible for a Queen's prize "each of

such students must have received from a qualified teacher at least twenty lessons in each subject on account of success in which a prize is claimed since the last examination in that subject in which he was successful." It has hitherto been a grievance with science teachers that the Queen's prize could be won without any attendance at class. The Directory furnishes the conditions for obtaining the special scholarships and medals, as the Edward Forbes and the Murchison medal and prize; the Tyndall, Hodgkinson, and the Frank Hatton prize; and the De la Beche and the Bessemer medal.

Under the regulations special to art some modifications have been introduced. It has been arranged that lessons may not be registered in more than two groups of subjects for any students on any one day, except on Saturdays, when lessons in three subjects may be registered. And for the purpose of registration the groups are to be drawing (including freehand, geometry, model, perspective, outlining, and shading from the cast), architecture, theory and designing, painting, study of the figure, and modelling.

Several examination syllabuses are altered. In physics there is fuller treatment of sound, and in botany (both advanced and honours), the courses now include the study of the cryptogamia. In the principles of mining the syllabus has been completely recast. It is now very complete, including such subjects as mineral geology and geography, exploration, breaking ground, deep boring, opening ground, modes of working, ventilation, lighting (including use of the Fleuss apparatus), drawing and winding, drainage, and underground conveyance (including electric railways). In this revised syllabus, in addition to scientific accuracy, attention is to be paid to "orthography, composition, and writing," whilst "exactness will be expected in all that relates to numbers, dimensions, and weights, and as neat and accurate drawing as the time will permit."

THE WALLS OF CHESTER.

A PAPER was read by Mr. G. W. Shrubsole at the meeting of the Royal Archæological Institute, upon the age of the city walls of Chester. He said that Pennant had stated over a century ago that the form of the city evinced its Roman origin, but that no part of the old walls remained. The latter remark had naturally evoked considerable difference of opinion, and when, about fifty years ago, a zeal was shown for the preservation of the local antiquities, for the first time the claim was advanced that a large part of the north wall on the east side of the Northgate was Roman work *in situ*. Since that time it had figured as such in standard works, although considerable discussion had arisen upon the point, which was a most interesting one, and one that the last quarter of a century had given greater facilities for rightly judging than any previous period. During that interval large sections of the wall have been laid open for necessary repairs. Besides this, many excavations have been purposely made at the base of the wall at the more interesting points, to ascertain its peculiarities and character.

In dealing with the age of the walls, said Mr. Shrubsole, it is my intention to limit my remarks to one period involved in the question raised by Pennant. Does any part of the Roman wall still exist in the present walls of Chester? It were profitless and it is well-nigh impossible to judge by mere appearance of the age of a structure, on the whole so destitute of distinctive architectural features, which has had to be repaired or remodelled every century or two. Among much that is uncertain, one period we know stands prominently forward for distinctive recognition in the use of stone, tiles, and mortar in its constructive works, which enables us to distinguish it from all others. I allude to the period of the Roman occupation of Britain. The position that I take up on this question is opposed to the modern view, believing that, however pardonable may be the claim for the Roman age of any part of the city walls, it is one not borne out by anything to be seen there at the present time. It is an element not without value in this case that the oldest writers on the subject, such as Camden, Pennant, Ormerod, Tyson, and Henshall, make no such claim for the walls. The opinions held by those writers, and even older ones, might be summarised in the words of Ormerod:—"The walls of Chester follow the outline of the Roman work, and probably stand on the Roman foundation." On the general subject it may be said that historical evidence is against the probability of any portion of the Roman wall being extant. The facts bearing on the case are that, after the departure of the Romans, the Britons, Danes, and Saxons each in turn assailed the walls and helped on their demolition, leaving them for Ethelfreda to rebuild and, it is said, enlarge. Again we find in Norman times an imperative order was issued for the rebuilding of the walls, to be followed by a fine for non-appearance on the part of holders of land. For their history during the next five hundred years the Patent Roll gives us an insight into the state of dilapidation into which they had fallen from natural decay and intestinal strife. Subsequently, in the Civil War, the walls suffered severely, serious breaches having been made on the face of the wall. In this condition they remained until, as the inscription on "Pemberton's Parlour" tells us, "In the eighth year of the reign of Queen Anne divers wide breaches in the walls were rebuilt and other decays therein were repaired, 2,000 yards of the pavement were new flagged or paved, and the whole repaired, regulated, and adorned at the expense of 1,000*l.* and upwards." From this time a trifling tax on Irish linen imported into Chester provided a sufficiently ample fund to keep the walls in good repair. Under any circumstances it is impossible to believe that a perishable stone of the nature of our sandstone should have held together as a structure for 1,600 years. It is not even credible that 200 or 300 yards of it should have remained intact. It is far more probable and consonant with observation that there may have not been one, but four walls, in the space of time over which its existence has been spread.

Proceeding to examine the parts of the wall for which a Roman origin is set up, Mr. Shrubsole referred to the group of large stones found on the outside of the wall near Blackfriars, midway along the Roodee. One fact alone, he said, disposed of its claim to Roman origin. The base of the stones rested upon a quicksand which was the bed of the old river. To have neglected the solid ground above, and to have built the wall of the Castra on quicksand in a hole 50 feet below the level, was a mode of proceeding he could not imagine any military engineer capable of, least of all a Roman engineer. In examining the reputed Roman work at the Kaleyards, he accounted for the single course of stones there found by the fact that some centuries ago the city wall stood on the spot where these stones now stand. The foundation of clay proved treacherous, aided by the loose ground of the fosse in front and the outward thrust of the ground of the churchyard, and these causes proving too much for the stability of the wall, it was pushed outwards to such an extent as to be useless, and it was dismantled, the base being left in the place where it was found, and the new wall built inside the old one. The Roman work *par excellence* of some authorities was to be seen on the east side of the Northgate, between it and King Charles's Tower. Owing to certain clearances, the wall was now to be seen under exceptionally favourable circumstances, but, looking at the work as a whole from the base to the top, it must be confessed that for genuine Roman work it presented several anomalies, if not unique features. They were supposed to see here a wall which, from the plinth to the cornice, was believed to have been part of the Castra which encircled Deva on that side. The base had a very English-like look about it. The irregular size of the stones, large and small intermixed, had not the characteristic appearance of Roman work, and the whole was crowned by a cornice, an unparalleled example so far as the walls of Roman castri in England were concerned, and more nearly allied to the debased Classic cornices to be seen in the front of some of the gabled houses in Bridge Street of the Jacobin age than anything Roman. In 1884 a number of excavations were made in order to examine the inner face of the wall, when it was found that there was a singular absence of everything Roman about it, while all its affinities bespoke its connection with the work of the last two or three centuries. Other structures in the city, such as Julius Cæsar's Tower at the Castle and the Old Shipgate near the river, had been spoken of as Roman, but after very superficial examination—seeing that neither of the places alluded to were 500 years old—they were really out of the discussion, for most certainly neither of the spots were included within the Devan camps. As to the construction of the older portions of the walls, during the past twenty-five years he had on various times seen hundreds of yards of the present wall laid open for necessary repair, but in no instance had he seen the faintest approach to Roman work *in situ*. After referring at some length to the discussion as to the material of which the walls were constructed, Mr. Shrubsole said that all the evidence to hand went to show that the Romans in their several works made free use of local stone, as might be seen in Handbridge, where several hundred yards of rock had been excavated, and the microscopic examination of the stone showed that the stone in the Northgate wall was identical with the local stone. There was, therefore, no warrant for the supposition that the stone had been brought from a distance, and the wall, therefore, could not claim a longer life than was usual with a stone of its kind. The way in which the error as to the extreme age of the walls had arisen was readily explicable. If the opinion rested alone on a passing or superficial examination, such was the extent of the "weathering" of the stone and the seeming antiquity which one or two centuries would confer upon it, that it seemed natural to infer its antiquity was great. Looking at all the aspects of the walls he was of the same opinion as Pennant, and had come to the conclusion that nothing in the walls dated further back than the reign of James I. and Charles I.

The Rev. Dr. Bruce stated that his impression was that the Romans, in choosing the stones for their building purposes, were never satisfied with anything except of a very lasting and

durable nature. If they found a bad stone in the neighbourhood they would go miles away, and in the neighbourhood of Carlisle, where the same kind of sandstone existed as that found near Chester, it was observable that the Romans had gone a distance of eight miles in order to obtain a stone that would last some period. For his own part, he would say that he thought some portions of the Chester walls very like Roman work, but Mr. Shrubsole seemed to think those very portions were modern productions. Most of the ancient buildings in the north he found had been covered over with earth and plantations, and some of the foundations of Roman erections had been dug out quite recently in places where there was no expectation of their being.

Mr. Lister said one difficulty presented itself to his mind, and he would ask Mr. Shrubsole whether he had ever come upon any undoubted traces of the Roman walls on any work above ground or under ground in the city. If he replied in the negative the difficulty would present itself as to the destruction of the foundation of the wall. No siege or storm could have at any time destroyed the whole of the wall foundation inclusive.

Mr. Shrubsole said that at no period had they come across any traces that would lead them to believe that they had found the walls of the old Castra. Though they had found traces of Roman villas they had never found any traces of Roman walls.

CHURCH BUILDING AND RESTORATION.

Birch.—Five stained-glass windows have been placed in the chancel apse of the church of St. Agnes. They are gifts from Mr. C. S. Keeling. The work has been executed by Messrs. Heaton, Butler & Bayne, of London, under the direction of Mr. Medland Taylor, of Manchester, the architect of the church.

Dalston, Carlisle.—The late Colonel Salkeld having bequeathed to the vicar and churchwardens of Dalston the sum of 1,000*l.* towards the rebuilding of the parish church, it has been resolved to entrust the work to Mr. Paley, of Lancaster, whose eminence in his profession, and connection with the parish as grandson of Archdeacon Paley, alike recommend him as a person acceptable to the parishioners.

St. Ippolyt's Church, St. Albans.—The restoration of the chancel of this church has been commenced, and will probably be completed in about three months. Mr. Miskin, of St. Albans, is the builder, employed by the authorities of Trinity College, Cambridge, who are the patrons.

Wellington.—Plans have been prepared by Mr. Nicholson, of Hereford, and the tender of Mr. Culson, of Hereford, has been accepted for the restoration of this church, which is in a deplorable state. It is proposed to re-roof the church, carefully preserving the fine old oak timber work; to reseat it, to repair the tower—a rare specimen of Norman architecture; and to put it in decent order throughout. The chancel has recently been rebuilt by the Ecclesiastical Commissioners.

NEW BUILDINGS.

Richmond Library.—The public library facing the Green has been enlarged, the total length of the library being now 92 feet. The old portion of the library will in future be mainly used for the lending department. In the rear of the building a new furnace-room, lavatory, &c., have been erected. The old portion of the library has been considerably altered in order to bring it more in harmony with the architectural character of the building. The whole of the new fittings have been made in pitch-pine and varnished. The walls of the new portion have been built hollow. The ventilation of the library is effected by three of Boyle's exhaust ventilators fixed in the roof, and fresh-air inlet tubes discharging 5 feet 6 inches above the floor line of the building. The whole of the library roof has been reglazed with thick glass of a green tint, and the centre of the roof is double glazed. The new portion of the building is lighted by means of six of Wenham's pendant lamps, and a large May's pendant burner in the centre. Mr. Frank J. Brewer, architect, has prepared the plans, which have been carried out under his superintendence by Mr. F. Sims.

University Club, Glasgow.—A new University Union Club is about to be erected on a site granted by the Senate. The money for the purpose (5,000*l.*) has been granted by an anonymous donor. The building, for which plans have been prepared by Messrs. John Burnet, Son & Campbell, of Glasgow, consists of a two-storeyed erection with a low square tower, fronting University Avenue, flanked at the east end by the large hall, placed at right angles to the rest of the building with its gable to the street, and at the west end by a battlemented archway for carriages, with side doors for foot passengers instead of the present wooden gate. The part next the gate will be occupied by the lodge-keeper and club attendant. The principal door is at the base of the tower and leads into a large entrance-hall, one side of which is occupied by the staircase, with lavatories beneath. The hall leads to a broad corridor, with seats set in the windows opening on to the college grounds, to which another door gives direct access. On one side are three committee-rooms, while from either end one enters the dining-room, 34 feet by 20 feet, which can be used as a conversation-room. The assembly hall measures 58 feet 6 inches by 30 feet, and, with its galleries, will seat three to four hundred. It has been designed on the same lines as the House of Commons, with lobbies running round the back and sides, giving direct access to all parts of the hall, and to which members will pass when voting on those occasions when the hall will be used by the dialectic and other societies for their debates. At one end is the platform, with a door to the adjoining committee-room, which will serve as a platform retiring-room. Round the other three sides is disposed a gallery, to which access is obtained by two octagonal staircases entered from the before-mentioned corridors. The walls are covered below with wood panelling, and plastered above; the roof is of open timber-work. The second floor is occupied by a news-room of the same size as the dining-room, and by a library and reading-room 46 feet 3 inches by 21 feet. A smaller staircase gives access to an upper room in the tower 18 feet square, which is to serve as a smoking-room. It is proposed to make the subscription as low as 5*s.*, so that the club may be as representative as possible. The work in connection with the building has already been commenced. The building is to be completed before the opening of next summer session.

GENERAL.

Mr. William Lawrie, architect, of Inverness, has presented a painting—*Strolling Minstrels*, by Mr. R. Saunderson—to Stonehaven, of which town he is a native. This is Mr. Lawrie's third gift towards the adornment of the Council Chamber.

The Trustees of the British Museum have issued a descriptive and historical catalogue of Japanese and Chinese paintings in the national collection. The series was formed by Mr. William Anderson, for the purpose of illustrating an ancient and remarkable phase of art in its historical and technical developments.

The Belgian Annual Exhibition of the Fine Arts, which is held by turns at Brussels, Ghent, and Antwerp, was opened on Monday at Ghent.

Mr. G. G. Adams, F.S.A., has modelled a life-size medallion portrait in *alto-relievo* of the late distinguished Egyptologist, Dr. Birch, which is now placed over the grave in Highgate Cemetery.

The Stained-glass Window which is to serve as a memorial of the late Lord Curriehill has been fixed in St. Giles's Cathedral, Edinburgh. It was designed by Mr. Burne Jones, A.R.A., and executed by Messrs. Morris & Co.

The Museum of Casts in Brussels was opened this week. It occupies one of the pavilions of the Exhibition of 1880.

M. Cernuschi, banker, has presented to the city of Paris his unique collection of Chinese and Japanese bronzes, a considerable portion of which were derived from the Summer Palace of the Chinese Emperors, which was destroyed in the war of 1860. They then passed into the possession of Count Palikao, from whom M. Cernuschi purchased them. The gift will not, however, be available until after the death of the testator.

A Parochial Hall is about to be erected in Walsall on the site of the "Old Queen's Head," from the designs of Mr. James Davis.

Englefield House, near Reading, which was an interesting Elizabethan mansion, was nearly burnt down on the 12th inst. The Long Gallery erected for Queen Elizabeth, and the rooms used by King Charles and Queen Anne, are among the portions destroyed.

The Altar in St. Paul's Cathedral has been removed temporarily, in order to allow of the erection of the new reredos.

The Pro-Cathedral, Kensington, of which Messrs. Goldie were the architects, is now being painted in an elaborate manner.

The Rebuilding of the Queen's School at Kew having been necessary for many years, has at last been determined upon. Her Majesty has made a liberal donation towards the cost. The architect appointed is Mr. Edwin Dolby.

The Palace of Buda Pesth is to be further enlarged and embellished. The works will occupy ten years, and are estimated to cost 7,000,000 florins.

A Four-storeyed House in Carlsruhe collapsed on Tuesday, when several of the workmen were killed. The Public Prosecutor immediately ordered the arrest of the architect.

M. Gotteland, chief engineer of the French Public Works Mission at Athens, has submitted to the Greek Government the plans of a projected railway from Nauplia to Calamata, by way of Tripolitza. The line is to be 181 kilomètres long, and is estimated to cost 21,000,000 frs. The line from Kiatos to Xilocastion and Camaris, 21 kilomètres, and that from Milos to Argos, 10 kilomètres, will be open for traffic this autumn.

The Architect.

THE WEEK.

The First Commissioner of Works on Monday night informed the House of Commons that the works at Westminster Hall (which were recommended by the report of the Select Committee in April, and by the vote of the House in June of last year) are now about being carried out under the direction of Mr. Pearson. A contract has been entered into with Messrs. Shillitoe & Sons, of Bury St. Edmunds, the contractors for Truro Cathedral, and they are now making preparations and getting materials upon the site, so that the works will almost immediately be in active progress. The delay is described as arising partly in consequence of the vacancy in the office of consulting surveyor, and partly in consequence of certain technical difficulties which arose in connection with the settlement of the contract.

On to-morrow and Sunday the Roman Theatre at Orange will be again used for dramatic performances, and will assume a new aspect when seen by the aid of the electric light. The theatre was planned with much skill, and the hill on one side was utilised for ranges of seats. On the last time when the ruins were used the opera of "Norma" was attempted. More judgment is now shown, for the play will have a sort of local interest, as it relates to an incident that is supposed to have occurred in Arles when it was the French Rome. M. Silvan, of the Comédie Française, will have the principal rôle in the spectacular "Empereur d'Arles." Afterwards Molière's "Precieuses Ridicules" will be played. Orange has so ill a reputation with strangers that few care to see so interesting a performance when the price is submission to the mosquitoes and landlords; but the Vauclusians have thick skins, and are sure to enjoy the entertainment which the artists have provided.

Mr. R. O. Bottomley, the landscape painter, and one of the best-known members of the Manchester Academy of Fine Arts, was drowned on Saturday at Llandysilio. He was taking his holiday in the district, and on that day he walked along the River Vyrnwy, with the intention of fishing as well as making sketches. As he did not return at night, the river was searched, and his body was found in a place that was not more than three feet in depth. Mr. Bottomley is supposed to have fallen into the water while attacked by one of the fits of giddiness from which he suffered. He was a native of Oldham, and his earlier works were taken from the scenery in the neighbourhood of that town. During the last sixteen years Mr. Bottomley was an unfailing exhibitor in the exhibitions of the Manchester Academy. He was elected associate in 1870, and full member in 1878.

According to M. Veuillot, the best place in all Paris to compose a sonnet is on the Quai d'Orsay. The poet can there find solitude, and, if people meet him, they are sure to be politicians who are too absorbed with their own affairs to notice a wayfarer who is puzzled in trying to find rhymes. But when M. Veuillot composed his poems while walking up and down the Quai, it did not present the desolate appearance it has had since the Cour des Comptes was partly consumed. From that time the poets, like the rest of the world, appear to have forsaken the Quai d'Orsay. It will soon be in a less attractive condition, unless for misanthropes who love solitude. Now we are at least sure to find a sentry standing at the gate of the big, dreary barrack which Napoleon I. built for his imperial guard, and a few heads will be seen looking out of the windows. The soldiers all appear glad to see a passer-by. But the barrack has long been in an unsafe condition; like Imperialism it was not built to endure, and, as the residents were in constant danger, it is about to be demolished. What will be done with the site? Is it to be surrounded with a hoarding covered with gaudy advertisements in order to serve as a pendant to the neighbouring Cour des Comptes, with its blackened walls and gigantic weeds? It is known that M. Antonin Proust and his friends wish to convert the latter into a museum of decorative arts. Will they endeavour to get hold of the site of the barrack and form a museum on a grand scale, which might be done if the unimportant street dividing the buildings were closed? The ground in that way would be large enough, but the objection to its position would still hold. The Quai d'Orsay is too far from the manufactories and the chambers of artists, too far from Paris life to be visited by people. Designers and workmen would not care if it were assigned to verse-makers in perpetuity.

No less than seventeen Royal Academicians and ten Associates will be represented at the forthcoming exhibition in the Manchester Corporation Art Gallery. Over a thousand works have been accepted. The Sub-Committee have again had the benefit of the advice of Mr. P. R. Morris, A.R.A. Thursday next will be varnishing-day, and the exhibition is to be opened to the public on September 8.

The plans for the Manchester Jubilee Exhibition by Messrs. Maxwell & Tuke have been amended, and on Wednesday were approved by the Council. Tenders are to be sought immediately, and it is expected that within a month the works can be started. The principal alterations consist in the raising of the dome and pavilions, and the addition of a special annexe, containing 8,500 square yards, for the machinery in motion. The ground appropriated to the exhibition and gardens has an area of about thirty-two acres. Mr. A. A. Gillies has been appointed secretary, and Mr. S. L. Bapty general manager.

The visitor to the Louvre at the present time will find that he is allowed to see a good deal less than is marked out for him in his guide-book. The galleries are undergoing rearrangement, and the convenience of strangers could hardly enter in the calculations of the conservators. It is impossible, for example, to see the French pictures, for they are undergoing cleaning, a process which is rarely attempted, owing to the outcry which is always heard against the operators. The Italian pictures will not be visible for a week or two, when the big fresco, known as the *Magliania*, will be in a more suitable position. Some fragments were lately brought over which are said to have formed part of the palace of Darius. A Salle de Darius was at once got ready for their reception, and it has been decorated in an expensive way. It has yet to be opened. Indeed, the decoration of the Louvre has of late entailed a great expense, and M. Guillaume has a large body of artists and workmen under his direction.

Messrs. H. Saxon Snell & Son wish it to be known that they were not asked to report upon all the designs in the competition for the additions to the East London Hospital, Shadwell. Their examination was confined to the four designs selected by the managers, viz., those marked "Sunshine," "Thought," "Simplex," and one bearing a circle. Messrs. H. Saxon Snell & Son decided in favour of the design which bore the motto "Sunshine," and on this opinion the managers acted.

A competition has been opened among French artists for the decoration of the Salle des Fêtes and of the ceiling of the staircase in the Mairie of Pantin, one of the Paris districts. The sum to be paid is 36,000 frs. for five works. The choice of subjects is left to the competitors, who are to submit sketches one-tenth of the size of the pictures before November 15. The jury will be composed of the Préfet of the Seine, three nominees of the Conseil-Général, two delegates of the Administration, and three representatives elected by the competitors. Three sketches will in the first place be selected by the jury, and the authors will be asked to paint one of the figures shown in them to full size. The painter who in this second trial obtains most votes is to have the commission; 1,000 frs. will be paid to whoever takes second place, and 500 frs. to the third competitor. Each of the two prizemen will also be given a commission of the value of 8,000 frs. for other rooms in the Mairie. If it should happen that none of the three figures is worthy of adoption, the three competitors will receive 500 frs. each.

THE MEDIÆVAL BAPTISMAL FONTS OF ENGLAND.

[BY A CORRESPONDENT.]

(*Continued from page* 106.)

IN commenting upon individual examples of the baptismal font it will be best to proceed chronologically and commence with those of the Norman period, of which style, as has been previously remarked, England happily still possesses examples in great abundance. In so many instances, also, the sculpture and images to the font remain intact, whereas externally in canopied niches the mistaken zeal of the iconoclast has demolished them. But few of the various fonts touched upon here are illustrated in the special works devoted to the subject.

Commencing with fonts of the Norman period, we find at Albury Church, Oxfordshire, a remarkable specimen, more curious than beautiful, and resembling a flower-pot. It is of circular form, and has a rude suggestion of Classic triglyphs in the frieze-like band of ornament round the upper part of the bowl. There is no shaft, so to speak, for the place that generally occupies it is supplied by a kind of repetition of the bowl, encircled by a chevron ornament. Among Norman fonts, a large proportion cannot boast of much beauty in form, and the sculpture or carving is often rude and uncouth. But still many examples remain, the design and execution of which must command admiration. Thornby Church, Northamptonshire, possesses a font with a Norman bowl rudely octagonal in shape, the sides being bellied out and covered with interlacing ribbon-like ornament of a Runic character, the main feature on each of the sides being a large circle. This is almost as remarkable a Norman example as the last one commented upon. The shaft is of later date, and calls for no remark.

At Houghton-Regis Church, Bedfordshire, is a very curious Norman font. Part of the bowl is fluted, and the base is an inverted cushion capital. In twelfth-century work the latter feature thus perverted is not so unusual, as at Aylesbury Church, but in the Early English, Decorated, and Perpendicular periods is very rare. There is certainly a singular want of inventiveness displayed in thus treating a base, and in the later styles one finds much improvement in this respect, though the designs of the rest of the font became academic and monotonous while better in proportion. The barbaric and rude feeling of the earlier examples gave place to greater refinement, particularly, of course, in the sculpture and carving, but it was rather at the expense of vigour and originality.

The county of Cornwall is very rich in Norman fonts, as at Bodmin Church. They are more or less rude in design, as might be expected in so remote a part of England. The circular example at Lanreath possesses the honeysuckle ornament arranged around the upper part of the bowl like a frieze, while the base rather resembles an inverted bowl.

The font belonging to Camborne Church is curious, with four angels bearing shields and inscriptions set around the bowl, and recumbent lions guarding the base of the shaft, the symbolism of which representation is very appropriate to a font. The date seems to be thirteenth century, but it may be later, as in Cornwall the later fonts bear very much the character of the earlier.

One of the most remarkable designs in fonts in the knowledge of the writer is that at Crick Church, Northamptonshire. It appears to be of Transitional Norman, or early thirteenth-century character. The bowl is cylindrical, having on the top a rude suggestion of part of the dog-tooth ornament, the general face of the bowl being covered with large globes, projecting nearly half of their diameter, arranged in three rows, set very close together. It is difficult to imagine where the designer got his idea of this ornamentation. Possibly it was a mere caprice, or might have been suggested by some design in jewellery. There is no central pier or shaft, for the bowl is carried by three rudely carved representations of human beings squatting on pedestals. It appears as if there were originally four of these, as the platform or base is square in plan. This example is only mentioned as a curiosity, as it has no merit whatever, either in beauty of design, symbolism, or anything else.

Another Transitional Norman font worth alluding to is that in Chalgrove Church, Oxfordshire, which has a peculiar twisted shaft, but in other respects calls for no remark.

The writer will now proceed to consider a few examples of fonts of the Early English period. Most modern fonts possess three distinct and separate members, *i.e.*, the base, the shaft, and the capital, the latter forming the bowl. But the elegant thirteenth-century font to the church at Acton Burnell, Shropshire, does not at all contain these distinctive features in the usual way. In composition it is extremely simple, octagonal in form. There is a low, octagonal, square-edged plinth on which stand projecting delicately-moulded shafts, one to each angle, surmounted by capitals. Trefoil-headed arches, very handsomely moulded, are carried on the latter, and the top of the bowl comes almost immediately above the outer members of these arches. The whole effect of this beautiful font may be said to be obtained by the repetition, eight times, of the same well-considered feature on an octagonal plan. This is really the great secret of any of the most successful designs—judicious repetition of a carefully thought over composition.

The octagonal bowl of the Early English font at Lackford Church, Suffolk, is remarkably beautiful, mainly on account of the carving spread all over it. At the angles is only a bead moulding, as also to the capping and base of each side of the bowl. In the oblong panels thus formed occurs the charming conventionally-treated foliage above mentioned. Under the panels the bowl is chamfered off, and on the splay are two pateras and two dog tooth-like ornaments, alternating to each side. The shaft of the font is of the same plan as the bowl, and has a moulded base and capital.

The church at West Deeping, Lincolnshire, has a font, the plan of which is mainly octagonal, with almost detached shafts, surrounding a central pier, and carrying little arches. This makes a very effective treatment. Mr. PALEY, in his "Illustrations of Baptismal Fonts," speaks of a few Early English and Decorated examples, supported on arches with or without a central stem, as at Barnack, Northamptonshire, the specimen just mentioned, and at Forster Church, Cambridgeshire. He says the effect is admirable, the arches not being merely panelled ornaments, but pierced through, and he expresses surprise that this construction is of such rare occurrence. The writer fully endorses Mr. PALEY'S commendation of this beautiful type of font. How well he can remember, many years since, making a careful sketch of the exquisite font at Barnack Church, to which he can always turn with pleasure!

The leaden bowl of the Early English font to Warborough Church, Oxfordshire, is very remarkable. There is a small arcade in the lower part of the bowl containing four panels. This is divided from a similar arrangement of panels by a wider and higher panel containing rosettes. There are three of the high panels. Each of the small panels contains a figure, all of which are replicas, doubtless owing to the material employed, and represent a bishop raising his right hand in the act of benediction, and holding a crozier in his left. There is another example very like this one at Long Wittenham Church, Berkshire. The shaft of the Warborough font is a panelled Perpendicular one, with no striking features.

The font to Raunds Church, Northamptonshire, is thirteenth century, circular, and perfectly plain, with the exception of a ram's head projecting from one side of it, typical of sacrifice—a curious and unique instance, as far as the writer is aware. With not a few of the Mediæval fonts the design calls forth no admiration, but, on the contrary, rather provokes adverse criticism, as in the case of Great Addington Church, Northamptonshire. The bowl here (Early English) has sculptured heads resting on rude corbels, which seem to convey no symbolism or have any meaning. The shaft, however, is a good one—a central circular pier with four shafts attached to it, having well-moulded capitals.

At Rushden Church, in the same county, is a font with a bowl of about the same period as the last-mentioned, but with a very Late Decorated octagonal shaft panelled on alternate sides with pointed quatrefoils in two tiers, a species of panel founded on the saltire form, and other ornamental panels resembling the first-named. The bowl has plain semicircular-headed panels with simple foliage of a conventional character, springing

forth from the lower portions of these panels. It would be difficult to show a better example to the student of what constitutes "judicious reticence" in architectural design. The bowl has little ornamentation, but looks quite suitable to the requirements of a village church. But the panelled shaft does not seem to belong to it, and would have been a great deal more appropriate had it been left quite plain.

Among all the Early English fonts, it would seem impossible to find a more quaint or curious specimen than the well-known one to St. Giles's Church, Oxford. As regards the shaft there is nothing unusual. In plan it consists of a large cylindrical central pier, with four much smaller satellite shafts quite detached. All the shafts, including the central one, are surmounted by moulded capitals, the larger shaft having the capital of the same depth as the others, and not deeper, as so often occurs. The small shafts have a kind of chevron ornament in the abaci. The plan of the bowl is founded on the square, having shafts at the angle resting immediately on the capitals to the pedestal beneath. This is not a very usual feature in Mediæval work, but at Romsey Abbey Church we see it in the clerestory windows of the choir, as well as in other churches. But the designer of this font was not satisfied with merely having angle shafts, so he put two other shafts in each of the four sides of the bowl, the projection of which is rather more than half their diameter. Between each of these shafts the dog-tooth ornament occurs, so that the effect is crude and incomplete. A bold bowtel moulding, however, forms a kind of base to these intermediate shafts, its top being level with the upper part of the bases to the angle shafts. This bowtel appears rudely cut off to make room for the base of the angle shafts, and one wonders whether the design of this part, as also the top of the bowl, had been left unfinished. The appearance is necessarily very "liny," with its series of closely-packed pillars. In fact, it looks almost as if some mason had used his saw and abstracted one of the stones to some massively built cathedral pier. For this bundle of shafts, so to speak, appears as if it ought to bear a massive superstructure, whereas it really carries nothing whatever. The writer fears he has been somewhat tedious in describing this odd font at too great length, but it could not well be disposed of quickly. An interesting example of a font, the bowl of which, like that at Lackford Church aforesaid, is completely covered with carving, is to be found in the fine Perpendicular church of Banwell, Somerset. The main elements of the composition, like so many of the most effective fonts, are extremely simple, and it is by the manner in which the surface is embellished that richness is produced. The plan is circular throughout. Around the top of the bowl is a frieze-like band of small quatrefoils, the treatment of which is Perpendicular. But in other respects the bowl and shaft of the font appear to be of thirteenth-century character. Under the band of quatrefoils the surface of the bowl is completely covered with a conventionally treated foliage, the axis of which is vertical and arranged symmetrically. This carving resembles seaweed more than anything else, though the stonework has evidently been somewhat scraped. Such a leaf it is unusual to represent in carving, and justly so, as the forms are rather too rounded and wanting in vigour. The Mediæval men were clever in importing into their sculpture the most characteristic leafage, while at the same time they invested it with such a modicum of conventionality as would suit its adaptation to architectural purposes. One can fancy (the Bristol Channel not being more than five or six miles distant from Banwell) that the outline of seaweed would be familiar to the sculptor. This type of font, having the bowl encircled with foliage, is a very beautiful one, and the decoration peculiarly appropriate in such a situation.

The font at Thorpe Church, Lincolnshire, is one of the most elegant specimens of the thirteenth century, with its trefoil-headed arcade surrounding a cylindrical bowl. At Studham Church, Bedfordshire, the circular Early English font is very cup-like. The bowl is double-bellied, so to speak, and the base to the shaft resembles an inverted bowl. Such a treatment of the base is uncommon in the thirteenth century. In Norman work there is an example of it in the font to Stratton Church, Cornwall, and at Lanreath Church.

To speak of examples of the Decorated period, at Exton Church, Rutlandshire, is a specimen of a font where the diameter varies but little from top to bottom, in this respect resembling the Early English font at Acton Burnell previously commented upon, and not possessing the customary distinctive divisions of base, shaft, and bowl. Its form is an octagon, treated in a very elegant manner. There is a good illustration of it in Paley's "Fonts."

All Saints' Church, Norwich, possesses a fine octagonal font of Decorated character, and is more than usually embellished with sculptured figures. Each panel to the bowl contains two well executed effigies in high relief, representing the twelve apostles, as well as St. Paul, St. John the Baptist, St. Michael the Archangel, and St. George, and the shaft is also enriched with single figures in each of its panels. The panels in the bowl are mere sunk rectangles, without cusping or any enrichments save the sculpture. As an architectural composition this beautiful and well-known font ranks very high, with the two figures in the panels of the bowl and the single one below only standing on its individual pedestal. The arched canopied heads intertwined with foliage immediately above further conduce to the happy effect.

(*To be continued.*)

A SCULPTOR'S STORY.

THERE are very few people in Paris who do not traverse the Boulevards a great many times in every month, and as all passers by are sure to gaze at the windows of the shops where bronzes are sold, it may be concluded that there are very few people in that city who are unacquainted with the figure of *François Villon*, by M. François Etcheto, although they may not all have seen the original in the Square Monge. Villon or Corbeuil is a poet who has found devotees of late in England no less than in France, and his sincerity of utterance, however low may be the subjects, has an undoubted charm, especially if it is remembered that he was born four hundred and fifty years ago, when people were afraid to express their thoughts. But, apart from that, Villon is an important figure in French literature. The respectable Boileau, who was not disposed to be friendly to poets who were deficient in the moral sense, says that Villon was the first of the Frenchmen who practised poetry as an art:—

> Villon sut le premier, dans ces siècles grossiers,
> Débrouiller l'art confus de nos vieux romanciers.

The life of the poet was more sad than any that Johnson related, unless we make an exception in the case of Richard Savage. Villon was an university scholar, but somehow his acquaintance with Aristotle and Averroes brought him no office. Like Jack Falstaff, he came to believe that thieving was his legitimate vocation. But, unlike the English knight, Villon came under the "rusty curb of old father antic the law." He was put to the torture, and was twice condemned to the gallows. Strange to say, the cold-blooded Louis XI. always intervened in his favour, but no honest employment was provided for the poet. However, a priest was inspired with pity for Villon; he was carried off to the provinces, and there spent what was left of his life in peace and comfort.

Villon was thus a poet for whom the gutters of Paris served instead of the Pierian spring, and as a thorough representative of the Quartier Latin it was only fair that his image should appear before the eyes of students of a later age. The statue that adorns the Square Monge is as characteristic as any piece of portraiture in the city. Villon becomes suggestive partly of the feathered Mercury and partly of the *gamin de Paris*. As he stands he inclines a little to the left side, for a perpendicular pose, however well suited to a mathematician or a politician, would hardly correspond with the mode of thought of so peculiar a moralist. We know that "every true man's apparel fits your thief," and a tailor would be sure to say that Villon never was measured for the habiliments he is made to wear. But the short overall answers well for the concealment of thievery of an obtrusive kind, and, moreover, the loose folds may be a protection against an occasional pass of a rapier. The lute at the feet suggests the minstrel. The matted locks reveal he is one that comfortable citizens would consider to be of a disreputable class, who has often slept in the open air for want of a roof, but the keen eyes and the sensitive lips denote a spirit who could see beyond the shows of things. For Villon was able

moralise with the best over the riddle of life, and the talk of Hamlet in the graveyard is marvellously like what we might expect from a man who had just been reading some of the verses of the scapegrace. Our English experience suggests the difficulty of making a statue of a poet. Burns in Dundee, Tom Moore in Dublin, the crowd in Poet's Corner, all testify in that way. Abroad there are also figures of poets that offend the eye. Indeed, in all Europe we doubt if one can be discovered which is as expressive as M. Etcheto's *Villon*.

If, on seeing the statue, anyone might ask about the sculptor, the information would not be readily obtained. Strange to say, this marvellous work is one of the two which are all that are forthcoming to represent the powers of so able an artist. The second is a figure of *Democritus*, of which the marble copy was to be seen in this year's Salon. M. Etcheto is at present an invalid. The misery which sometimes awaits sculptors as well as poets was his lot, and it overcame a frame that was frail by nature. Thanks to the intervention of M. Paul Leroi (and it is not the first time his influence was exerted in behalf of unhappy artists), M. Etcheto was rescued before he was overwhelmed. He is now at Pau, and everyone who loves art must wish that a man whose genius is unquestionable may shortly be restored, and be able to endow his country with noble works. In the *Villon* we see only the 'prentice hand of the sculptor, and from such a beginning we expect much. In the last number of *L'Art*, M. Paul Leroi modestly relates the story, keeping himself as much as possible in the background :—

"When M. Etcheto exhibited his plaster models of the *François Villon* and the *Democritus* in the Salons of 1881 and 1883, I was," says M. Leroi, "very favourably impressed by them. M. Eugène Guillaume, and subsequently M. Ernest Barrias, the sculptor, expressed to me how deeply they sympathised with the sufferings endured by one who was a genius of the rarest class. Having admired the artist, I was eager to become acquainted with the man himself. I found M. Etcheto overcome with fever, and shivering near a handful of fire in a damp studio, that was close to the fortifications, and which became more dreary when one remembered that it was within a hundred yards of the elegant mansions of the painters in the Avenue de Villiers. He was without any commission, but in spite of his illness and misery he was modelling with a trembling hand a small figure of a woman, to which he imparted infinite distinction. I was heart-broken with what I saw. I promised to come again, and, when I did, I had the good fortune to be made the bearer of a commission for a reduction in marble of his *Villon*, which was offered by an eminent amateur (the Baron Alphonse de Rothschild), who, having become a member of the Institut, signalised his election by a generous and delicate encouragement of the sculptor's art. Sculpture is to-day the most marked glory of French art, but its votaries are badly recompensed—as, indeed, they have rarely been otherwise.

"M. François Etcheto was enabled to remove to a more habitable studio in the Rue Aumont-Thiéville. Unfortunately for him, the change was too late. His weakness had increased, and it was no longer possible to have any illusion that it was to be of a short duration. He continued, however, to work without any abatement of fervour ; this time it was on the reduction of the *Villon*. I counselled him to take some repose, assuring him that nothing could be more contrary to the desire of the patron whom I represented than his struggle to execute the commission in spite of his illness, and by which he was aggravating the danger. My efforts were all in vain. Having accepted the price of his statue in advance, M. Etcheto felt that he was bound to uphold the dignity of his art by completing the work. When it was ready, then he could be free. He held to his resolve in spite of all my entreaties ; but I could not help feeling respect for him, while I feared the consequences of his honourable conduct.

"I resolved to bring the case before a lady artist whose position in the great world is only employed in efforts to make people happy. Endowed with the highest intellectual gifts, her heart is as large as her intelligence, and this lady renders a service in a way that suggests the recipient instead of the donor of a benefit. I knew of some of the cases in which men of letters had been aided by her kindness, and how, also, artists had reason to bless their 'bonne camarade.' I had, therefore, no misgiving about the result of my appeal. I was hardly allowed time to state the circumstances before I was asked to return to the Rue Aumont-Thiéville and to order the invalid to depart forthwith to Pau, and there to entrust himself to the intelligent care of Dr. Meunier.

"The friends of M. Etcheto will be glad to learn that at Pau his health improves from day to day. Before leaving I asked him for a few autobiographical notes, and I have received the following in a letter dated November 16, 1885 :—

"'I was born of French parents in Madrid in 1853. I have gone through five years of military service. While stationed in Paris I was more or less able to attend the classes of the Ecole des Beaux-Arts. I belonged to the Atelier Jouffroy. It often happened that M. Jouffroy (whom I did not recognise as the professor) came beside me to give his advice to other students. I was entirely ignored. This conduct irritated me against him, and when I exhibited my *Villon* I did not describe myself as his pupil, but as "Etcheto, élève de l'Ecole Nationale des Beaux-Arts de Paris." That was my way of protesting. Although both M. Dubois and M. Falguière inspired me with admiration, I feared to be troublesome, and therefore have had little to do with them. I was in this way deprived of advice which might have made something of me. I know my deficiencies and must follow my unambitious career. When I compare myself with some of my friends who have vigorous constitutions, a supreme enthusiasm, and an undaunted courage, I often doubt if I am born to be a sculptor. They can produce works unceasingly, while I have made two statues. I have executed only a single bust that was commanded by the State. It is mediocre in character, for it was taken from an engraving, and I am not eager to undertake another work under such unsatisfactory conditions. In short, I am not an able man. I am deficient in knowledge, and am a slow workman. I forget myself in a contemplation of my model, and don't advance. In this way my works have cost me dearly. I am more disposed to study, or rather to produce no more than studies when treating a subject, and I make and destroy with the same outlay of nervous force, which becomes a very great fatigue. You ask how was my vocation revealed to me? I believe it was while trying to make my *Villon*, for before that time I was unable to finish a single study in the atelier, and one of my comrades, named Dampt, therefore used to call me "le lâcheur." I must say, however, that he has shown himself to be a sincere friend, and I heartily admire him. It was while alone in my atelier, in the Passage Dulac, standing before a work of which I could not foresee all the difficulties, and with scanty resources at my disposition, that I drank, once for all, the bitter cup, and if I was brought to comprehend how hard was the sculptor's life, I was also taught to love it as the greatest of the arts.

"'I fear I am unable to say anything interesting concerning myself. I have an afflicting remembrance of the deception that I felt in returning to the ateliers of the Ecole des Beaux-Arts. I was full of faith in my art. I expected to enter in a sanctuary, and, instead, I became a witness to all the stupidities of which ill-educated men can be capable. I have been harmed in this environment. I have lost my time and my best illusions. But what was to become of me if I remained in Paris and did not accept the offer of my benefactress? It gives me great pleasure to think sometimes that I may be able to do something to satisfy her intention. Do not forbid me, for I know the extent of my powers. Gratitude may double them, and then I shall have the happiness to produce something that may be called good sculpture.'

"This is no idle dream, for, if M. Etcheto recovers his health entirely, we may expect some additions to the two remarkable creations which have gained him so high a place among French artists. We have a right to expect much from a man who is described by one of the most clear-sighted of his friends as having the most superb artistic visions, which he timidly recounts, as if his enthusiasm were a failing which was sure to be ridiculed, and which are followed by a state of mental depression that is almost incredible. But the power that is exemplified in the *Villon* and *Democritus* leaves a hope that the sculptor will surmount all despondency, and reveal his strength in realising one of his dreams, which is the model of a woman palpitating with life. He will then be able to express the treasures of poetry which vibrate in him, and which for a time have to be suppressed."

THE BRITISH ASSOCIATION MEETING.

ON Wednesday next the meeting of the British Association for the Advancement of Science will commence in Birmingham. The following arrangements have been made for the excursions :—

The greater number will take place on Saturday, September 4, no fewer than seventeen having been arranged for that day. The other ten day excursions will be on Thursday, September 9, on which day, too, a "long" geological excursion, which may be made to last for six days, will be commenced. In one or two cases those taking part in the day excursions will be afforded facilities for extending their visits ; and, on the other hand, those taking part in the "long" excursion may arrange to leave or join the expedition at any stage of it. The excursions on Saturday, September 4, will include one to Oscott

and Sutton Coldfield, under the leadership of Alderman Stone (Mayor of Sutton Coldfield) and Mr. J. E. Bagnall, A.L.S. The Very Rev. Canon Souter will do the honours of St. Mary's College, Oscott; and after time has been afforded them for viewing the park and the church the visitors will be entertained at tea at Midland Lodge, Alderman Stone's residence in the park. An excursion to Halesowen, Clent, and Hagley will be conducted by Mr. Thomas Anderton. Halesowen Church, St. Kenelm's Church, Halesowen Abbey, and Hagley Hall and Park will be viewed. After tea, at which the visitors will be the guests of the Right Hon. Lord Lyttelton, the carriages will drive round the Clent Hills, through the village of Clent, to the Lyttelton Arms, Hagley. For botanical and geological members time will be given for a walk to the summit of the hill, and a descent through the park to the hall. In the course of the excursion the Leasowes, once the residence of the poet Shenstone, will be visited; while at Halesowen the half-timbered houses and other antiquities, and the home industry of nailing, will afford interesting subjects of observation. Excursion No. 3 partakes largely of a practical scientific character. The visitors will be conducted over the sewage farm at Saltley by Alderman Avery, Mr. William Harris, and Mr. W. S. Till, and the visit will serve to illustrate a paper to be read in Section G, by Mr. Till, on the work of the Birmingham Tame and Rea District Drainage Board. Alderman Avery, chairman of the Board, will entertain the visitors at luncheon at Tyburn Farm. Afterwards Castle Bromwich Hall will be visited (by permission of the Viscount Newport), the carriages going by Minworth and Water Orton. Mr. John Corbett, M.P., and Mr. Paxton Porter will escort a party to Stoke Saltworks, Westwood House, and Impney. Stoke Saltworks having been inspected under the guidance of Mr. Corbett, train will be taken to Droitwich. Thence visitors will drive to Westwood House, the ancient seat of the Packingtons, going afterwards to Impney, where Mr. Corbett will entertain them to tea. The excursion concludes with a walk to Droitwich Station. Coughton, Alcester, and Ragley will form the scenes of another excursion, the guides in this case being Mr. F. B. Goodman and Mr. Edwin Smith. Coughton Court (an ancient seat of the Throckmortons), Coughton Church, and the ancient Roman town of Alcester, will be inspected with the aid of local gentlemen; and at Ragley Park the Marquis of Hertford will receive the visitors at tea. The Tamworth excursion will be conducted by Mr. Egbert de Hamel and Mr. Wright Wilson. Here the visitors will be shown the castle, Offa's Dyke, the earthwork defences of the town, and the church; and at Bole Hall the visitors will take tea as the guests of Mr. de Hamel. Mr. J. A. Cossins and Professor Lapworth will take a party to Hartshill and Merevale, to view the geological sections exposed between Stockingford and Caldecote, Merevale Church, Merevale Abbey, Hartshill Castle, and Roman remains at Mancetter; Mrs. Dugdale has invited the party to tea at Merevale Hall. The excursion to Malvern will be led by Mr. G. E. Mackie, M.A., and Mr. J. W. Oliver. The visitors will leave the train at Malvern Link Station, and will drive through Malvern Wells, Little Malvern, and along the west side of the hills, returning through the Wych to examine the geology and botany of the district. Tea will be provided at Malvern College by Mr. Mackie. The railway tickets for this excursion will be available for return up to the Monday evening. An interesting geological excursion is arranged to the Wrekin, under the direction of Dr. Callaway, F.G.S., but the interest will not be purely geological, as the view from the Wrekin of the English counties and the principal mountains of Wales is one not lightly to be missed. Mr. Joseph Beattie will receive the party at Overley to tea. Mr. John Cotton will conduct a separate excursion to Buildwas Abbey and Wenlock Priory. The visitors will be the guests of Mr. C. M. Gaskell. Shiffnal, Tong, and Wrottesley will be explored, under the direction of Councillor Martineau and Mr. F. W. Martin. Opportunities will be afforded of viewing Shiffnal and Tong churches and Wrottesley Hall (where tea will be provided by the Right Hon. Lord Wrottesley), and those who wish it will be taken to view some of the more remarkable of the erratic blocks which abound in the neighbourhood. Shakespeare's county, of course, will form the scene of one of the excursions, and elaborate arrangements have been made to make the visit as interesting and instructive as a short visit can be made. The leaders of the party will be Mr. W. Percy Harrison, Mr. W. R. Hughes, and Mr. G. H. Kenrick. At Shakespeare's birthplace the visitors will be received, on behalf of the trustees, by Mr. Sam. Timmins, F.S.A. The Guild Chapel and King Edward's School will be shown by the Rev. R. S. de C. Laffan, the Shakespeare Memorial Buildings by Mr. F. Hawley (librarian), the gardens and site of New Place by Mr. B. Bulmer (custodian), and Holy Trinity Church (in the absence of the vicar) by the Rev. F. Smith. The Mayor of Stratford-on-Avon will receive the visitors at the Town Hall, and entertain them at tea. Time will be allowed for a visit to Ann Hathaway's cottage. The excursionists to Warwick, led by Mr. C. J. Woodward, will visit St. Mary's Church and Leycester Hospital, and are invited by the Earl of Warwick, after viewing the castle, to take tea in that historic edifice. The party which visits Stourbridge and Enville will be led by Mr. G. King Harrison and Mr. Charles Williams. The Lye Fireclay Works, Enville Church, and Enville Hall (with an invitation to tea by the Countess of Stamford), will form the staple attractions. Alderman Chamberlain, M.P., chairman of the Hamstead Colliery Company, has invited a party to inspect the colliery and descend the pit. The workings will be illuminated, so that photographs may be taken, and geological sections and fossils will be exhibited at the surface. Tea will be provided by the directors. An excursion to Lichfield has been arranged for under the guidance of the mayor (Councillor Lomax) and Mr. E. W. Badger. The cathedral, Dr. Johnson's statue and birthplace, and other deeply interesting objects will be inspected. The dean (the Very Rev. Dr. Bickersteth) will show the cathedral, and discourse on its history; and the mayor and inhabitants, with the dean and chapter, will entertain the visitors to tea at the George Hotel. Dudley and the Wren's Nest will be visited, with Mr. C. Tylden-Wright and Mr. W. Madeley as leaders. The limestone caverns in the castle grounds will be illuminated, and the museum of the Dudley Geological Society will be thrown open. The visitors are invited to tea in the castle grounds by the Countess of Dudley and the members of the Geological Society. This completes the tale of Saturday's excursions.

CASTLE ACRE ABBEY.

THE condition of this building, which is near Swaffham, is deserving of the attention of the Society for the Preservation of Ancient Monuments. According to Mr. Kingsford, the western façade is simply magnificent, and in some points unique; as a specimen of Norman architecture it is almost unsurpassed. In the early part of last month Mr. Kingsford visited the ruin, and was dismayed at the negligence of the parish or the owner, if it be not the property of the parish. In one of the chambers—the abbot's dining-hall—the centre of the old mantel-shelf has been ruthlessly cut out and carried away (this within the last twelve months); some of the mouldings in one of the beautiful side windows, where the dog-tooth is as sharp and well defined as if it had been carved but yesterday, have been torn down by mischievous boys out of sheer wantonness. The village has for years apparently regarded the abbey as a quarry, for stones from the fane are to be found everywhere. Surely pressure ought to be put upon the parish, or the owner as the case may be, to cause some steps to be taken to preserve this relic of the piety of a former age from further devastation.

TESSERÆ.

Westminster Abbey and Amiens Cathedral.

SIR G. G. SCOTT.

THE abbey church of Westminster was commenced in 1245 by King Henry III., and the eastern portions finished about 1269. This makes it contemporary, in a certain sense, with Amiens; for though the latter was commenced in 1220, it was not completed till 1288. There can be no doubt that the cathedral at Amiens was, at the time of its erection, viewed as the most perfect development of the style, for it is clear that it was made in many instances the model on which the designs of other churches were formed. Cologne Cathedral, for instance, was commenced in 1248, during the erection of that at Amiens, and is manifestly a free copy of it so far as concerns its earlier portions; and though Westminster Abbey is by no means built on the model of Amiens, it was probably influenced by it. That prodigious pile, carried forward through so long a series of years, would be a great object of interest to all contemporary church builders; and Henry, who was much in France, would naturally send the architect of his own sacred mausoleum to see the great work of his day. Westminster Abbey is a church built on a French ideal, but with English detail—a great French thought expressed in excellent English. The windows are of the perfected bar tracery, which had not ye been much used in England; but in other respects I cannot find a distinctively French detail—or scarcely any—in the building, excepting the work of a single French foliage carver. Even the plan, which is purely French in idea, is carried out in a manner quite different from that of any French church I have seen. In the architecture the union of the manners of the two nations is most happy. The pillars are nearly like those of the great French cathedral, but the side shafts, instead of being attached, are separate shafts of Purbeck marble, the nucleus and the capitals and bases being all of the same beautiful material. The use of this hard stone led to that of moulded unfoliated capitals, in which they lose in effect when compared

with those at Amiens; but the nobler material would more than compensate for this. The triforium is far superior to that at Amiens, both in design and detail, and the whole internal design, though inferior in size and altitude, is to my eye far more pleasing, and when its varied materials retained their colour, and the Purbeck marble, which pervades every part, preserved its polish, there cannot be a doubt as to the superior magnificence of its effect. The parts, too, are much better proportioned, with perhaps the one exception of the too acute form of the main arches; the wall arcading is much more beautiful, and the details generally more richly moulded. We have then here, at our doors, a building whose interior is equal to that of any existing Gothic building, and we have no excuse if we do not avail ourselves of so noble an opportunity of study. Of the exterior I will say nothing. All its old features had perished by the end of the seventeenth century, when they were vilely renewed, and this base restoration is now in its turn decayed.

The Chimney Shaft.

S. SMIRKE, R.A.

I must not forget to do justice to the chimney shaft. Out of these trivial and uncleanly smoke-vents architects have taxed their ingenuity to produce really marvellous objects of high æsthetic value. Of Classical interest they can scarcely be said to possess any, for it is very doubtful whether architects of Classic times recognised the existence of such a feature. Vitruvius does not even name them. The remains of Herculaneum present not a single example of one; nor do the mosaics, frescoes, or bas-reliefs of antiquity show any indication of one, as far as I know. There is every reason to believe that the only means of escape for the smoke of their fires was through a hole in the roof, like the louvres of Mediæval times, so that the "smoke nuisance" we complain of at the present day may lay claim to high antiquity. The very name of the large hall in a Roman's house, atrium, is believed to be derived from this nuisance. "Atrum enim erat ex fumo." The statues in these halls are described by Juvenal and others as "fumosi"; and Vitruvius advises that there shall be no carved work in the interior of winter rooms, as they so soon, he says, get covered with soot. I apprehend that the roof timbers of our old baronial halls must have presented much of the same appearance; and as Horace complains of the "watery eyes" produced by the smoky halls, so our own mailed knights and their retainers could hardly have been better off. You will find that antiquaries are by no means satisfied as to the period of introduction of this great domestic convenience, the chimney, but it was somewhat late in Mediæval times before chimneys became very common. Viollet-le-Duc gives us in his "Dictionnaire Raisonné" a good example of one of the thirteenth century, formerly existing in the Abbey of St. Lô, and in England we have examples of still earlier date; but as civilisation advanced, and men's domestic habits refined, the chimney became conspicuous. They lavished art upon the decoration of the hearths below, whilst the chimney above partook of the same feeling, and both gradually grew into favourite objects of design, until, in the sixteenth century, the exuberance of architecture—especially, I think, in France—led to the erection of those enormous and elaborate towers which we see provided for the discharge of smoke at Fontainebleau and very many other places.

Influence of Precedent in Architecture.

HERBERT SPENCER.

No two classes of men appear to have so great a respect for precedent as lawyers and architects; by the one it is looked upon as of more importance than equity, and by the other it is appealed to as being a greater authority than any abstract principles of beauty or fitness; a judgment biassed by the errors of our ancestors is considered as the best guide for conduct in modern times by the lawyer, and the architect uniformly persists in copying the designs of the ancients, however unsuitable they may be to the habits of the present day. The universality of this prejudice in the case of the architect is evidently attributable to the system adopted in his education. A youth is taken into an architect's office, and the first principle of any importance that he learns is that "it is impossible to excel the ancients, and that the only thing we moderns can do is to copy their works." He sees all around him engaged in making designs in accordance with the good old patterns, and is perhaps himself chiefly employed in preparing enlargements after some of the ancient examples; any natural taste that he may have for ornamental designing is checked by telling him that he will never be able to come up to the works of our predecessors, and that he would be employing his time much better in studying the precedents handed down to us. The consequence is that he gradually imbibes the same veneration for antiquity that influences his seniors, and at the termination of his pupilage, instead of having had his natural creative talent brought to some perfection, he is probably as little capable of originating anything worthy of admiration as he was at the time he was articled; and he commences his professional career with the same determination to adhere to precedent that characterised his instructors; and this resolution being the result of a prejudice implanted in youth, is rarely to be removed by any arguments that may be adduced. Surely it is sadly derogatory to the dignity of the profession to have to acknowledge that out of all the arts practised by the moderns architecture forms the only case (with the exception of sculpture) in which the ancients have not been far outshone. Such a conviction in the mind of an architect is certainly rather inconsonant with due respect either for himself or for his employment. Is it then to be wondered at that there should be that want of public respect towards the profession frequently complained of by architects? Is it likely that society should entertain any high veneration for an art whose very professors acknowledge themselves to be mere copyists?

Decay of Building Stones.

MESSRS. HOFFMANN, FRANKLAND & ABEL.

Building stones in general may be divided into two classes, 1. Those which consist of materials not easily acted upon by acids. 2. Those composed of materials which are partially or entirely acted upon by acids with facility. As an illustration of the first class, granite, porphyries and serpentines may be quoted; whilst to the second belong limestones, dolomites, and certain sandstones containing carbonate of lime as cementing material. Regarded from a purely chemical point of view, the difference in the resisting power to corrosive agents of different stones would appear at first sight to depend entirely upon their chemical composition; but even a moderate acquaintance with the properties of the components of such building stones demonstrates that there are other conditions at least equally instrumental in determining the degree of permanence of different stones. It is a well-established fact that the same chemical substance exhibits in different conditions a great variation of its behaviour with chemical agents. Numerous examples might be quoted in illustration of this. Thus, marble and chalk are chemically identical; but, owing to the difference in their physical structure, the one being crystalline and the other amorphous, the former is much less readily acted upon by acids than the latter. Again, artificial peroxide of iron is readily soluble in acids; peroxide of iron, in the form of hematite, is attacked with difficulty by acids; and the same oxide, after exposure to a powerful heat, is almost entirely insoluble in acids. The influence of aggregation in these instances, and in numerous others which might be quoted, is obvious and generally admitted by chemists, however different and imperfect may be their views regarding the connection between physical condition and chemical effect. The observations just made regarding the behaviour of substances such as enter into the composition of building stones, cannot but apply with equal force to the aggregates of such components to the building stones themselves. The atmospheric influences to which building stones are subject are many of them essentially chemical actions, involving processes analogous to or identical with those performed in the laboratory; although from the extreme dilution of the chemical agents, as existing in the atmosphere, they must necessarily be of a very gradual character. There are few instances in which the influence of the state of aggregation upon the permanence of a building stone is more apparent than in that of the dolomitic limestone used in the construction of the new Houses of Parliament. Here, in one and the same block of stone of comparatively small dimensions, we find certain portions of the surface powerfully disintegrated, while others appear in a perfectly sound condition. Chemical analysis has hitherto failed to establish any important difference in the composition of sound portions of such stones and those parts which are subject to decay; it is therefore legitimate to attribute the unequal permanence of the stone, under atmospheric influences, to such structural differences as may be comprehended under the term—state of aggregation.

Resonance in Rooms.

J. HENRY.

Every room has a keynote, and if an instrument be sounded on this, it will resound with great force. The continuance of a single sound, and the tendency to confusion in distinct articulation will depend on several conditions—first, on the size of the apartment; second, on the strength of the sound, or the intensity of the impulse; third, on the position of the reflecting surface; and, fourth, on the nature of the material of the reflecting surfaces. In regard to the first of these, the larger the room the longer time will be required for the impulse to reach the wall along the axis, and if we suppose at each collision a portion of the original force is absorbed, it will require double the time to totally extinguish it in a room of double the size, because the velocity of sound being the same, the number of collisions in a given time will be inversely as the distance through which the sound has to travel. Again, that it must depend upon the loudness of the sound, or the insecurity of the

impulse, must be evident when we consider that the cessation of the reflections is due to the absorption of the walls or irregular reflection, and that consequently the greater the amount of original disturbance the longer will be the time required for its complete extinction. Thirdly, the continuance of the resonance will depend upon the position of the reflecting surfaces. If these are not parallel to each other, but oblique, so as to reflect the sound, not to the opposite but to the adjacent wall, without passing through the longer axis of the room, it will evidently be sooner absorbed. Any obstacle also which may tend to break up the wave and interfere with the reflection through the axis of the room will serve to lessen the resonance of the apartment. Hence, though the panelling, the ceiling, and introducing a variety of oblique surfaces may not prevent an isolated echo, provided the distance be sufficiently great and the sound sufficiently loud, yet that they do have an important effect in stopping the resonance is evident from theory and experiment. In a room fifty feet square, in which the resonance of a single intense sound continued six seconds, where cases and other objects were placed round the wall, its continuance was reduced to two seconds. Fourthly, the duration of the resonance will depend on the nature of the material of the wall. A reflection always takes place at the surface of a new medium, and the amount of this will depend on the elastic force or power to resist compression, and the density of the new medium. For example, a wall of nitrogen, if such could be found, would transmit nearly the whole of a wave of sound in air, and reflect but a very small portion. A partition of tissue paper would produce nearly the same effect. A polished wall of steel, however, of sufficient thickness to prevent yielding would reflect, for practical purposes, all the impulses through the air which might fall upon it. The rebound of the wave is caused not by the oscillation of the wall, but the elasticity and mobility of the air. A single ray of sound striking against a yielding board would probably increase the loudness of the reverberation, but not its continuance.

Steining Wells.

B. Latham.

The sides of wells require lining or steining (as it is termed) with some material that can prevent the loose strata of the sides of the excavation falling into the well and choking it. The materials that have been successfully used in this work are brick, stone, timber, and iron. Each description of material is suitable under certain conditions, while in other positions it is objectionable. Brickwork, which is universally used in steining wells in this country, not unfrequently fails in certain positions; as by reason of admitting impure water under great pressure, or from the work becoming disjointed from settlement due to the drainage of a running sandbed and the collapse of the well. Stone of good quality, capable of withstanding compressive strains, is good in its way; but inasmuch as it requires an immense amount of labour to fit it for its place, it cannot successfully compete with brickwork in the formation of wells, more especially as it has no merits superior to those of brick when used in such work; however, if in any locality, by reason of its cheapness, it can be used, care should be taken to select only such samples as contain a large amount of silica; indeed, in all cases it is a point of great importance, in studying the nature of the materials used in the construction of wells, to select those which are likely to be the most durable, and at the same time preserve the purity of the water contained in the well, and this is best secured by silicious materials. Timber is objectionable as a material to be used in the formation of wells, on account of its liability to decay, and thus not only to endanger the construction of the well, but likewise to some extent foul the water by such decay. It is very largely used under some circumstances, especially in the preliminary operations in sinking most wells. It is also successfully used in lining the shafts of the salt wells of Cheshire, and will continue entire in such position for a great number of years, as the brine seems to have a tendency to preserve the timber and prevent its decay. Iron is of modern application, and is a material extensively employed in steining wells, and as it possesses many advantages over materials ordinarily used, its use is likely to be much extended. It possesses all the qualities of a good material, insomuch as by its character it is capable of bearing great compressive strains, and of effectually excluding the influx of all such waters as it may be desirable to keep out, and is not liable to decay under ordinary circumstances. The author has known instances where recourse has had to be made to the use of iron cylinders, where it has been found that four or five rings of brickwork, set in the best cement, have failed to keep out brackish waters; and if the original design had provided for the introduction of these cylinders, they would have reduced the cost of the well very materially. The introduction of iron as a steining for wells, whether in the form of cast or wrought-iron cylinders, under many circumstances, will always be attended with economy and success.

Wrought-iron Columns.

W. Fairbairn.

Since a flat plate will bend sooner than a curved plate, it would be concluded, naturally, that a round tube, of moderate dimensions and of given thickness and section, would be a stronger form than the same plate in a rectangular form, in which the resistance to crippling must depend solely on the four angles; and since the rigidity afforded by the angles is extended throughout the four sides of a rectangular tube, in some manner proportionate to the distance from the angles, it would be concluded that a square tube  would be stronger than a rectangular tube  constructed with the same plate, inasmuch as the central portions of the longer sides of the rectangle will be less maintained in form on account of their greater distance from the angles; similarly increased strength might be expected from this form  . These assumptions were all submitted to experiment, and confirmed. For this purpose a number of tubes or cells of wrought iron were constructed, all 10 feet long, and either 4 or 8 inches square or of rectangular form, about 4 by 8 inches; their ends were perfectly flat, and they were compressed, by the intervention of a lever, between two parallel discs of steel, with arrangements for maintaining the pressure perfectly vertical, the cells being supported laterally. The direct object was to ascertain the value of each particular form of cell, and to ascertain the resistance per square inch of section in each case. The lateral dimensions of these cells are so large that with a length of 10 feet the pillars were not destroyed by a flexure, as in a long pillar, but by absolute buckling or crushing. The strongest possible form should therefore give about 16 tons per square inch of section. Similar experiments were then made with circular shells, under precisely similar circumstances for comparison. The cylinders varying from 1¼ inch to 6 inches in diameter, the diameter being so small in some cases, as compared with the length, some of these pillars failed by flexure, and followed the laws of long pillars, the resistance increasing nearly inversely as the square of the length; but where the diameter was 6 inches, the length being 10 feet, flexure could not take place, and the cells failed by buckling or crushing, as in all the rectangular pillars, and in such pillars the strength is independent of the length. From the foregoing researches it will be observed, that in order to attain the maximum powers of resistance to compression in the use of iron plates in construction, that the square box with thin plates, next to the plate itself, is the weakest experimented upon; the next in the order of strength is the rectangular form with a division across the centre, as at *a*  ; but the best distribution of the material is in the cylindrical form.

Retaining Walls.

Sir John Rennie.

These, until near the latter end of the last century, had been usually built with horizontal foundations and courses, the interior side being almost vertical, and the exterior with a flat face and very little batter, or in many cases vertical. The curved face retaining wall was latterly introduced, with the foundation and courses inclining from the horizontal, so as to conform with the radius of curvature; this form of wall is preferable, in many cases, to the old, as combining greater strength with a less section, and being more convenient in other respects, and was commonly used by Rennie in his various works, when applicable. To whom the introduction of this improved form of wall is due it is difficult to ascertain with accuracy; but Rennie, Ralph Walker, and Jessop were amongst the first who brought it into use. A further improvement was made in the retaining walls used at Sheerness in 1815 by Rennie, where the foundation being composed of soft alluvial mud and quicksand to a great depth, more than usual precautions were necessary to render the walls substantial and secure. The object was effected by enlarging the base, and making the interior hollow, like a caisson, with the bottom in the form of an inverted dome; the outer or river face being concave, and the foundation, for a certain width, laid inclining at right angles to a tangent from the curved face of the front of the wall. The remainder of the foundation was horizontal, and the back or land side of the wall was vertical. Thus there was both a front and back wall connected together by cross walls, forming one mass; the inverted arches or domes under the hollow spaces being filled with chalk and gravel concrete, and the whole resting upon a well-connected platform of piles and cross-beams and planking. By thus distributing the same quantity of materials over a greater surface, the vertical weight per square foot was reduced, and the desired stability was obtained upon this very difficult and treacherous foundation. Rennie had previously tried with success a wall of a similar principle, and under similar circumstances, at Grimsby. General Bentham also tried a similar principle, about the same time, which was not so successful, in consequence of an unsuitable form and construction.

NOTES AND COMMENTS.

THE Liverpool Corporation, or rather the Fine Arts Committee belonging to that body, find some trouble in dealing with the claims of local artists. The hanging of the pictures sent by artists of Liverpool gave great dissatisfaction to them, and so loud was the outcry that the chairman was forced to resign. In order that there might be no allegation of favour to strangers, the Fine Arts Committee resolved to hang the local works together in two rooms set apart for the purpose. But this plan is not received with favour by the artists. They say that their works were lent on the understanding that the usual arrangement would be adopted, and treat the alteration as amounting almost to a breach of faith, inasmuch as local artists whose works are already sent in, and who, under the new arrangement, might prefer to send to other exhibitions, are deprived of the opportunity of doing so. The interpretation which the public will give to the arrangement is, according to the Liverpool Academicians, that the pictures were considered unworthy of being placed alongside the contributions of artists from other places, and accordingly they decline to appoint two members of the Academy to select and hang the local works. It is almost as difficult to have a satisfactory arrangement of pictures as a satisfactory competition. What is proposed by the Corporation should be considered as an experiment. There is no more ground for concluding that the local pictures will suffer by being placed together than for the reverse conclusion. The wisest course would be to accept the Committee's arrangements; if they are found to be unsuccessful, the Liverpool Academy can advocate a different arrangement, and it would be sure to have the support of the public.

THERE is an apprehension that the ateliers of the French Ecole des Beaux-Arts are likely to be suppressed. The Government are introducing economical reforms on all sides, and it is supposed they will decline to grant the 2,800*l.* a year which is the principal support of the ateliers. Supporters are to be found for the reform among artists. The school has become too conservative to please many minds. New styles of art are invented every year, but they find little favour from the Professors, who continue to believe in the supremacy of the Greeks and the great Italians. Sensational novelty counts for nothing in the awarding of prizes. It is also supposed that the ateliers, being almost gratuitous, interfere with the rights of artists, for students naturally avail themselves of the most economical teaching. With a large section of the public the school has ceased to be influential. There are critics who make it a rule to ridicule the pictures which are sent to the Salon by Prix de Rome men, and in this way the prejudice against the school is revived. It is believed to be as much addicted to antiquated notions as it was in the days when it was tied to the Académie des Beaux-Arts. The school may need reform like most institutions of our time, but it will be an unwise piece of policy to sacrifice, by a stroke of the pen, the ateliers which are the source of its life. What revolutionists desire is simply a place of examination corresponding with the London University.

MR. CARY-ELWES, who was declared by Mr. Justice CHITTY to be the legal owner of the ancient boat found at Brigg, does not find it easy to obtain a custodian for the treasure. The boat was offered to the British Museum and to the museum at York, but the authorities of both institutions have declined its acceptance. Enough space cannot be afforded for its exhibition. Whether it was offered to one of the South Kensington Museums has not been stated, but the possession of the boat would be sure to be made an excuse for the erection of a new gallery.

MR. HOLMAN HUNT, in his last letter on the reform of the Royal Academy, offers the following suggestion:—As in all social disorders, he says, the first question to put is how the franchise is vested. It is agreed on all hands now, except by those interested, that the system of election from within is a vicious one; in this case I think it is the cause of the evils which are generally regarded as unbearable. Election from without seems to be a necessary change; if so, there is only the question of duration of office. I propose this should be for a stated period—say seven years—and then retirement from duties or re-election. This could scarcely be objectionable; if so, it will not be difficult for all to come to accord on vital questions. If the French system of selecting a hanging committee is found to work badly, it will not be difficult to modify it. My aim in proposing it was to save the members this trying and thankless labour—in part or in whole—when they will have so many to fulfil on which the future of art will more depend.

THERE are independent artists and ultra-independent artists in Paris, and they hate each other as sincerely as they hate the Committee of Selection of the Salon. The two bodies have been allowed to hold exhibitions in the temporary buildings which still occupy a part of the site of the Tuileries, and both were opened on the same day. This is the first year of the rivalry which will not serve interests that ought to be in common. The independent exhibitions were patronised because the French public have not such a blind faith in the rulers of the Salon as in England is felt towards the Royal Academicians. They know by sad experience in France that if any set of men are entrusted with power, and without any checks, they are sure to abuse it. So every year people run in quest of the few works worth notice which are to be found amidst a good deal of rubbish. It is some sacrifice to go through one of those exhibitions, but the toughest art critic would recoil if he were compelled to face a pair of them.

THE people of Kidderminster have found a difficulty in determining the best form of a memorial of the late Earl DUDLEY. His lordship was not endowed with the form that sculptors admire, and a statue would, therefore, have to be of the ideal kind. Besides, a good deal more money would be necessary than is likely to be collected among the Earl's admirers. A financial obstacle was likewise in the way of founding a science scholarship, which is one of the latest modes of memorial raisings. An oil painting was also over-expensive, unless it was of the coloured photograph class. In the end, an architectural work, from its cheapness, was deemed to be the most eligible. A DUDLEY cloister is to be added to the parish church. The subscriptions promised amount, it seems, to 120*l.*; but there are fears that all will not be paid in cash. We suppose it is intended to proportion the number of arches to the amount received, and hence the suitability of a cloister, which is considered to be rather elastic in admitting of extension or contraction.

THE last report of the Committee of Privy Council on Education states that up to April 1, 1886, the committee had sanctioned 6,459 loans, amounting to 18,452,556*l.* 15*s.* 1*d.* to 1,765 School Boards, by means of which new accommodation will be furnished for some 1,489,729 scholars. The estimated cost per child is thus about 12*l.* 7*s.* 8*d.*, but the amount of the loan applied for is generally in excess of the sum eventually spent. In the twelve years ending December 31, 1882, building grants to the amount of 312,200*l.*, have been paid by the Education Department on the completion of the erection or enlargement of 1,572 voluntary schools and 933 teachers' residences, affording new or improved accommodation for 280,146 scholars. These grants have been met by local contributions to the amount of 1,348,169*l.* The average cost of erecting voluntary schools, with residences for the teachers, has been about 5*l.* 7*s.* per scholar. This includes, as a rule, the value of the sites, very often given gratuitously in the case of schools of this class. The great majority of the remaining 4,747 voluntary schools, with seats for some 1,239,000 children, which have come under inspection since 1870, have been erected, enlarged, or improved, without Government aid, at a cost to the promoters of at least 6,000,000*l.* It is generally calculated that school seats should be provided for one-sixth of the total population. For the estimated population of 1885 (27,499,041) the returns therefore ought to show a provision of 4,583,173 school places. The actual supply (4,998,718) is somewhat in excess of this; but it is not evenly distributed throughout the country. In most counties the seats are now in excess of one-sixth of the present population.



Lucien Gautier, del. et sculp.

An Etching from "L'Art."

NOTRE DAME FROM THE P

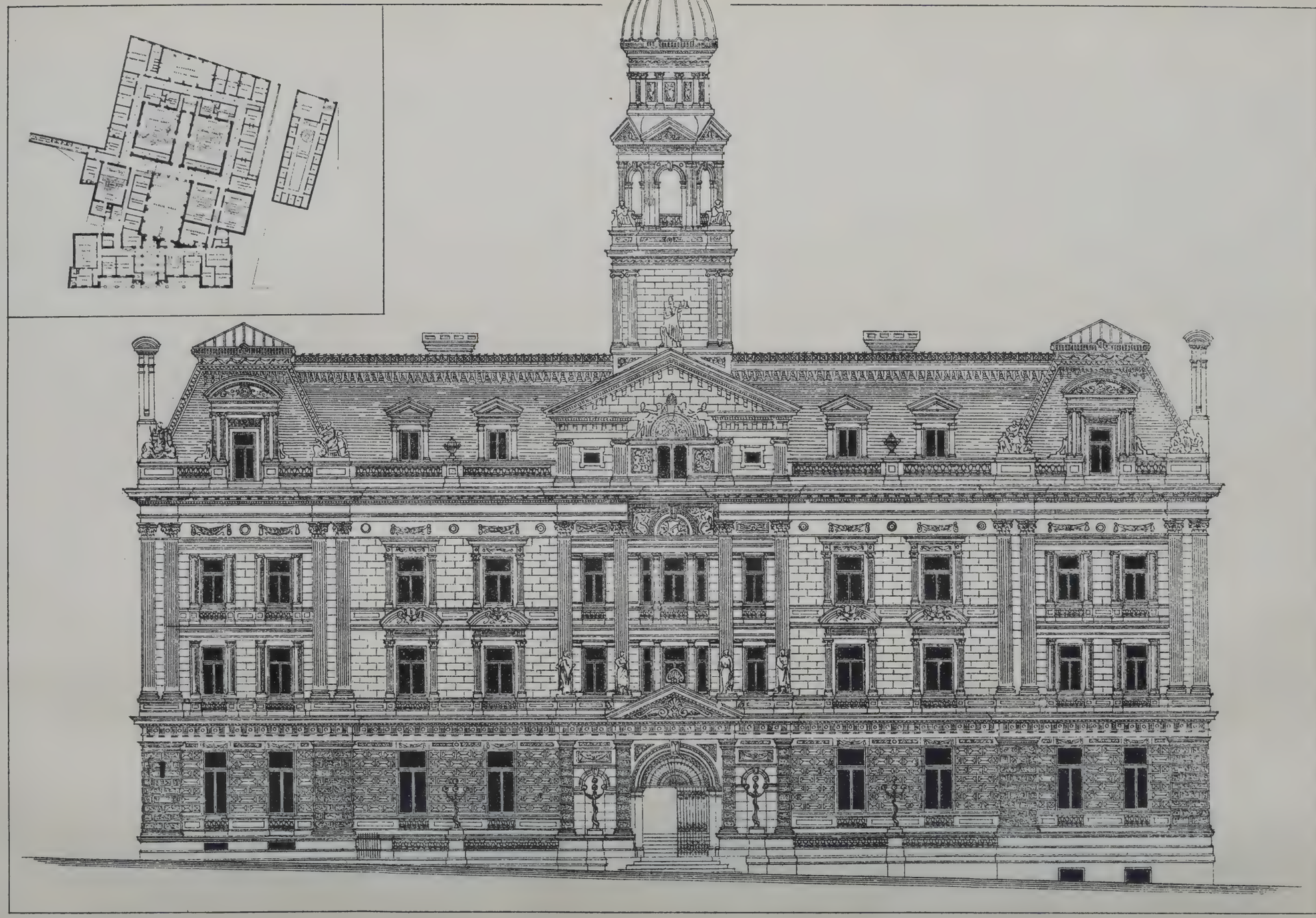
Printed by Sprague & Co.

ug.27th.1886.



T DE L'ARCHEVÊCHÉ, PARIS.

Lane. Cannon St. EC



Spottiswoode & Co. Lith. London

Design for Assize Courts, Birmingham.

By E. W. FAREBROTHER, F.R.I.B.A.

The Architect Aug. 27th 1886.



"INK-PHOTO." SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

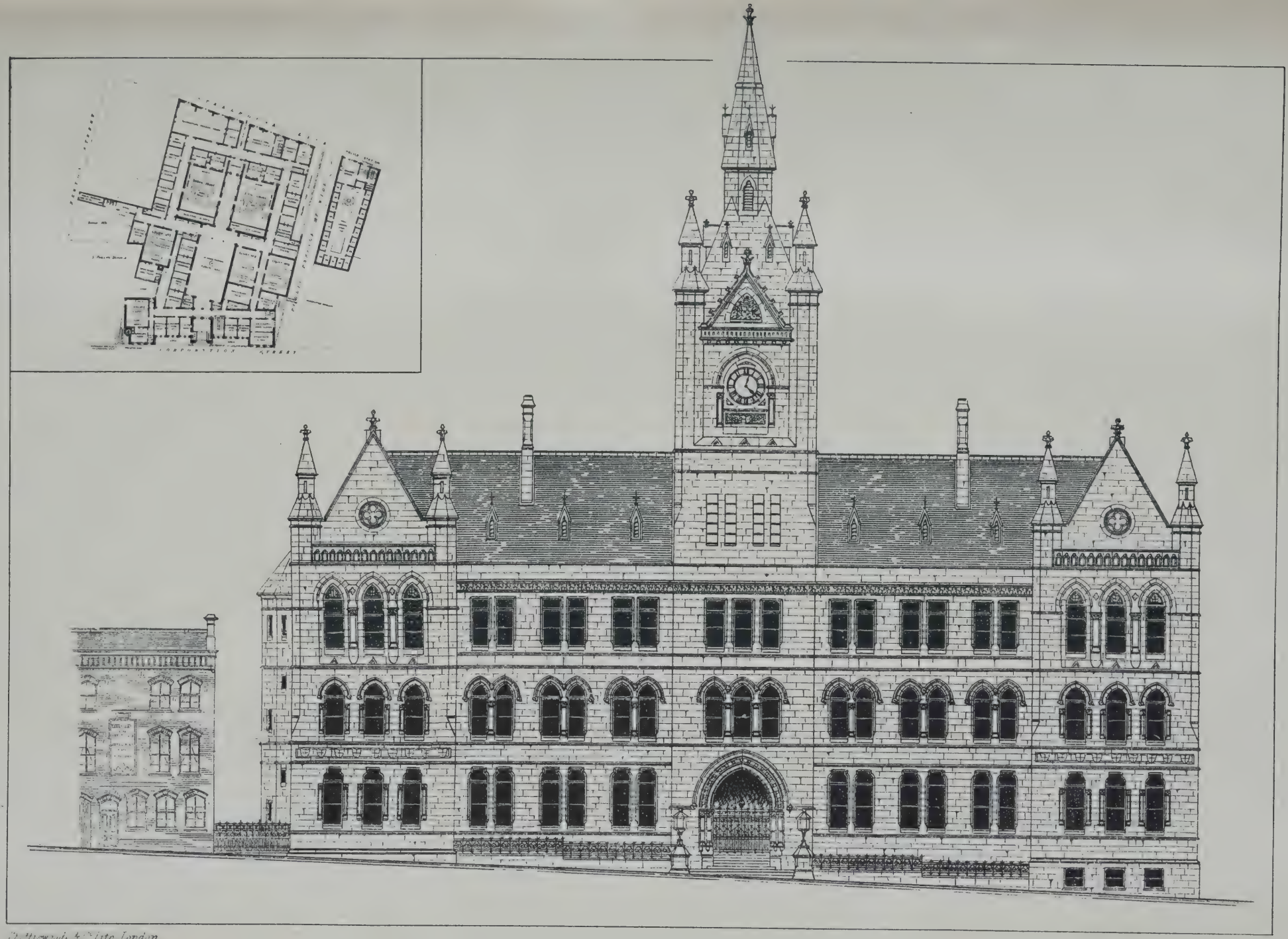
A CASKET, BY WILLIAM G.B. LEWIS, ARCHITECT.

The Architect, Aug.t 27th 1886.



INK PHOTO. SPRAGUE & Co. 22, MARTINS LANE, CANNON ST, LONDON, E.C.

A TRINKET TRAY, BY WILLIAM G.B. LEWIS, ARCHITECT.



The Architect Aug.t 27th 1886.

Hanhewood & Tate London

Design for Assize Courts, Birmingham.

By Messrs. G. B. NICHOLS & SON, Architects.

ILLUSTRATIONS.

NOTRE DAME, PARIS, AND THE PONT DE L'ARCHEVÊCHÉ.

IT would be strange if a publication like *L'Art* omitted the utilisation of the opportunities offered by the streets and buildings of Paris as subjects for illustrations. M. Lucien Gautier has produced a great many of the views from the city, one of which we give to-day. It shows the east end of Notre Dame, with the Pont de l'Archevêché. On the right is the Morgue. The Pont de l'Archevêché was constructed in 1827, and is a type of the flat segmental arching generally adopted by French engineers. The span of centre arch is 55 feet 8 inches, and each of the side arches is 49 feet 2 inches. The bridge was subject to a toll up to the time of the Revolution of 1848. The public garden enclosed by trees behind Notre Dame was the site of the archbishop's palace—hence the name of the bridge and quay. The building was destroyed in 1831.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 19. A CASKET.
NO. 20. A TRINKET TRAY.

THESE form part of a toilet set, designed by Mr. W. G. B. Lewis, architect. The casket is divided into three panels longitudinally, the centre panel representing a betrothal, in allusion to its being a marriage gift. The figures are in relief and enamelled. The side panels are filled with ornament, having jewelled foliage, surrounding antique cameos. The cornice is enamelled with translucent ruby enamel, the curved top is covered with scales in different coloured enamels, heraldic achievements in relief occupy the ends. The trinket tray is formed out of a nodule of agate, its carved ivory stand, representing trunks of trees, is overlaid with woody nightshade, having enamelled leaves, flowers and berries. The dragon which has climbed the back of the tray and guards the treasures is covered with green enamel.

The drawing from which these illustrations are taken was exhibited this year at the Royal Academy. It is, however, not possible in a monochrome to give any idea of the colour, upon which the general effect depends.

DESIGNS FOR THE ASSIZE COURTS, BIRMINGHAM.

WE publish this week two of the designs which were submitted in the recent competition. One is by Mr. E. W. Farebrother, F.R.I.B.A., Victoria Chambers, Great Grimsby, and the second is by Messrs. G. B. Nichols & Son, of 49 Queen Victoria Street, E.C., and Birmingham.

RESTORATION OF CHURCHES IN VENICE.

THE relative importance of the great restorations of St. Mark's and the Doge's Palace has, says a correspondent of the *Times*, so occupied the minds of the few who are really interested in the preservation of Venetian architecture, that some important pieces of work, already complete or nearly so, are unnoticed. Among these is the lovely Renaissance church of the Miracoli, which has been completely renovated and, *me judice*, in excellent taste, the coloured decorations being freshened, the beautiful pavement repaired and renewed, and the old altars restored to their original positions, while the sculptured marble ornamentation, being under shelter, has had no need even of cleaning, and the church has probably very nearly the appearance which it had when new.

The policy of renovation of the old architecture where the state of decay has rendered reparation necessary, is one which is very much a matter of taste. In the church of St. Mark's all the new marbles introduced to replace those which were no longer retainable *in situ* have been left in the state of freshness which newly-worked marbles must have, and this excites the ire of the enemies of restoration, who are vexed by the rawness of the stone. The Ducal Palace is restored on the other plan of giving all the new stones the appearance of old, to keep the unity of the building, and this exasperates the anti-restorationists as an attempt to pass off for the noble old work the ignoble doings of the degenerate successors of the Doges. There is still further choice of treatment besides these two. One method is to leave the buildings to the natural effect of decay and disintegration until they become piles of ruin, from which capitals and fragments of friezes and masses of the old mosaics may be rescued and sold to American, English, or German tourists or dealers in antiquities, and of the original buildings only picturesque subjects for painters shall remain. Advocates of this treatment there are, but they probably never thought that if the successors of the builders had had the same ideas there would by this time have been no St. Mark's or Ducal Palace for them to see; but perhaps buildings of the seventeenth century erected on their sites, cleared of their ruins, or, at best, that the Ducal Palace should have been reconstructed in the end of the sixteenth century, when Da Ponte saved it from demolition by temporary disfigurement. The other, and, so far as I can see, only remaining alternative, is to replace broken and unserviceable stones by others in the rough, so that the untrained eye need not mistake the new for the old.

In seeking to compel the guardians of the architectural treasures of Venice to adopt one or the other of these systems the malcontents must remember that the entire tradition of Venice is one of repairs, and that every generation has left something of its sign manual in the great buildings of the State. If the renovator is a desecrator, then there is little but desecration now left. St. Mark's stands over an older church, and the Ducal Palace replaces two, while the entire arcade of the south and west sides was added to a building a century older. Many of the finest old churches must have been swept away to be replaced by monstrosities like St. Moisé, or the Jesuit churches, which are everywhere a stigma on Christian architecture. The present spirit of restoration respects the style of every past century, and even St. Moisé is restored in its own character as a page in the history of art. The nineteenth-century Venetian architect does what his fifteenth-century predecessor did—puts his best talent in the service of the old architecture, and he has at least this advantage, that he does not pretend to supplant the old by his own original conception, but does his best to follow and preserve all the traces of the original workers, restoring Gothic as Gothic, Romanesque as Romanesque, and Renaissance as Renaissance. All that any age can do is to give the best, and this is giving its best to the preservation for posterity of what time and decay have permitted to reach us.

Where the autographic quality of the work is not important, as it is in the campanile of Giotto, and much of the sculpture of the Duomo of Florence and the Ducal Palace and St. Mark's, the question of renovation is purely one of taste, and an architect who is capable of restoring a church to its original richness by renovation of the old decorations, keeping the original character, is certainly entitled to general approbation. In this spirit the Miracoli church is restored, and most visitors to Venice will see it in the coming winter with pleasure, as one of the loveliest of the Renaissance churches of the city. The Madonna del Orto is also completely renovated within, and the gilding and colour of the capitals and ceiling restored, and I think that none but those who love art, as they do wine, the better for its age, will find this restoration *de trop*.

St. Giovanni and Paolo, with its tombs of the Doges and its huge frame of wooden ties and braces binding its brickwork together, is in process of a much-needed structural reparation, the dome menacing ruin. Behind it the chapel, where the *Peter Martyr* of Titian and other art treasures were burnt through the carelessness of the church attendants, remains as the fire left it—a warning scarcely well heeded when we see in the Frari the noble Titian still being smoked by the candles of the altar, and the most exquisite piece of Renaissance ornament in Venice, that of the tomb of Doge Moro at St. Giobbe, still trodden under foot by all who enter the sacristy. But one can hardly make the priesthood the mark of special censure for this kind of negligence when we find families living in the Ducal Palace and exposing its existence to the danger of a fire among the network of five-century-old oak timbers which makes its inner structure, and even in one of the halls under the Great Council chamber a perpetual exhibition of Venetian manufactures—a bazaar, where samples of distilled liquors and other combustibles repose tranquilly by a show-case filled with wax and other matches, &c.

Murano Church is completely restored, and, it strikes me, very well done; but as the work outside is almost entirely brick of a very good quality, washing and pointing have given it very much the air of a new church, though almost no renovation has been done.

At Torcello almost nothing is done, or was to be done, on the outside, the brickwork here too resisting, as the stone exteriors have not; but the inside is a lesson on the way in which the Church preserves its antiquities, *i.e.* not only here but through all Italy, by substituting the most vulgar and theatrical altars and altar decorations for the fifteenth century and Renaissance originals. Torcello is unique among the churches of Venice, and, so far as I know of Italy, in the arrangement of the apse, which seems to have been originally calculated for the Orthodox form of worship, as, in fact, probably all the early Venetian churches were. At Torcello the throne of the bishops was on a high platform, to which a flight of steps led, and

around in a semicircle the seats of the clergy were placed in tiers rising one above the other. In front of this must have stood a low communion table with a screen between the seats and staircase and the church at the sides. This is now replaced by an offensive seventeenth or eighteenth-century theatrical altar, with cupids and posturing angels hiding the throne of the bishop and the seats of the clergy, which, being out of sight, have been pillaged of all the casing of Greek marble which covered the brick substructure, which now appears in a state of utter dilapidation. The great mosaic which covers the wall above the doorway is admirably restored, and that of the apse is still under restoration, while the steps to the throne and the theatre around it are in process of renovation to their primitive condition in A.D. 1008, by the care of the Government of Rome. But while the high altar remains, or the only less offensive, because less prominent, side altars, no restoration will give an adequate idea of the original church.

The adjoining church of Santa Fosca—earlier, I believe, than the cathedral, and subsequently its baptistery—suffers still more by the bad taste of the clergy in altering and ecclesiastical furnishing, and here has been restoration which was destructive. The original character of Santa Fosca has long been lost beyond retrieval or complaint of the Society for the Protection of Ancient Monuments—who, by the way, have just forwarded another protest against the restoration of St. Mark's, and especially, I understand, against the levelling of the floor. As, at the present moment, no one thinks of undertaking that very considerable work, or has proposed it, as it involves taking up the entire inner area of the church and removing the bases of the piers of the old church, the protest is so far premature. When the time comes this work will certainly be done, and all the protests of the Society for the Protection of Ancient Monuments—which, be it observed, bears no share of the responsibility for the church or the charges for its care and preservation—will have as much and no more effect than when they were raised against the restoration of the façade. The commission for the works on the church has as much regard for it as any English society can have, and both Government and public, so far as it knows and cares for such matters, resents as intrusive and out of place the interference of foreigners, who, the Venetians say, cannot agree on the preservation of their own monuments, and are utterly unqualified to undertake the direction of the Venetians. If the society will send a competent architect here to assist the commission, I am certain he will be politely received and listened to; but long and wordy protests, in English too, like that just received, made by people who know nothing of the matter, and have no concern with it, would not, *mutatis mutandis*, be received with politeness by Englishmen from Italians, and are simply postage and labour thrown away.

Before leaving this subject, however, I must say that the Municipality of Venice deserves very little of the commendation I have given the Italian Ministry of Instruction. It is continually allowing monuments of historical importance and the highest local interest to be taken from house fronts and courts, and sold abroad. Just now the relief over the door of the old Convent of St. Domenico, founded by Doge Marin Zorzi, and the last remaining street monument of old Venice in this quarter, has been sold by the proprietor of the house, and will probably follow many others abroad. If it were on a church or in a convent the Ministry would save it, but as it belongs to the city of Venice it has no protection. The aggregate incompetence, indifference to the general good or the public decorum of the municipalities of Italy, with two or three notable exceptions, is doing more to check the prosperity of Italy than the mistakes of the Ministry or the irregularities of the national officials. Municipal government is not understood even in the great cities, while in the small communes the councils are simple machines for private emolument. But in Venice, after eleven centuries of doges, we have a right to expect that the municipality will know how to protect the city from the speculators.

EXCAVATIONS AT JERUSALEM.

AN account is given in some Vienna and German papers of excavations made by the French Dominican monks at Jerusalem on some land which they have lately acquired, about a furlong and a half outside the Gate of Damascus. Six mètres below the present level of the ground the workmen came on some arches of considerable extent, the walls of which had been very carefully built. At a short distance they found the basement of a chapel, before the entrance of which there was a tombstone covered with a long inscription. Unfortunately, this stone was stolen before any one thought of copying the inscription, and no trace of it could be obtained. About the middle of their property they found a large well-preserved mosaic, and upon the space all around being cleared the bases and other remains of great pillars were discovered. It is presumed that this is the site of the great basilica built in the fifth century in honour of St. Stephen by Eudoxia, the wife of Arcadius, the first of the long line of Eastern emperors. Still more remarkable is the discovery made just on the boundary of the estate. While digging the trench for the foundations of the boundary wall which the Dominicans wished to build, the ground gave way, and one of the workmen disappeared. On clearing out the place they came on a large and beautiful hall which had been cut out of the rock; where the rock failed the gap was filled by admirable masonry. From two of the sides two large doorways led into two vaulted tombs, all of equal size. On each side of the vault there was a resting-place for one coffin, and at the end opposite the entrance places for two. At the furthest end of the great hall a passage led to another excavated vault, in which stood three great covered sarcophagi. It is suggested that these sarcophagi contain the remains of Helena, Queen of Abiadenos, and her sons. The quantity of bones found in these chambers was very great. In the middle of the great hall, in a hollow specially prepared, a sort of long metal box was found. It was adorned with representations of children holding garlands up on high. Unfortunately there was no inscription, nor anything which could furnish a clue to the period or the purpose of these sepulchral chambers.

THE CHESTER HYPOCAUST.*

BY way of preface to a description of the hypocaust discovered in June last, the author regrets that owing to the difficulty of obtaining correct dimensions, the filthy state of the soil, and other causes, he is prevented from giving to the Institute a paper fuller than the title implies. The author feels honoured, however, by the request to lay such information that was by any means obtainable before this meeting. In June last the work of laying a connecting sewer from the intercepting sewer on the Roodee to drain Black Friars and its district commenced. Having formerly discovered the interment supposed to be Roman near this line on the outside of the Walls some years ago, the author felt sure that the further opening of the neighbourhood would yield other proofs of the Roman occupation of this city. Proceeding onwards from the Roodee, the excavations passed through the clay under the City Walls foundation opposite the house occupied by Mrs. Blackburne, near the centre of the roadway, at a depth of 13 feet below the present surface, the remains of a hypocaust, more or less in a good state of preservation, was discovered. The drawings, now exhibited for the first time, show in some measure the form and arrangement so far as could be seen. The western and eastern walls measured 2 feet 9 inches at the top with a slight batter, the eastern wall having a slight batter and set-offs, and having under strata of clay. The concrete floor, several pillars, and a specimen of the masonry were cut out, and are now deposited at the Grosvenor Museum by the Town Council. To a practical man's eye this masonry approximates in many respects to several portions of our City Walls. No trace of bonding tiles was found, though the masonry was enclosing so large a number of tile pillars. The form seemed to partake of that of a chamber with a semicircular end facing west. The internal dimensions of this chamber on the longest line exposed to view, and from west to east, measured 9 feet 8 inches. The width could not be ascertained, the trench being only 2½ feet wide, and the probing under being attended with danger, owing to the superincumbent mass of filling-up stuff and the wet mud at the bottom. Keeping to this longest line, on which there were the remains of twelve pillars, a series of four supported for a distance 5 feet 3 inches a concrete floor, in splendid condition, 6 inches thick, varying to 7 inches. These pillars also rested on concrete, the under portion being of loose material, then came the clay under all. These supporting pillars were found in a perfect state, the remaining ones, as said before, being more or less destroyed, but ample portions of them were left to identify their original position. The upper floor concrete had at the distance named a square-worked edge, and seemed to have been stopped originally at this point. Large tiles abutted against the same, but little trace of these was found. The tiles forming a pillar were ten in number, the base or foot tile being 10½ inches wide, 16 inches long, 2 inches thick; then came seven shaft tiles 8 inches square, then under cap tile 12 inches square, 1½ inches thick; upper cap tile 17 inches square, 2 inches thick, and the concrete floor supporting tile from pillar to pillar, 2 feet square. All these were bedded on each other with mortar. It may be important to mention that the pillars found adjoining the walls were composed of stone slabs, cut as nearly as possible to the form, dimensions, and thickness and number of the tiles in the pillars. What on earth this extra labour was given to cannot be imagined. Broken flue tiles were also found in the filling-up stuff here,

* A paper read at the meeting of the Royal Archæological Institute, by Mr. I. M. Jones, city surveyor.

and a flue tile was removed by the author, which stood vertically near the last wall pillar—whether in its original position could not be verified. Bones, tiles, and coins were found during the course of the excavation, and a tile with an inscription, which may hereafter prove most interesting, was handed to the curator of the Grosvenor Museum. A curious point may also be named, that the level of the bottom floor of the hypocaust is 40 feet above ordnance datum. Corresponding with the present level of the street at the Watergate, not many yards distant, the present Roodee is 21 feet below this floor, and the present parapet wall some 14 to 16 feet above the floor. The City Wall is distant 21 yards from the semicircular end, and it is to be regretted that this discovery was not made at an earlier date and before the opinions had been formed as to possible extension of the Town Wall at a later time, as the centre of the hypocaust is shown to be distant about 12 or 15 yards only from this mythical or imaginary wall. The remains were examined *in situ* by the Lord Bishop of Chester, the Very Rev. the Dean, Alderman Charles Brown, and many local archæologists and visitors. Leaving the hypocaust, further along the trench a series of excavations had been made, leaving cone-like mounds of clay with mud between. This may be a subject of further discussion. The author has only touched on the fringe of the subject, hoping by discussion of the facts the truth may be elicited. The Very Rev. the Dean supports his suggestion that further excavation be made with permanent entrance at this point, as the necessarily imperfect exploration and covering up again leaves certain matters open to doubt. Thanks are due to Mr. Meacock, draughtsman, and the Corporation employés for their strict attention to his directions, the author believing that a due acknowledgment to practical men, whether professional or artizan, for any help given will lead to stubborn facts being more extensively obtained and circulated, and so get rid of imaginary ideas and surmises. This duty of giving credit where credit is due has not always been performed locally, and the author cannot forbear taking this opportunity of mentioning it. In conclusion, the Town Council, in this as in all other matters connected with the archæology of the town, have liberally seconded the author's efforts by allowing the investigation to be made so far as was consistent with due progress of the work in hand.

FIREPROOF CONSTRUCTION.

A FIRE occurred lately in the factory of Messrs. Henry Cooper & Sons, in Roden Street, Nottingham. Fortunately the Dennett system of fireproof construction had been adopted in the building, and, in consequence, there was as little structural damage as was found after the great fires at the Haymarket Stores in 1881, and at Messrs. Bartram, Harvey & Co.'s premises, Staining Lane, E.C., in 1883. In the latter case, but for the efficiency of the system, there must have been as great a destruction of property as followed the Wood Street fire.

In a leading article in the *Nottingham Express* we find the following commentary on the manner in which the Dennett system withstood the fire :—

The fire which occurred in Messrs. Cooper's mill quite recently bears adequate proof that the system is all that it claims to be. Our readers will doubtless remember that during the night of July 29 a fire broke out on the fourth floor of the factory. The fire raged with great fury for some time. That the heat during the time the fire was in progress was intense may be gathered from the fact that the glass in the windows was fused, one or two thick iron shaftings were twisted with the red heat, whilst two or three valuable lace machines appeared as if they had just passed through a fiery furnace. But notwithstanding the terrific heat, the board flooring was hardly damaged, whilst the concrete ceiling above received no damage beyond being discoloured by the volumes of flame and smoke which, aided by a strong draught of air from the open door, rushed along close to the ceiling and belched forth from the broken windows. An inspection of the room above, however, will show the fireproof qualities of Dennett's system, even more strikingly than in the room below. In this top storey was stored a large quantity of light and combustible material besides some delicate lace machinery, but not a single thread in the whole room was even singed, and this is truly wonderful considering the fierce heat which was raging within 4 inches of paper parcels containing valuable laces. The origin of the fire will perhaps never be really known, but it is firmly believed to have been the work of an incendiary, because afterwards, we are informed, bits of firelighters, &c., were found in various parts of the room. If this is so, then the person made a woeful mistake, for it would be next to impossible—if not practically impossible—for the factory to have been burned down. What the consequences would have been had it not been fireproof it is not easy to say, but it is almost certain that the building itself would have gone, whilst those most intimately acquainted with the premises hold that the surrounding factories would have been fired as well. Thus here is an instance of the prevention of what might have been the most disastrous fire that had ever happened in Nottingham simply through the flames being unable to find their way through the fireproofing of the room in which they originated. As it was, however, there could not be the possibility of a fire of such magnitude. This particular fire has established beyond doubt the fact that in a building having such fireproof floors an outbreak of fire can be confined to the room or storey in which it originates, and those of our readers who are owners of large buildings would do well to visit the scene of the fire in Roden Street, where Mr. Henry Cooper will with pleasure allow them to judge for themselves upon the efficacy of Dennett's system. Certain it is that if buildings of this description were more common there would not be the number of serious fires there are, and in these days when insurance companies are chary in issuing premiums it would indeed be better for all parties were this fireproof system introduced not only into all mills, factories, warehouses, workshops, but public buildings and private houses of all descriptions. The great number of important buildings upon which the patentees have been employed during recent years, and the extensive and continued use of the system of fireproof construction by the most eminent architects of the day, afford the best guarantee of its excellence.

The *Nottingham Journal* is no less emphatic in bearing testimony to the power of endurance exhibited by the arching on the occasion :—

There can be no doubt as to the truth of the statement that the patent fireproof floors, manufactured by Messrs. Dennett & Ingle, Station Street, were put to a severe test at the fire which took place recently at Messrs. Henry Cooper & Sons' lace factory, Robin Hood and Roden Streets, Nottingham. The floors are formed of concrete, and in the room in which the fire broke out are about 18 inches thick. This depth of 18 inches is "over all," including woodwork, &c. The thickness of the Dennett arching is 4½ inches in crown, with a rise of 5 inches, there being beams below this to which machinery is fastened, and above joists which support the wooden floors of the rooms above. The chief thing noticeable as giving conclusive evidence as to the intensity of the heat is a 3-inch line shaft 9 feet distant from the floor, which is considerably twisted and contorted. A number of Lever's lace machines are also badly damaged, the iron in some of them appearing to have been at a white heat, whilst the woodwork is almost, if not entirely, destroyed. Some large iron girders in the room are twisted into all manner of forms, whilst some zinc at a distance from the floor has evidently been melted. A gas meter also exploded in the room, whilst the windows shared in the general destruction. The heat appears to have travelled along the top of the room and along a passage into a room occupied by a Mr. Priestley, a door at the entrance of which was entirely destroyed, part of the partition between the two rooms sharing the same fate. The fire was entirely confined to the room in which it originated, thanks to the floors with which the fifth storey was laid. The room in which the fire occurred was situated in the fourth storey, and the floor to the storey above acts as a preventative against the firing of the room below. In a room directly over the spot where the fire must have been the hottest, there was stored a large quantity of combustible material and delicate lace machinery, which is none the worse for the heat to which it has been subjected. The factory occupied by Mr. Cooper stands in the midst of a number of others, which would undoubtedly have caught fire, and inevitably would have been destroyed, but for the floors with which the factory in question was laid, and there is no knowing where the catastrophe would have ended. We can congratulate our townsmen, Messrs. Dennett & Ingle upon their invention, and feel sure that it will be more appreciated in future, now that its usefulness has been thoroughly tested. Fire insurance companies will be sure to make large abatements in their premiums on those buildings that are protected by it.

The following letter has been received from the proprietors of the factory by Messrs. Dennett & Ingle :—

"Roden Street, Nottingham : August 10, 1886.

"Gentlemen,—The fire which broke out on the fourth floor of our factory during the night of July 29 last, most satisfactorily tested the value of your fireproof floors, as the fire was confined to the floor on which it broke out.' The construction was evidently subjected to intense heat, as 3-inch iron shafting fixed at 9 feet above the floor was considerably twisted and contorted. On the floor directly over the spot where the heat was most intense was a large quantity of highly combustible material, and also delicate lace machinery, but not a thread was even singed. There is no doubt that if the building had not been fireproof the other two wings, and probably the adjoining blocks, would have been destroyed. In our opinion this establishes the fact that in a building having such fireproof floors, an outbreak of fire can be confined to the room or storey in which it originates.—Yours truly,

"Nottingham. HENRY COOPER & SONS."

The experience in Nottingham confirms what was hitherto known about the value of Messrs. Dennett's arching, and which has shown itself to be entitled to be considered as *par excellence* the fireproof system. In order that opportunity might be afforded to judge of the results of the fire, Messrs. Henry Cooper & Co. will allow their factory to be inspected on any day from 3 to 5 P.M.

Bygones.

"*Antiquity after a time has the grace of novelty.*"—HAZLITT.

DILAPIDATIONS IN 1807.

THE essay by Samuel Beazley, of which we gave an account last week, suggests what was thought of Mediæval architecture by a few men in the early part of the century. The following essay, which also was read at a meeting of the London Architectural Society, is interesting as an abstract of the practice in respect of dilapidations at the same period. It is no less useful now. The author of the essay was Joseph Woods, jun., the president of the society. It will be seen that among the experts who gave him advice was Mr. J'Anson, the father of the President of the Royal Institute of British Architects. We may say that, in respect of questions relating to the survey of house property, the name "J'Anson" corresponds with "Chitty" in respect of legal questions. Mr. Woods' paper was read on January 9, 1807 :—

The great uncertainty attending the surveys of dilapidations, and the very different value affixed to them by different surveyors, have made me think it desirable to endeavour to point out some standard by which one might ascertain exactly what (under the common forms of leases) came properly under the term "dilapidations," and at what rate they ought to be valued. In attempting this I have met with two important, and I fear insuperable, difficulties. The first is, that most of the cases are referred out of court, or, if decided in it, are not thought worth recording. The other, the varying opinion of the judges, who have decided in similar cases so differently, I had almost said so contradictorily, that they seem to have considered the law on this point as entirely in their own breasts. What information I have been able to gain on the subject I now venture to lay before the society, requesting their indulgence for my deficiencies. I have, indeed, done little more than arrange and collect into one view what I could find on the subject in the second edition of Woodfall's "Law of Landlord and Tenant"; but the assistance of my friends Mr. J'Anson, Mr. Savage, and Mr. Turner, who have been kind enough to communicate their observations on the subject, and especially of the latter, who has taken the pains to examine all the authorities cited by Woodfall, has enabled me to render my essay much more perfect than it would otherwise have been possible for me to have made it. Still, however, there are some points on which I cannot produce any authority, and am obliged to set down opinion instead of law. My object has always been to detail what is rather than what ought to be. The law as it now is must be in all these cases the rule of our conduct, and, even if I were able to take upon myself the office of a lawgiver, I think that the accurate knowledge of the regulations which do exist, and as far as possible of the reasons for them, is a necessary step to the understanding of what ought to be. It appears to me that my subject is a useful one, but by no means generally interesting. As, therefore, I cannot expect to amuse, I will endeavour to avoid being tedious by compressing what I have to say as much as possible.

It is sometimes the practice to begin with a definition of the terms about to be employed; my essay is little more than a definition; dilapidations are, however, taken generally, whatever at any given time in a house occupied by any other than its owner is worse than it ought to be.

The owner of any tenement, who lets it on lease to another, has a right to expect that it should be delivered up to him, at the expiration of the term, in as good a condition as is consistent with the necessary decay and deterioration produced by time; and that the tenant should make good whatever it may have suffered by accident or neglect, and that as well in what has been erected by the tenant as in what was originally demised. If the tenant has failed in this respect, he is consequently bound to pay to the landlord a sum equal to the difference in the value of the estate between what it is and what it ought to be. This, I think, is the principle on which all demands for dilapidations are grounded.

In some cases, however, it appears that the tenant has a right to remove what he has himself put up. The essay will therefore divide itself into two parts. In the first, I shall endeavour to point out what deteriorations may be legally considered as the effect of time, and what are to be accounted dilapidations; in the second, I shall attempt to explain what buildings and fixtures are the proper subjects for a charge for dilapidations, and what the tenant has power to remove.

If the lease of a house be granted for a lessee to do with at his pleasure, the lessee is not at liberty to destroy or pull it down (J. Doddridge 2 Rolls, R. 74, cites 17 E. 3, 18 E. 7); and as waste is partial destruction I think he must be considered as bound to repair.

It appears (Woodfall 312, 2 Atk. 383) that a tenant for life shall be obliged to keep tenants' houses* in repair, even if he be such, without impeachment of waste, and the same takes place with a tenant at will; for the tenant ought, in justice, to restore the premises in as good a plight as they can be, consistently with such deterioration as is unavoidable; but a yearly tenant (and by consequence a tenant at will) is bound only to tenantable † and not to lasting repairs.

If no covenants are inserted in the lease (Woodfall, 312), the common covenants to repair, maintain, and uphold are always implied, and the lessee is as much bound by them as if they were expressed.

If these covenants are expressed the tenant is bound to keep the premises in repair, and if he should neglect to do so, the lessor, at the end of the term, may claim a sum of money for that purpose.

Whatever injury the tenant has done himself, or permitted to be done by others, to the premises, whereby the estate of the lessor is diminished, is clearly a dilapidation, and chargeable as such; whatever injury has taken place by accident is also a dilapidation.‡ It remains to consider the injuries occasioned by neglect.

The rule to be observed in determining what injuries are dilapidations, is that fair wear, without accident, is not a dilapidation; but that wherever there is any degree of accident, it is one. The difference between "accident" and "wear" appears to be that the latter takes place gradually and insensibly, the former suddenly and perceptibly; thus the nosing of a step may be quite worn away, and it shall be no dilapidation; but if from any cause whatever the nosing have been broken away, instead of worn, it is a dilapidation.

Perhaps this definition may be thought to leave too great a latitude to the word "accident," as it includes circumstances that occur without any apparent reason for their happening at that particular time rather than at any other; thus, if the timbers of a floor decay, the floor will perhaps give way at a time when there was no particular stress upon it; yet I think common language will justify me in terming such a circumstance an accident; and, besides, it appeared that I could express myself more clearly and concisely by using the word in this manner. Wherever accident has taken place, not only the accident itself is a dilapidation, but all injuries arising to the building therefrom. I believe I shall be better understood if I mention a few particulars.

If a building be covered by weather-boarding, and the weather-boarding decay by age, as long as it forms an entire and complete covering it is no dilapidation; but if it be broken or fallen down in any part it is a dilapidation; and if, owing to a neglect of repairing it, any internal work be injured, this injury is a dilapidation, although no further accident take place, for it is a consequence of the first accident. If a timber decay, supporting any part of the house, it is not chargeable as a

* In the case cited, Lord Hardwicke overruled an exception to a master's report, by which a tenant for life without impeachment of waste was charged with several sums for the repair of tenants' houses on the estate. No authority is cited for this doctrine, and it rests entirely on Lord H.'s dictum, and it would, probably (if it be law), only hold where leases had been granted, and not where a tenant for life, without impeachment of waste, had suffered a mansion house, &c., to fall to decay.

† Tenantable repairs extend only to the finishing, and not to any part of the skeleton of a house; they include all the work of the joiner, plasterer, and glazier, but not to that of the bricklayer and carpenter; stopping out wind and weather are, however, included in tenantable repairs.

‡ Woodfall is not very clear on the subject of accidents by fire. He says, p. 293 :—"If a house be destroyed by tempest, lightning, or the like, which is the act of Providence, it is no waste; and the statute 6 Anne, c. 31, enacts that no action shall be prosecuted against any person in whose house any fire shall accidentally begin, with a proviso that the Act shall not defeat any argument between landlord and tenant." Again, p. 326 :—"At common law lessees were not answerable to landlords for accidental or negligent burnings; then came the statute of Gloster, which by making tenants for life and years liable to waste without any exception, consequently rendered them answerable for destruction by fire;" but now, "6 Anne, c. 31, the ancient law is restored, and the distinction introduced by the statute of Gloster, between tenant at will and other lessees is taken away; for, &c., &c." Yet, he adds, p. 327 :—"An exception of accidents by fire is now in many cases introduced into leases to protect the lessee, who would, as we have seen, be liable to rebuild in his covenant to repair." This is evidently contradictory, but it is now fully decided that the covenant does extend to all accidents of that nature.

dilapidation as long as it continues a sufficient support; but if it give way the tenant is bound not only to replace the timber, but also to repair all the damage done by its fall.

In external coverings the law seems somewhat stricter against the tenant than this rule would require, for if anything decay for want of attending to the coverings it is to be considered as a dilapidation, even if no accident can be supposed to have taken place.* I am not aware that this applies in any case except in that of paint; but I believe any decay arising from the neglect of painting is a dilapidation, but the paint itself is not one, unless by the covenant the lessee was bound to do it.

In one other trifling case the rule here laid down has an exception, which is in favour of the tenant: broken glass is not a dilapidation, according to some surveyors, unless there be more than one crack in the pane; or, according to others, while it remains sufficiently entire to exclude wind and weather; the first rule has the advantage of being the most precise, the latter of being the most reasonable. With this exception (and that of the neglect of covering before mentioned) the rule appears to be, as above stated, that wherever accident takes place it is a dilapidation, but where the one does not occur, no charge can be made for the other.

Having ascertained what are dilapidations (with respect to the premises acknowledged to be part of the landlord's estate) it remains to say a few words on the value of them as chargeable on the lessee at the expiration of his term. It appears that the tenant was bound to keep the tenements in repair to a certain degree, but not to deliver them up as new. He was not, therefore, bound to use new materials, but only to leave the house as good as it would have been had no accidents happened, and the coverings been properly attended to. All, therefore, the lessor can claim is a sum sufficient to enable him to effect this purpose. That the lessee had an opportunity of doing it at a cheaper rate than the lessor is of no consequence, as by permitting the term to expire he has lost that opportunity; nor is it of any consequence to the tenant whether the money so demanded is applied, or intended to be applied, to the repair of the tenement; or, indeed, whether the tenement be in a situation in which it can be repaired with advantage; he was bound to give up, at a certain time, something of a certain value, and if that thing be of less value than it ought to have been it is just that he should pay the difference.

But as it is not easy to decide what is the market price of old materials, it becomes necessary to refer to that of new as a standard, and as the claim of the lessor is greater in proportion as the premises have had less wear, it will not be just always to preserve the same proportions. If, for instance, a new house have been leased for six years, the owner may reasonably expect that no part of it should be much the worse for wear; whereas if it had been leased for sixty-six years, a considerable general decay must necessarily have taken place. Thus much must be left, ultimately, for the judgment of the surveyor; but I think that hardly any case could justify a demand of more than three fourths of the new value, and that none would occur in which one-fourth might not be fairly demanded. A covenant to leave the house in as good a plight at the end of the term as when the lease was made, appears to be no stronger than a common repairing lease.†

I now come to explain what are, and what are not, subject to dilapidations. It is evident that whatever the tenant has power to remove during the term cannot be justly chargeable with dilapidations: for if it be acknowledged that by leaving them at the end of the term he relinquished his right to them, yet the claim of him in reversion can only take place at the time they are so left, and he must take them such as they are as a gift from the tenant. If, therefore, we can ascertain what may or may not be moved, we shall also ascertain what are and what are not subject to claims for dilapidations.

The old rule is, that whatever is built upon the ground or affixed to the building are fixtures, and I believe it will be best to consider this as the rule now, and to enumerate the exceptions. All that the tenant received from the lessor he is certainly bound to restore in as good a plight as may be; all that he builds or puts up himself, that is fixed, he is also bound to yield up in good condition to the lessor. But over what is not fixed the lessor has no claim. Thus the lessee may erect barns, or sheds, or any building upon wooden blocks lying upon the surface of the ground, and take them down if he pleases without putting up anything else in the place; but if the barns are fixed into the ground they become the property of the lessor. The first exception is, that all buildings erected for the purposes of trade are removable; thus not only ovens and coppers may be taken away, but workshops and manufactories may be removed, provided they were erected for that purpose merely. This exception seems at first only to have been in favour of wooden buildings; but Lord Kenyon observed, in the case hereafter mentioned, that a brick chimney would not prevent a tenant from removing a building, and decided that its being on a brick foundation would not do it; and though his opinion was not followed by Lord Ellenborough, yet that judge did not decide on the cause before him that the tenant had no right to remove the buildings because they were of brick, which was the case, but because they were erected for the purposes of agriculture, and not for those of trade. In the case alluded to as decided by Lord Kenyon, the tenant was permitted to take away the buildings he had erected for the purposes of agriculture, though there was an express clause in the lease that all buildings made by the tenant should be left at the expiration of the term. But it is to be observed that, though the subject was agriculture, Lord Kenyon talked of nothing but trade, not attending to the distinction maintained by former and subsequent judges; and his opinion was in consequence neglected by Lord Ellenborough in the decision of an after case of the same nature, who observed, at the same time, that the cause just mentioned had not undergone the subsequent review of Lord Kenyon and the rest of the court.* But as it is perhaps impossible to draw any exact line between the purposes of agriculture and those of trade, as the barns of the farmer are as much intended to keep the corn for sale as the warehouses of the merchant, it is not to be wondered at if the decisions are not always consistent in this point.

This is the only exception with regard to buildings; but of what are called fixtures, many are now permitted to be taken away which were formerly considered to make a part of the house. "Marble chimneypieces may be removed, and partitions," and even wainscotting, if it have been put up with screws. It is to be remembered that in all cases the lessee is obliged to leave the premises in as good condition as if his improvements had never taken place. Thus, if he pull down a wooden chimneypiece and put up a marble one, he is bound, on taking the latter away, to replace the former, or one of equal value. If he put up a partition and take it away again, he must repair any damages which the adjacent work may have suffered by that means, and with this restriction, I believe, almost all fixtures may be removed during the term unless there are express covenants to the contrary.

REVIEWS.

Fantaisies Décoratives par Habert-Dys. Paris: Jules Rouam. London: Gilbert Wood & Co.

French artists receive such a sound training that it is not difficult for them to imitate the characteristics of diverse styles. No sooner did Japanese work become popular than a Franco-Japanesque style was produced, and it was as true in its way as Neo-Grec in architecture. M. Habert-Dys has often embellished the pages of *L'Art* with borders, head and tail-pieces, which show a most exquisite fancy in dealing with the things which are the elements of Japanese decoration. But he was restricted in scope, as it was necessary to keep his design subordinate to the printed matter, and he had not the advantage of colour. In the "Fantaisies Décoratives," which are now in course of publication, the artist is able to do more justice to himself. In these plates, M. Habert-Dys enters boldly into competition with the Japanese ornamentists. He can draw birds, flowers, fishes, insects, with as just a recognition of natural qualities as they can, but he has more science, and when he introduces the human figure or a bit of conventional ornament he surpasses the eastern artists. It will be said

* I have been inclined to doubt, from the expressions of Woodfall, whether in dilapidations arising from neglect of coverings the coverings themselves were to be estimated as such. His words are these (Woodfall, 293, Co. Lit. 53-4, and notes):—"Waste may be done in houses by pulling them down, or suffering them to be uncovered, whereby the rafters and other timbers of the house are rotten, but the bare suffering them to be uncovered, without rotting the timber is not waste: so if a house be uncovered when a tenant cometh in, it is no waste in the tenant to suffer the same to fall down." I have added the last words to show that the expression "the bare suffering them to be uncovered" does not mean to "remain uncovered" but to become so. But the decisions of the courts and the practice of surveyors are decidedly averse to such an interpretation.

† Woodfall, 325 Fita Abr. T. cov. it f. 42 Esp. R. 590.

* In a case lately tried at Guildford before Judge Grose, The City of London *v.* Varnham, an attempt was made to establish a difference between buildings which could be used only for the purposes of trade and those which, though built and used for trade, were yet convertible to the purposes of agriculture. Varnham had erected and removed buildings of both descriptions to the value of 1,400*l.*, of which those which might be used as barns or granaries were estimated at 1,000*l.*, and for this sum the action was brought; but though the amount was not disputed, the jury gave a verdict for only 300*l.*, thus fluctuating between two opinions, and deciding in a manner irreconcilable with either. I have not, however, complete confidence in my authority as to particulars, and there may perhaps be some important inaccuracy in this statement. At any rate, so arbitrary a distinction, and an inconsequent verdict, can hardly be pleaded as a rule for future decisions.

perhaps that M. Habert-Dys cannot sufficiently forget himself, and therefore cannot have the Japanese *naiveté*. But that is a compliment to him. His work is like a free translation into the purest Paris French of some of the old legends. There is no use in exactly imitating a piece of Japanese work, for the original is sure to be better than the copy. What M. Habert-Dys does by close study (aided by an affinity of nature) is to inflame himself with the spirit of the old artists, and to design while under its influence. We trust that we shall not offend enthusiasts by saying there is no *soupçon* of barbarism in his designs, and that in all his forms there is a daintiness of execution which is enough to excite envy in any Japanese workshop. The artist has been true to the title he gives his work. All the plates are fantastic and decorated. Thus, in his first number, he starts with a hand-screen, which has for subject a troop of geese crossing a foot-bridge. The composition is broken, according to Japanese canons, by a vertical band of ornament on a gold ground. In a second, which serves for a fan, there are birds on a golden ground placed against a stormy sky. A series of four panels show dogs, cats, birds, and monkeys, posed as if they were having portraits taken; while what seem to be flowers at first sight are found to be heads of the subjects. Air, earth and water are alike under the sway of the artist. Here he gives us a flight of birds in all the *abandon* of life; in another place we have a shoal of fishes, who have no less enjoyment; elsewhere a procession of mice serves as a border. Like a conjurer he takes a few insects and makes a bracelet out of them, or he puts a few fans together and we have a novel pattern for a stuff. We see a cat meditating, in a placid, philosophic way, over a group of cows, and possibly thinking of the good arrangement by which they are upheld for her food; a cow, who appears to have turned poet and to be apostrophising the sun; a lobster, who is as eager for prey as any usurer. But in none do we see a trace of the exaggeration which is so often found in the clever burlesques of M. Regamey. M. Habert-Dys has as much controlling power as invention. His fantaisies are the best of all Western attempts to work on Japanese principles, and they can be recommended as inspiriting works for designers.

SPECIFICATIONS FOR PRACTICAL ARCHITECTURE. By FREDERICK ROGERS. Second Edition. Crosby Lockwood & Co.

The collection of specifications prepared by Mr. Rogers on the basis of Bartholomew's work is too well known to need any recommendation from us. The new edition has the advantage of being offered at a reduced price. Twenty-seven examples of specifications are given, comprising all the kinds of work that are likely to occur in ordinary practice. If the book were useful in no more than one case it would still be worth what is charged for it. It is one of the books with which every young architect must be equipped, for time has shown that the specifications cannot be set aside through any defects in them.

KELLY'S DIRECTORY OF THE BUILDING TRADES THROUGHOUT ENGLAND, SCOTLAND, AND WALES. Fifth Edition. London: Kelly & Co.

The importance of the building trades in Great Britain is suggested when we find that nearly two thousand closely-printed pages are required for the names of the representatives in this new edition of Messrs. Kelly's Directory. The volume is a masterpiece of compilation, and exemplifies the perfection of the organisation in the publishers' establishment. The French "Annuaire du Bâtiment," which is supposed to be an illustration of the French system, will not sustain comparison with this English work, either in arrangement or in execution. The French paper, type, and printing are far inferior to Messrs. Kelly's. We have tested this new edition in many ways, and can bear witness to its accuracy. Changes which have occurred since the compilers went their rounds cannot be called errors. We are informed in the preface that the "whole of the names therein have been personally visited by a large staff of canvassers, and the returns made by them have afterwards been arranged by a staff of clerks specially trained to the work." Thanks to so expensive a process, the Directory can be accepted as a trustworthy book of reference. People are too apt to take volumes of this class as mechanical productions, and overlook the labour that is necessary for their production. It may, therefore, be well to mention that the names alone of the towns and villages visited fill eighty-eight columns, and the index to the building trades fills six. However small may be the village, we have a clue to the people who represent building in it. One may have only a bricklayer, a mason, or a carpenter, but if there are other trades we are sure to have them. Thus, on opening a page by chance we find it contains Crewe, the railway centre. It gives the names of the architects, brick and tile makers, builders, builders' ironmongers, building material dealers, carpenters and joiners, gasfitters, gilder, iron gate maker, lime merchants, painters, paviors, plasterers, plumbers, sawyers, slate merchants, slaters, stone and marble masons, timber merchants, window-blind manufacturers, &c. The estate agents are also given. What more is possible? The Directory is indispensable in every office where business is transacted with architects or with any of the trades directed by architects. It is creditable to the publishers that they have spared no expense on this most useful work. The execution is superior to that of the last edition.

KELLY'S DIRECTORY OF THE ENGINEERS AND IRON AND METAL TRADES AND COLLIERY PROPRIETORS. Fifth Edition. London: Kelly & Co.

This is a companion volume to the one we have just described, and is on a similar plan; but as it relates to everybody who can be said to be connected with civil or mechanical engineering, it has more variety than exists among the building trades. In some cases it must have been difficult to draw the line between engineering and building, for a good deal of work is common to both departments. The two volumes being similar, what we have said in praise of one is no less applicable to the second.

NEW BUILDINGS.

Newcastle-under-Lyme.—Extensions have been carried out at the Union Workhouse. The new structure is built of dark brindled bricks effectively relieved by bright red terra-cotta quoins and facings, and it presents a substantial appearance. The building is connected with the present infirmary and workhouse by a covered way leading to the centre of the block. The newly-erected edifice comprises male and female wings to the left and right respectively, these being connected with an administrative central block by open staircases. Each wing possesses a day ward, general wards, and separation wards for special cases. The wings have ground and first floors, and the central block is provided with an additional floor, which takes the form of children's wards. The infirmary affords accommodation for 60 adults, 6 children, and 2 nurses, with the requisite provision in the shape of surgery, stores, cellarage, &c. The separate wards in each wing are provided with all the necessary sanitary appliances of the latest construction, and also with ample bath accommodation. A little distance to the rear a mortuary and other offices have been built, and each department has an enclosed airing yard. The completion of the infirmary signalises the carrying out of the first contract. At the earliest possible moment the inmates of the old hospital will be removed to their more spacious and adequately furnished apartments just finished, and the second portion of the extensions and improvements will be proceeded with. The contractor for the building is Mr. Richard Bradbury, of Stoke, and the work throughout has been executed in a highly satisfactory manner under the superintendence of the architect, Mr. John Blood, of Newcastle.

Portsmouth.—New Prudential Insurance Buildings have just been commenced at Portsmouth. Mr. A. Waterhouse, London, is the architect, and Messrs. Stephens, Bastow & Co., Bristol and London, are the contractors.

GENERAL.

Engravings representing *Interior of the Temple of Claudius*, *Doorway of the Pantheon*, *The Coliseum*, *The Tarpeian Rock*, *Temple of Venus at Rome*—all by Rossini—and *Jacob at the Well*—after Raphael—have been presented by one of the citizens to the Aberdeen Free Library.

A Statue of life-size of *St. Winifrid*, designed by Mr. Kirby, architect, of Liverpool, has been erected at St. Winifrid's Well, Holywell, in the beautiful carved canopy which has been empty for several centuries.

A School of Art was formally inaugurated at Malvern last Friday.

A Memorial Hall for public purposes is to be erected in Pitlochry.

Mr. P. Horsman, who gave an art gallery to the town of Wolverhampton, has now offered to defray the cost of providing and furnishing the in-patients' department of a new eye infirmary to be erected on the Merridale Road.

The Earl of Fife is about to erect a public hall in Braemar for the use of his tenants and the inhabitants of the district generally. The hall will be built entirely of Mar Forest timber on a stone base.

The Memorial Stone of the church of St. Mary, Stamford Brook, W., was laid on Monday last by H.R.H. the Duchess of Teck. The church is from the designs of Mr. Chas. J. Gladman, A.R.I.B.A. The works are being carried out by Messrs. Dove Bros., of Islington.

Earl Derby has given directions for the reservation of three plots of land in Bootle, for the building of churches.

The Bilston Town Commissioners have received the report of Dr. F. W. Barry, of the Local Government Board, on the sanitary state of the town, in which the erection of a suitable hospital for infectious diseases is recommended.

The Architect.

THE WEEK.

THE Committee appointed to arrange for the erection of an Art Gallery and Museum in Leeds confined the competition to the architects of the town, and fixed the sum to be expended at 8,000*l.* That sum is insufficient if the gallery is to be creditable to Leeds. A shrine for works of art ought, moreover, to be itself an example of art, which it cannot be if all the parts are to be grimly plain. The Leeds architects are dissatisfied, as they may well be, and the Council of the Leeds and Yorkshire Architectural Association have asked the Committee to reconsider the question. But the Committee are not to be moved into liberality. They consider 8,000*l.* to be enough for a gallery, and the Leeds architects are, therefore, placed in the unpleasant position of competing under conditions which make it impossible to produce a work of art.

THERE is the usual amount of discontent about the competition for the Edinburgh Municipal Buildings. It is objected that the system of sketch designs is not adopted. But the magistrates and council must be aware that there is not unanimity among architects in respect of the advantages of a preliminary competition restricted to sketches. The Glasgow competition was not between sketches, and corresponded with what is now proposed. Still a great many architects willingly took part in the two competitions for the municipal buildings. Another objection is raised against the absence of a guarantee that the author of the first design is to be selected to carry out the work. It would be better if there was no reserve, but we must remember how influential is northern caution. Architects are familiar with the saving clause which reappears in the advertisement of the latest competition for a public building, viz, the Lewes Public Hall. The first premium is "to sink into the commission, if the architect obtaining such premium shall be employed in the execution of the work." But if he is not employed he receives only 20*l.*, and his design becomes the property of the Lewes Council. In Edinburgh 250*l.* will be paid, and practically the authorities do not assume more power over the execution of the work than the authorities of Lewes.

THE application of the Richmond Vestry to raise 30,000*l.* to purchase the plot of land near the Hill, belonging to the Duke of BUCCLEUCH, is certain to be recommended for approval by the Inspector of the Local Government Board. If the ground is purchased, it will be unwise to sell one-half of it in order that the outlay may be diminished, and probably the proposal was only put forward to subdue the opposition. It is right that one of the finest views in England should be preserved, and if it were possible the big hotel and other buildings about the place could be removed with advantage, for it is not every one who believes that the finest view is improved by a hotel in the foreground. But if Richmond Hill is of national interest, it is hard on the taxpayers of the district that they should have to pay a large sum of money to give pleasure to strangers. It is one of the cases in which the Exchequer should make advances. A few subscriptions are promised, and it is imagined that the London Corporation may offer aid, but the money obtained in that way is not likely to do more than cover the expenses of transference. The local rates will have to bear the cost of purchase.

IF the present age is in need of a title it might call itself the Age of Examinations. They are becoming so general among us that it will be soon hard to decide whether the Chinese or the English give more encouragement to the principle. We see what examinations have done for the Flowery Land, and in a generation or two England may also be able to show that it is on the way to become pedantic and obsolete. The latest adherents to the fashion are the Glasgow measurers. It would be hard to discover men who are more useful to architects and clients. But they have resolved that their successors must follow a different route towards utility. Henceforth employés in offices are to be subjected to periodical examinations by means of paper. It is not suggested that the measurers will give confidence to their assistants by undergoing any test of their own adaptability to be crammed with "science subjects." The Committee for the Federation of Architects also see that the only hope of safety for the clients of remote ages is in the application of a rigid law of examination applied to architects. An ingenuous sort of a circular has been issued in which it is proposed to obtain an Act for the registration of all persons now in practice, however incompetent any of them may be; but the Act is also to make it imperative that from that day forth new practitioners must obtain a diploma of qualification as the result of test examinations, which will be instituted by men who have not been examined. This anxiety for the future is, we suppose, to be considered praiseworthy. But is it not likely that the people who come after us will be as well able to take care of themselves as we are? If they were to be imbeciles there might be some philanthropy in providing them with architects and measurers, but if our successors have to pay the penalty for our excitement in weakened brains it would be better to make provision about the bakers of the future. The wants of our own time are enough to exhaust any wisdom we may have.

IT seems difficult by means of competition to select a measurer that can cope with refractory contractors. But what is to be said to appointing clerks of works for public buildings in that way? Formerly the surveyors were able to recommend efficient practical men for the post. Some of those clerks of works attained a high position. The War Office was never possessed of a more able chief surveyor than the late Mr. MENNIE. He entered as a foreman in 1829, became a fourth-class clerk of works in 1838, and worked his way through all the grades up to a bureau in Pall Mall. Mr. SANDS, who at one time was well known to builders of barracks, was originally a fourth-class clerk of works, and we could name many others. Under the Office of Works it was impossible for a clerk of works to become a surveyor of the first class, for more acquaintance with architecture is expected than is supposed to be possible of acquirement by any one who held so subordinate a position. But the clerks of works under that department of the public service are, as a rule, competent officers. However, *doctrinnaires* have at length prevailed, and henceforth every foreman who aspires to be a clerk of works under the Government will have to go through the ordeal of a day or two in Cannon Row. His knowledge of carpentry and brickwork may be exact, but he may find himself "spun" because he cannot tell where the Yang-tse-Kēang has its rise, or write a page of the longest words in the language from dictation. NEMESIS has not overlooked the new arrangements. We know how often the Office of Works was supposed to condemn civil architects' work because of its sanitary deficiencies. It is now asserted that the system in vogue in Whitehall Place is antiquated. The candidates for the office of clerk of works are, therefore, expected to be *au fait* with the very latest doctrines which a medical gentleman may evolve as a means of advertisement.

HOLIDAYS are becoming imperative, and apparently everything must succumb to them. They have compelled people to suspend their curiosity about the French Exhibition of 1889. M. LOCKROY, the Minister of Commerce, has departed from Paris, and M. ALPHAND, who is arranging the plans, is also away. Until the end of September everything is left in suspense. Immediately after the vacation a start will be made, for the Champ de Mars is to be surrounded with hoarding, and tenders for the work are invited. The co-operative societies of working carpenters are eligible to compete. M. LOCKROY and M. ALPHAND have merited a long holiday, and we hope that when resting they will be inspired by a sense of the inapplicability of the proposed iron tower. It will increase the expenditure, and what will be the return? Does any one anticipate that a single visitor will be attracted by that mass of metal?

AN ARCHITECT'S SKETCHES.*

AN architect's collection of sketches that was not intended to gratify any eyes but the author's is always sure to give pleasure, and when the student of it is kept prisoner in London during the holiday season the gratification is enhanced. Sketches of the kind become records of impressions, and sometimes of hopes. A bit of detail is seen which is pronounced charming; but it is not possible to sketch all that is visible of that class. The thought arises, "It would be useful in such or such a building that may come off some day," and then it is sure to be transferred to paper. We can imagine Mr. DUNN entering foreign Roman Catholic churches, and, when struck with their beauty, asking himself whether the day will come for the erection of similar buildings in England? If it should, he at least will be provided with materials. In this way one sketch-book after another is filled. Then, as we are told, publication became an after-thought, and a volume of a hundred plates is the result.

We have no hesitation in saying that Mr. DUNN'S collection of sketches is among the most valuable of those which have appeared in our time. They are drawn in a style that sometimes suggests WELBY PUGIN and sometimes J. L. PETIT. But the style is controlled by the desire to secure something that is useful in every case. That breadth of effect which is so often sought, and which is not to be despised, is rarely introduced. In many cases a firm line is given where a lover of the picturesque would insist that a broken line was more suggestive. Mr. DUNN'S desire was to make the buildings give him hints, and the qualities which were not capable of aiding him become of secondary importance. Hence we often have small portions of interesting churches and buildings occupying a page, while elsewhere a large building may have only a couple of square inches devoted to it.

There are things in the volume which have been often drawn. The first plate, for example, is the beautiful lantern of St. Nicholas's Church, in Newcastle-on-Tyne, and the last is a part of the Hôtel de Ville, in Ghent, which is possibly more generally known. Then we have sketches from Bruges, Caen, Limburg, Nuremberg, Chartres, Oxford, and other places, which must be tolerably familiar to every English and American architect. But in the majority of the sketches we have reminiscences of scenes that are not on the beaten ground of tourists. Cairo may not be difficult to approach; but as much cannot be said of Spain, which Mr. DUNN has found fertile in subjects.

In his Cairene sketches it is tolerably evident that Mr. DUNN was most struck with the corbelling, and in the notes he jotted down he remarks that it is "very ingenious, and suggestive of Gothic construction." He gives several examples, which bear out his idea. The upper part of the doorway from Damascus is also confirmatory of that theory; but such capitals as are seen in that city are unknown in Gothic. The minarets given from Damascus are very beautiful, scientific, and therefore rational, in their construction. A door from Tunis is effectively ornamented, and without any of the profusion that is sometimes seen in Eastern work. The title of MALHERBE, the poet, is said to depend on his having taught the great power of a word when put in its right place. A similar principle should rule in decoration. Ornament acquires a new power if put in its proper position, and not elsewhere; but artists are not always disposed to recognise this truth. The door has a square framing, with a horseshoe arch. The outer ring of the arch has ornament at intervals, which is executed in nail-heads. In the two upper angles of the spandrels there are two plaques in which there is no correspondence except size—an assertion of liberty which is thoroughly Eastern. The door is sufficiently decorated, but there is no superfluity.

It seems natural that some plates from Spain should follow. The Seville doorway, with the bits of wall and ceiling decoration, show an affinity with what came first; and in the ciborium and towers at Tarragona we see the desire to express an upward-springing power with one of subordination, which are found in the minarets and domes of Damascus. The buttresses and finials of the ciborium form a masterly composition, and the interior must be no less interesting, for the spaces between the ribs of the groining are pierced through in tracery, besides being coloured and gilt. The upper part of the splendid Rodez tower no longer exists, and Mr. DUNN suggests how it may have been completed. No doubt, he writes, this is taking a liberty, but the excuse must be that the primary object of the sketches was study and improvement. A good many plates follow of towers and spires in different countries, and we suppose Mr. DUNN desires to suggest their Eastern relationship. St. Sauveur, Bruges, shows a more severe type, which is again seen in the Caen examples. In Palermo there is another variation.

The interiors begin with the cathedral of Barcelona: the arches are stilted and the reredos rises almost to the height of the capitals. As it is detached the mass of gilded work must have an imposing effect. The bishop's throne appears to be at the epistle or right side, which is unusual. It is suggested as a model for a Roman Catholic church on a large scale. One feature in it is the enormous thickness of the nave-aisle walls, which are deep enough to be formed into chapels. Another interesting church is the one that belonged to the Dominicans at Toulouse. It is divided by a row of columns down the centre, so that there is no nave. This arrangement is supposed to have been adopted to separate the sexes. There is a series of small chapels around the outer wall in the interior, and for a part of the exterior. In the east end of the cathedral of Alby we have an arrangement which is also suggestive.

We have next several plates, illustrative of parts of buildings. One is from the cloisters at Tarragona, in which round and pointed arches and traceried circles are well combined. The Tresor at Caudebec shows work of later type. Some beautiful altar tombs from Burgos and Toledo are given, as well as grandiose altars from Spain. Their effect is partly due to the treatment of the pinnacles, and a page of pinnacles from York, Lichfield, Caen, and Rouen does not seem out of place in this part of the book. The triangular porch at Ratisbon, the king's tomb in St. Chiara, Naples, the doors from Burgos, suggest what Gothic was when there was no necessity for the designer to be hampered by finance. Several examples of the "sacrament house" are also examples of that happy condition of affairs. The skill of the old masons in grappling with difficult problems of stone-cutting is suggested by the stairs of Heidelberg, Stutgard, and Chartres. The cantilevers at Caudebec and the corbelled windows at Marburg bring us once more back to Cairo. Then we have plate after plate to indicate the variety of ways in which roofs are treated in the old German towns. They are followed by examples of fireplaces and windows, which may be called variations of the lintel. We have also valuable suggestions for secular buildings from Marburg, Rothburg, Angers, and Louvain. Diagrams are furnished of the tracery in about twenty windows of different types, and the concluding plates of the book are a magazine of interesting "bits."

From what we have said it is evident that Mr. DUNN has laboured in an extensive field, and it would be strange if he did not glean much that was overlooked by travellers who went over the ground before him. One of the most marked characteristics of the sketches is their freshness. Representations of the buildings may be found in many volumes, but, so far as we know, the majority of the subjects are given for the first time. Europe is so rich that it is not easily exhausted, and we hope that Mr. DUNN may on another occasion produce a second volume similar to the one he has given. But every traveller will be ready to acknowledge that sketching is always easier on one's first visit. Afterwards the subjects appear to be familiar, and one is likely to suppose that they are known to all the world. If Mr. DUNN should not give us more sketches, we hold ourselves indebted for what he has done.

Mr. DUNN'S volume of sketches is exactly the kind of book that is useful in helping one out of a difficulty. From the variety and excellence of the subjects the pages can hardly fail to offer something that will be suggestive whenever they are consulted. The subjects are not indiscriminately taken, but have been selected because they appeared to be worth possessing as materials for practice, and we are confident that not a single page in the volume will be considered superfluous.

* *Notes and Sketches of an Architect.* By Archibald M. Dunn. London: B. T. Batsford.

THE MEDIÆVAL BAPTISMAL FONTS OF ENGLAND.

[BY A CORRESPONDENT.]

(*Concluded from page* 119.)

THE Decorated font at Kidlington* Church, Oxfordshire, is a good instance of a simple village church font. The circular bowl is of considerable depth, very slightly curved in external section, and having a small moulding at the top. The plan changes with excellent effect to an octagon in the bell of the capital under the bowl. The shaft is very short, and has base mouldings of bold proportions and vigorous projection. Altogether this is a very satisfactory instance of what can be done by good proportions and without any extraneous ornamentation whatever. The bowl is plain and unadorned, without even a circular or raised panel or a quatrefoil. There is no lurking ball-flower in the hollowed mouldings, nothing but purely moulded work. The same principle which is applicable to the humble font, little more than half the stature of a life guardsman, can most fitly be appropriated to the stately fabric of a cathedral some hundred feet or so up to the ridge of the roof. Turning from great things to small, the architect in designing fonts should be careful not to change his plan too often from plinth of base to capping of bowl. Many of the most elegant fonts are circular or octagonal throughout. With a square bowl, to continue the same plan all the way results in a somewhat clumsy composition. The writer wishes to lift up a warning voice against too much searching after novelty and change, and rather to inculcate the cultivation of thoroughly good proportions than eccentric or far-fetched striving after architectural legerdemain or *tour-de-force*.

The font to Heckington Church, Lincolnshire, in the Decorated style, is another example of that form of font not so unusual in this period, like that to Exton Church. It has a series of canopied niches, but unfortunately the figures have vanished.

The font of the same period to Woodstock Church, Oxfordshire, has a simple moulding with a hollow member containing ball-flowers. It is curious how seldom any enrichment of this kind at the top of the bowl occurs in ancient fonts. The example at Kiddington Church, not far from the last-mentioned, and in the same county, is hexagonal, and has rich traceried panels to each of its sides, like the octagonal font at Woodstock Church, and has also a moulding at top with ball-flowers.

Offley Church, Hertfordshire, possesses a very ornate specimen of a Decorated font, the bowl having angle buttress-pinnacles and ogee-shaped crocketted canopies, enclosing ornamental panels to each side. The shaft is also very rich, much cut up into parts, which to accurately describe would be difficult, and even then it would not be easy to understand.

That type of Decorated font which may best be designated as the "octagonal cube" is not uncommon. There is no particular beauty in the outline, as might be imagined, for whatever beauty exists is to be found in the enrichments. The specimens at Ewerby Church, Lincolnshire, and Poynings Church, Sussex, are cases in point. How far better it is to see a font the properties of each division of which are good and well studied—the massive simple base, the elegant shaft, the rich bowl! In such compositions the fifteenth century period is, as a rule, eminently successful.

The beautiful font at Redgrave Church, Suffolk, of the same style as the last-mentioned example, has an embattled top to it, a feature rather rare in fonts.

Stanwick Church, Northamptonshire, contains a very ornate specimen of the transition between Decorated and Perpendicular. Each side of the bowl is richly panelled, and there are small pinnacled buttresses at each angle, also crocketted and finialed pediments, &c. The piers of the pinnacles are rather curiously arranged, as they are not vertical but on a curve, following the outline of the lower part of the bowl. The shaft is missing. There is a broad, chamfered plinth or base, enriched with four-leaved flowers as well as richly panelled. But the whole design is rather overdone; it would really have looked better if less ornament had been bestowed on it.

* Not to be confounded with that to *Kiddington*, another church not far off, commented on hereafter.

The grand series of Perpendicular fonts have yet to be commented upon. Let us begin with that of the church of Bradford Abbas, Dorsetshire, a specimen of an elegant and unusual design, having no central shaft, but instead, four detached square panelled piers at its angles. These are carried up to the bowl, with which they are almost flush, giving not only the idea but the reality of actual support. In the Perpendicular era, in the matter of fonts just as in other architectural features, there is a want of variety in the designs, certainly much more so than is to be found in earlier examples. However interesting and pleasing to the lover of heraldry, yet as a matter of ecclesiastical propriety the practice of making coats-of-arms a part of the decoration to fonts cannot be defended. It is not intended to maintain that shields bearing arms must nowhere be put in a church. But they are certainly out of place in a font where earthly distinction should vanish. For here the adult or infant of every degree is admitted into the Christian fold. No such objection applies to shields not bearing heraldic devices, but used only decoratively. They then become most useful and pleasing features for representation of the emblems of the Crucifixion, or other sacred and appropriate devices.

An excellent example of the proper treatment of a Perpendicular font is to be found in Taynton Church, Oxfordshire; this is octagonal and has a most substantial-looking and massive base. It also possesses a shaft of ample diameter, each side of which is delicately panelled in three divisions. The capital under the bowl is handsome and well moulded. But its only other decoration, besides the series of mouldings, is in the sculptured figures in the bell of the capital at each angle. The vertical part of the bowl is divided horizontally into two bands, the upper one projecting beyond the lower, the whole being richly carved. The simple capital and the plain base, contrasted with the elegant shaft and the carved bowl, certainly combine to render this font an exceptionally good specimen of Perpendicular composition. It might perhaps have been better not to have divided the bowl horizontally into two such narrow divisions, but this seems the only fault to find in the design.

The octagonal font to Ensham Church, Oxfordshire, is certainly, to the writer's mind, unique in its design as regards the bowl, which somewhat resembles an Early English double-belled capital, though of the Perpendicular period. There is a rich moulded capping at the top, and then a cavetto moulding, deep as regards its height, but yet shallowly recessed. The latter is, however, prudently filled up towards its lower part by angels with outspread wings, occurring at each angle of the font. Then come some more mouldings, and under these two four-leaved flowers to each side. It was repaired many years since, before the regular era of church restoration had commenced, and one wonders whether this seemingly unique example was then really faithfully and conservatively restored.

The font at Ewelme Church, in the same county, is a more elaborate example of Perpendicular work, but is not equal in composition to the last named. The base is too slight for the superstructure, and the panels to the bowl not being square, but oblong—*i.e.*, less in height than length—are not pleasing, and are, moreover, cusped in an inelegant manner. The magnificent oak cover, with its forest of pinnacles and spire-like outline, is well known and needs no further comment here.

The Late Perpendicular octagonal font to Cold Ashby Church, Northamptonshire, has also a very curious and unusual bowl. The top is deeply embattled, one large embrasure to each side. The embrasures, of course, are not cut through the whole thickness, but are stopped at the back, leaving sufficient substance of stone behind. The remainder of the bowl is perfectly plain. The large embattlement is a quaint conceit, giving the notion of the font having been looked upon by its designer as something to experiment upon.

In Cambridgeshire, at Leverington Church, is about one of the most ornate fonts of the period now treated of. There is scarcely a single part of it left plain, the base and shaft being fully as rich as the bowl. It abounds with sculptured figures, such as bishops represented sitting, pinnacles, crockets and finials, roses, &c. In fact, it is a com-

plete repository of the architectural details of the Perpendicular style.

The font at Covenham St. Mary Church, Lincolnshire, is of the same period, and an instance of one of those anomalies in the form of font. But at the same time it can be called elegant, which is by no means always the case with anomalous objects. The shaft is hollowed out into a shape difficult to explain without illustration. The octagonal bowl possesses small corbels dying into these "flutings" in the shaft, which in its turn sits upon a square base. The latter has peculiar shaped "steppings" at its angles. Altogether this adds another to the long list of remarkable fonts.

A good specimen of a panelled shaft of Perpendicular date is to be found to the font at Yate Church, Gloucestershire. The panels are square-headed, and do not look "fussy," or disturb the repose of the composition, as too many do.

Another Perpendicular font, that at Fakenham, Norfolk, has almost disengaged shafts at the angles at the bowl, which have the fault previously commented on when found in modern fonts. Such examples are not uncommon in the Middle Ages; the shafts carry nothing, and are really only ornamental "dummies." It is too much the way at the present time to defend, or, at any rate, to excuse, the deliberate violation of "true principles" where ancient precedent for so doing can be adduced. In some rare instances the violation may be condoned, and the master-hand may have thrown such an attractive veil over what is in reality a deformity or abortion that it is passed over without adverse criticism. The miniature buttresses with diminutive make-believe water-tables, of which so many examples are to be found in old Perpendicular benches, always offend the writer's eye. For when such projections in woodwork are required, for constructional or other reasons, it is quite possible to treat them in a more legitimate way.

At Ufford Church, Northamptonshire, is a good instance of a kneeling stone to a Perpendicular font. It is remarkable how in modern examples so little decorative employment is made of so useful and essential a feature. The platform and steps on which the font rests should receive more attention in the planning than they often do. When there are several steps and the font is of elaborate character, the risers might be made ornamental and projecting moulded nosings put to the steps. This would add greatly to the dignity of the font.

The writer must not close these remarks without just mentioning a kind of baptismal shrine in which the font is enclosed, of which there are a few rare examples in England, such as the noteworthy one in Luton Church, Bedfordshire. Here the font is enclosed within an octagonal stone screen, having its lower part filled, except at the entrance, with panelling, while the upper part forms a groined canopy. Another enclosure of this kind, but of wood, exists at Trunch Church, Norfolk.

To enter upon the subject of font covers would be to open up a new and rather wide field, and would be foreign to the scope of this article. But it is worth alluding to that most curious example at Fingeringhoe Church, Essex, which is octagonal in plan and has an open ogee-shaped top, formed of several crocketted flying ribs. Two of the sides open like a cupboard door. The interior of the cover has a flat ceiling, ornamentally panelled.

Though so many fonts have been carefully criticised and described, numbers of very interesting ones have been left unnoticed, because their name is really legion. What a valuable work it would make were a book published illustrating every ancient font in England, each drawn to scale. Fonts are easily measured and readily accessible! In foreign countries the Government might undertake such a task, but we have little expectation of it in our England.

There is an almost boundless field of variety in the designs of fonts if the zealous architect will but apply his mind to it. He can be thoroughly original without courting eccentricity.

A Roman House has been discovered in clearing the ground for the new foundations of the buildings of the Banca Nazionale in Rome. It is said to belong to the third century. The walls have paintings, as it seems, of Biblical subjects, mixed with some mythological figures—*e.g.*, Pegasus on Helicon, Æsculapius with his serpent, and Muses.

THE DEGRADATION OF VERSAILLES.

THE interest that is taken in the terraces, fountains, statues, and vases of Versailles is not confined to France, for it is almost universal. No apology is therefore needed for offering a translation of the article by M. Henri Vuagneux from the *Figaro*, which contains a detailed statement of the condition into which the park has been allowed to fall.

If Le Nôtre and Mansart could leave their graves for an instant, says M. Vuagneux, and visit the groves which were created by them, the two architects in their despondency at the sight would be sure to declare that the great work which crowned their career was no longer worthy to survive them, for it was likely to efface their renown. The Marvels of Versailles, that were no less celebrated than the Hanging Gardens of Babylon, and which have astonished the world for two hundred years, will soon become no more than legends.

It is only those who have carefully examined the four or five hundred works in marble and bronze which stud the parterres of Versailles, who are in a position to give a precise account of the rapidity with which the destructive agencies are depriving us of the masterpieces of Adam, Coustou, Coysevox, and of other French celebrities of the seventeenth and eighteenth centuries.

If we were not aware of the insufficiency of the sum which is doled out for the preservation of the place, we might charge the administration of the Beaux-Arts with the whole responsibility of the disaster, in which case the architect of the Palace of Versailles and the conservator of the Museum which is there placed would be reprehensible. But it is too evident that the cause of the ruin which menaces one of the glories of the country rests entirely with the Chambers.

It was bad enough to have subjected to useless transformations that marvellous salle-de-spectacle which was an eighteenth-century chef d'œuvre, and the only one of its class in existence. But it shows an inconceivable want of vigilance to allow the elements to accomplish the work of destruction. Not only have the rain and the sun left many a deep fissure, but not one of the works of art in the park has been exempted from the mutilations of barbarians who cared little for the guardians, and were oblivious of that love of art which at one time distinguished the country. It is painful to contrast this conduct with that of the Germans who, when they were masters of Versailles in 1871, treated with respect all the vestiges of a great epoch.

Upon the terrace of the palace in front of the Salon de la Paix is the great vase sculptured by Tuby. The handles take the form of heads of satyrs. The horns are broken, and the socle, which is of rose marble, is cracked in several places. The companion vase, which is by Coysevox, and with similar handles, is split from top to bottom; the water escapes through the cracks, stains the marble and is causing its decay.

The two great vases of Egyptian marble by Mazière and Rousseau, which are on the coping of the steps near the chapel which lead to the lower parterre, are in a deplorable condition. The marble is being eaten away by the moss, fragments of the necks are lost, and parts of the feet. They are menaced by ruin. Near these vases, and forming a pendant to the *Crouching Venus* of Coysevox, is a bronze reproduction by Keller of the antique *Rémouleur*, or the *Sharpener*, in the tribune of the gallery of Florence. It has a rent in the right forearm and wrist, which is about 7 inches long.

On descending to the parterre we find serious injuries to the two vases by Bertin, which are decorated with branches of vine bearing fruit, with young fauns forming the handles. There are hollows in the marble, and the figures are defaced. The two crown basins are abandoned; great weeds have pushed their way between the plaques of the borders, which are disjointed and blackened by the moss and dirt. The tritons and sirens, by Tuby and Le Hongre, that form the central group of the basins, are decaying under the yellowish deposit. The Fontaine de la Pyramide, with its sculpture in lead by Girardon, is in as defective a state as the neighbouring basin, the borders being disjointed, and in the interstices aquatic plants are growing. In the large vase at the bottom of the basin the water is allowed to stagnate, and is exhaling a miasma that must be dangerous to the health of the crowds of children who walk about the fountain. The part of the basin at the side of the cascade is bending down; the water also leaks from the basin of the latter to the side of the fine relief of the nymphs by Girardon. The lower part of the vase is encumbered with weeds, stones, and detritus of various sorts.

The statues which adorned the space around the Parterre du Nord, and the steps leading to the grove where is the Bath of Apollo, now seem like scarecrows to frighten the birds, and the sight of them in the evening is enough to make any chance visitors think of spectres. All the asperities of the marble are covered with a thick bed of black or green moss. We no longer see a collection of works of art rejoicing the sight with the beauty of the form; the fingers of the hands are nearly all removed, the socles are disjointed, and are succumbing under the weights they support. The *Sanguin* of Jouvenet and the

Colérique of Houzeau (the latter recalling the visage of M. Floquet in an astonishing manner) are horrible; the *Winter* of Girardon appears to be stained with blood; the *Summer* of Hutinot—which is a figure of Ceres—is being consumed by the damp. The *America* of Guerin appears like a savage suffering under a gangrenous eruption. The *Autumn* of Regnaudin, in colour and transformation, can only be compared to one of the comic minstrels in the Jardin de Paris. The *Apollonius* of Melo, the *Shepherdess* of Granier, the *Earth* of Massou, the *Night* of Raon, the *Africa* of Cornu, the *Europe* of Mazeline are all lost, for the moss and the humidity have attacked the marble, which is being disintegrated and falls into dust. The limbs of the *Satyr* of Buyster are covered with moss and weeds.

The twenty-two groups of boys and girls, cupids, satyrs, and tritons by Legros and Lerambert, commonly known as the *Marmozets*, in the Allée d'Eau, no longer carry the attributes which gave them significance. The fine marbles of the circular *allée* before the piece of water, comprising the *Bérénice* by Lespingola, the *Faustine* by Frémery, the *Fame writing the History of Louis XIV.* by Guidi, are ruined. *Bérénice* wants a nose, *Faustine* wants a head, the remaining figures want hands or fingers. The medallions placed at the feet of the personages have lost the corners, and are broken.

The fountains of *Diana* and the *Point du Jour*, which are on each side of the approach leading to the parterre of Latona, are filled with moss and dirt. The water in the basins is darker in colour than the cocoa that is vended near it. The tone of the bronze in the fine groups surmounting the basins—*Tiger and Bear*, *Stag and Bloodhound*, by Houzeau; *Lion and Wild Boar*, *Lion and Wolf*, by Van Clève—has been transformed into a dirty yellow. The great marble vase, by Hurtrelle is wearing away through the damp, and the heads of rams surrounding it have lost their horns.

All the statues which are scattered around the parterre of Latona, one of them being the superb copy of the *Sleeping Ariadne* by Van Clève, are deteriorated to a degree that is indescribable; parts have been carried off, the figures are broken, the moss has imparted the green tone of absinthe to the marble, all the socles are tottering, and are in danger of falling. The copy of the *Nymph of the Shell*, a splendid work by Coysevox, is in a frightful state of dirt, and the parts restored at one time have the look of bandages. The *Dying Gladiator*, by Mosnier, has the aspect of a man dying of cholera; the pedestal is like an old tomb in a cemetery.

Left and right of the basin of Latona are eight beautiful vases which were made by Cornu for Colbert, a great vase by Hardy, and one by Prou. They are all broken, and fragments of the marble are becoming detached, and some day are sure to fall to the ground.

All the stages of rose and veined marble which form the fountain of Latona are disjointed; parts are carved off. The frogs which symbolise the fable of Latona and the metamorphosis of the peasants of Lycia are now of various colours. One might fancy, from their condition and attitude, that they were appealing to Jupiter for a better government. The surmounting group of *Latona* with her children Diana and Apollo, which is the splendid work of Marsy, is seriously injured. Pieces of the marble have vanished, hands are without fingers, *Latona* has no longer the look of one who demands vengeance, and her two children are so enveloped with moss and other substances that they resemble a pair of hideous dwarfs. Gaps are visible on all sides of the socle. The two smaller basins, with figures in lead, known as the *Lézards*, which are also connected with the fable of the metamorphosis, are simply ruins, and become more sad by their contrast with the beautiful parterre of flowers which surrounds them.

In the crescent facing the grass plot the important group of *Castor and Pollux*, which is signed Coysevox, and dated 1712, is mouldering under the power of damp and vegetation. The socle is broken. The group of *Laocoon and his Sons*, by Tuby, is in a worse state: the colour of the marble has disappeared through the action of the moss; the two boys have no fingers; the socle is broken and seems ready to disappear. The group by Carlier, *Papirius and his Mother*, wears a tint of yellow and black that is frightful. *Arria and Pœtus*, by Lespingola, is mutilated and the pedestal is disjointed.

All the works on the Allée du Tapis Vert and about the Fountain of Apollo are also suffering from moss and damp; the heads of the figures are no longer recognisable, in some cases feet and fingers are removed. The copy of the *Venus de Medici* by Frémery is mutilated, and the cupid which bestrode a dolphin at the feet of the figure has disappeared. The child that forms part of the group of *Hercules and Telephus* is a black monster. Here as elsewhere all sorts of words are scribbled on the figures of the goddesses. The vases are disfigured by notches or split from top to bottom. One of them has borne an advertisement of one of the Paris shops.

The twelve statues placed between the Fountain of Apollo and the canal, comprising the *Leucothœ and Bacchus*, the two *Hercules*, the *Roman Emperor* after the antique, the *Clarté* by Baldi, the *Cleopatra* by an Italian sculptor of the sixteenth century, and other work, are all disappearing under the black coating which envelopes them, and which is a bed where weeds grow. The fine group of *Apollo*, which represents the god in his chariot drawn by four horses, and surrounded by marine monsters and tritons, stands again in need of restoration. It was executed by Marsy, after a design by Lebrun.

In the groves the neglect is still more flagrant. The *Bath of Apollo*, the delightful grotto designed by Hubert Robert, is in a lamentable condition. The fissures in the masonry of the upper part, and the infiltration produced by the settlement of the slabs of the basin, have compelled the guardians to let the water run away immediately after the action of the hydraulic jet. The basin is in consequence always dry, and a field is left to the vandals, who have carried their attacks up to the foot of the central group, *Apollo Served by the Nymphs*, the masterpiece of Girardon and Regnaudin. The figures are covered with the writing of the visitors. The groups at the side of the grotto—the *Tritons Watering the Horses of Apollo*, and the *Tritons Holding the Struggling Horses*—the works of Guerin and Marsy, are worse treated, for there are cracks nearly two inches deep here and there.

The Fountain of Ceres (a work by Regnaudin), the Rond Vert, and the Bosquet de l'Etoile, are abandoned. The statuary that once adorned them is in a woful condition, the figures are mutilated, and the symbols they carried are stolen; some have fallen from their pedestals, and the fragments are buried under the soil. The Fountain of Saturn (a group by Girardon), that of Flora by Tuby, the Fountain of Bacchus by the brothers Marsy, and that of Enceladus, are only swamps where the waters stagnate; the surrounding marble being demolished, the weeds are allowed to grow to a height of more than three feet.

The Fountain of the Obelisk (sometimes known as the basin of the hundred jets) has been long left unused, the masonry is demolished as well as the marble steps of the cascades. Some of the big leaden pipes are used as if they were stepping-stones for crossing the swamp.

The vases and statues surrounding the Bassin du Miroir and the King's Garden have dents in all parts, are covered with writing, and rest on stands which are without solidity. The column of *Flora* is cracked by the moss, in the Corinthian capital birds have built their nests, the plinth is broken, and the slabs are disjointed. The two colossal statues of the *Farnese Hercules* and the *Farnese Flora*, by Cornu and Raon, have a spectral aspect; they are covered with a black deposit and parts are broken. In the grove where the famous intrigue of the Diamond Necklace had its origin, in the Salles des Marronniers, the marbles and basins alike demand urgent restoration.

The "colonnade" which Mansart designed, and for which Coysevox, Mazière, Granier, Le Hongre and Leconte prepared bas-reliefs, shows many signs of decay. The central group, the *Rape of Proserpine*, by Girardon, could hardly be more black if stained with ink, the circular pedestal and steps on which it stands are deformed, and seem about to collapse.

The grove of the Salle de Bal—the only part of the park which of late underwent a restoration—is not open to the public, and, when the depredations committed in other parts are remembered, the precaution is not unnecessary.

As to the statues which ornament the garden front of the palace, they are in a condition approaching that of the mutilated saints of Rouen Cathedral. Yet among them are notable works, such as the *Faith and Religion*, by Coustou, which surmounts the tympanum of the chapel.

The façades of the château, which have been restored since the time of Charles X., call for immediate attention. The masonry up to the balconies is covered with a damp moss that is a destructive agent; besides, it is forcing a way between the stones.

This is the state of a palace of which France was at one time so proud, and that must have cost nearly two hundred millions of livres. Of the hundreds of works of art which have been scattered over the gardens not one remains intact. If Versailles contained only Druidical monuments, the neglect might not appear to be their natural condition. But the works now being destroyed are the masterpieces of sculptors who belonged to the period that was the most artistic in France, they are not a greater age than the eighteenth or seventeenth centuries, and they have never undergone removal. A moderate amount of care would have sufficed to conserve them in all their purity of form and style. If it is no longer possible to remedy the evil which has been committed, it is at least possible to stop its advance. As soon as the Chambers meet an Act should be passed providing funds for the expensive works which have to be undertaken, and care should be taken in the selection of the artists who are to have charge of the restoration.

It is also indispensable that the materials which are used should be submitted to strict examination. Look at the condition of the château of Pierrefonds, where restoration has been

going on since the death of the regretted Viollet le Duc. In the beautiful Salle des Gardes, which is now entirely restored, the ceiling beams, which are not two years in position, are already sagging, and appear as if they would soon be unable to carry the load they are supposed to sustain. It is at once curious and painful to see the new stone in the walls at Pierrefonds falling in pieces, while the solidity of the old stone has not been disturbed after several centuries have done their worst upon it.

THE BRITISH ASSOCIATION.

THE meeting of the British Association commenced at Birmingham on Wednesday, when the President's address was delivered in the Town Hall. The following is the official programme for the remainder of the proceedings :—

Thursday, September 2.—Sectional meetings, 11 A.M. to 3 P.M. Garden parties at The Grove, Harborne (Mr. William Kenrick, M.P., and Mrs. Kenrick); Edgbaston Grove, Church Road, Edgbaston (Mr. and Mrs. G. B. Lloyd); Hallfield, Wellington Road, Edgbaston (Mrs. Nettlefold); Wyddrington, Church Road, Edgbaston (Mr. and Mrs. J. E. Wilson). Afternoon walks to Berkswell and Hampton-in-Arden, Hockley Station, Rowley Regis, and Moseley. Conversazione at Exhibition, in Bingley Hall, at 8 P.M.

Friday, September 3.—Sectional meetings, 11 A.M. to 3 P.M. Garden parties at Perry Hall (the Hon. and Mrs. A. C. G. Calthorpe); the Botanical Gardens, Westbourne Road, Edgbaston (the Committee of the Birmingham Botanical and Horticultural Society). Afternoon walks to Pouk Hill Quarry and Daw End. Afternoon visits to public elementary schools. Lecture by Professor W. Rutherford, M.D., on "The Sense of Hearing," in the Town Hall, at 8.30 P.M.

Saturday, September 4.—Sectional meetings, 11 A.M. to 1 P.M. Excursions. Lecture to working men in the Town Hall, at 7.30 P.M.

Monday, September 6.—Sectional meetings, 11 A.M. to 3 P.M. Garden parties at Chad Hill, Harborne Road, Edgbaston (Mr. and Mrs. R. L. Chance); The Dales, Augustus Road, Edgbaston (Mr. George Dixon, M.P., and the Misses Dixon); Westfield, Augustus Road, Edgbaston (Mr. and Mrs. Richard Peyton). Afternoon walks to Rowley Regis, Sutton Park, Packwood, Bromsgrove Lickey, and St. Chad's Cathedral. Afternoon visits to public elementary schools. Lecture by Mr. A. W. Rücker, M.A., F.R.S., on "Soap Bubbles," in the Town Hall, at 8.30 P.M.

Tuesday, September 7.—Sectional meetings, 11 A.M. to 3 P.M. Afternoon walks to Harborne, Sedgley Beacon and Quarries, Oscott College and Great Barr, and Walsall. Afternoon visits to public elementary schools. Conversazione in the Council House and Museum and Art Gallery, at 8 P.M.

Wednesday, September 8.—General meeting in Town Hall, at 2.30 P.M. Performance of the "Elijah" in the Town Hall, at 8 P.M.

Thursday, September 9.—Excursions.

TESSERÆ.

English Academies of Art.

JOHN PYE.

A PRIVATE academy of one kind or the other for the study of drawing appears to have existed in London from 1711. Sir Godfrey Kneller presided over the first of which mention is made. That having ceased to exist, in 1724 Sir James Thornhill established one at his own residence. Sir James died in 1734, and Hogarth having become possessed of his "neglected apparatus," established an academy in St. Peter's Court, St. Martin's Lane, at which most of the British artists of the reign of George II., and of the early part of the reign of George III., received the rudiments of their professional education. In 1740 the Foundling Hospital, then of rising celebrity, and deemed of great national importance, induced Hogarth to present to this establishment a portrait of its founder, Captain Coram. This example of liberality was soon followed by other artists. The attractiveness of this public exhibition, probably the first ever made of British works of art, demonstrated to the artists that they possessed in common the means of raising themselves from the obscurity in which they then lived, by making exhibitions of their works. In consequence a general meeting of artists was held at the Turk's Head, Gerrard Street, Soho, on November 12, 1759, when they resolved to establish an annual exhibition, to charge one shilling as the price of admission, and to appropriate the profits to raising a charitable fund for the protection of decayed artists, and a committee was appointed to carry the resolutions of the meeting into effect. The first exhibition was opened at the great room of the Society of Arts, then opposite Beaufort Buildings, in the Strand, from April 21 to May 12, 1760. But the society having objected that money could not be charged for admission to their establishment, the public were admitted gratis, and sixpence charged instead for the catalogue, of which 6,582 copies were sold; and thus was raised by British artists the first money they ever possessed in common. From the close of this exhibition the committee appointed by the general meeting to give practical effect to its resolutions appears to have shaken confidence in the community by an attempt made to divert their common property from its original purpose. A few withdrew from the many, and in the spring of 1761 the artists thus divided established two annual exhibitions. The most numerous and distinguished body exhibited in the great room in Spring Gardens, and the seceders commenced exhibiting in the room of the Society of Arts, in which the original exhibition had been made, and constituted themselves into a Society of Provident Care, supported by the revenue of exhibitions of their works, which society was enrolled in the Court of King's Bench. In 1768 the arts of painting, sculpture, and architecture were connected with the Crown by the formation of the Royal Academy, the constitution of which established an annual exhibition, and required that all candidates for the countenance of the Crown through academic honours should send their works there to be exhibited, and that they should not belong to, nor exhibit with, any other society of artists in London. In consequence the artists, with the hope of obtaining honours which were otherwise denied them, abandoned the original societies, and thus the germ of provident care and mental independence was rooted out of the national character of British artists by the acquisition, on the part of the Royal Academy, of the revenue of exhibiting the works of all the painters and sculptors of the kingdom.

Strength of Beams.

EDWIN CLARK.

In a simple rectangular beam the strength varies as $\frac{b\,d^2}{l}$; or, in other words, the strength of one beam compared with another is, first, directly as the section of fracture; secondly, directly as the depth; and, thirdly, inversely as the length. And it possesses these properties independent of the nature of its resistance, so that by direct experiment with any given beam we can determine the strength of any other beam of the same material. Experiments have been made on beams of every kind of material, and to simplify the calculation of other beams from these, the results have been reduced to those which would be obtained from beams 1 inch square and 1 inch long. Thus a beam of cast iron of these dimensions breaks with 11 tons on it (Hodgkinson); of wrought iron, 13 or 12·264 tons (Barlow); of red pine, 2·4. Knowing, then, the breaking weight of this 1-inch beam, to find the strength of any other similar beam we have simply :—(1) Multiply this breaking-weight by the sectional area of the new beam; (2) by the depth of the new beam; (3) divide this product by the length, using inches for each dimension. Taking, for example, a beam 8 feet long, 12 inches deep, 1 inch broad, we have for wrought iron,

$$\frac{\text{Constant. } 13 \times \text{Area of Section. } 12 \text{ inches} \times \text{Depth. } 12 \text{ inches}}{\text{Length, } 96 \text{ inches}} = 19{\cdot}5 \text{ tons.}$$

It is frequently more convenient to divide by the length in feet instead of inches, in which case these constants must be divided by 12, and in this form they are usually tabulated in works on the subject.

The Statues in Trafalgar Square.

ALBANY FONBLANQUE.

"My eyes!" cried an old sailor on seeing the Nelson Monument, "they've mast-headed the Admiral!" They have indeed. There he is at the mast-head like a midshipman who has incurred the captain's wrath. The mast is sufficiently represented by the column, and the capital of it is in the closest resemblance to the cross-trees. There are no shrouds, and for this good reason, that the absence of them accounts for the Admiral's having such a long spell of punishment, seeing that he cannot come down again. To stick up an admiral at the mast-head is much the same sort of thing as putting a grown gentleman into the corner with a fool's cap on his head. It may, however, be considered as a stern example of the rigour of naval discipline. The hero in the naval pillory looks very solitary, cold, and comfortless, notwithstanding all the benefit of his cocked hat. And in this last particular he comes into advantageous contrast with the king below him, George IV., who is on horseback, without a hat, and with nothing but a cloth over his shoulders. And mark here how impossible it is to please people. They complain that Nelson has a three-cornered cocked hat on. Well, here is a king riding without a hat, and they cry, "What a shame to set a king on horseback without a hat or any covering except his wig!" The horse is in an attitude of rest for two good reasons—first, that if he moved the king is sitting so that he must inevitably fall off; and, secondly, that beggars on

horseback proverbially ride to the devil, and therefore kings on horseback, who should do the very reverse in the direction of heaven, do not move at all. The king rides, as all figures with cloths instead of coats on the shoulders do, without stirrups, and looks marvellously ill at ease with his legs dangling down. In his right hand he holds a large roll of bills (marking the time when he was Prince of Wales); but it is clear that, though he has given the bridle to his horse, he is not flying from his creditors. The horse has been much criticised and found fault with as if he had been a real horse. It is asked, What sort of horse is he like? and we should answer, a clothes-horse, but for the unfortunate fact that his rider is so slightly and insufficiently apparelled. A thousand years hence, when the thing is dug up from some heap of congenial rubbish, it will be supposed to be the figure of a fat ostler with a sack over his shoulders (a covering often so worn on a rainy day), riding a horse to water. The roll in his hand will be taken for a stick broken in the attempt to beat the animal into a pace, and the bridle on the neck as denoting the rider's despair of any need of the curb with such a steed. When the Trafalgar Square monuments are complete, the mast-headed Admiral, the George the Fourth, the Charles the First, the George the Third altogether, it will be seen that the happy idea of such groupings is derived from Madame Tussaud's waxwork exhibition, where Mr. Wilberforce is grouped with Fieschi, Lord Eldon coupled with Oliver Cromwell, Mrs. Fry with Mother Brownrigg.

Early Use of Concrete.

SIR J. RENNIE.

Concrete, a mixture of gravel, sand, lime, and other cements, in certain proportions, was well known to the ancients, and in conjunction with the invaluable cement pozzolana, was applied with the greatest success in the then numerous moles and other submarine works, and its use has been still continued in Italy to the present day. Wren is said to have used it for a portion of the foundation of St. Paul's, where it was defective. Semple also alludes to it in 1776. Its use appears to have been discontinued for a time. Rennie proposed it for the foundation of the Penitentiary in 1811, Smirke and others followed in the same track, and now the employment of concrete for the foundations of buildings has become nearly universal wherever it is necessary.

Vicat's Discoveries.

F. ARAGO.

In his first essays M. Vicat made use of synthesis. Every one who had remarked how much the crystalline or molecular condition modified the physical properties of certain bodies could not give more than a limited confidence to the advantages likely to be gained by architecture from the chemical analysis of limes. The experiments of M. Vicat were directed straight to the object in view. The natural limes of Senonches were the type of perfection. M. Vicat composed an artificial lime, superior to that of the Senonches. He obtained this great result by calcinating in proper proportions chalk or pure lime mixed with clay. By this experiment light succeeded to obscurity, certainty to doubt: the art of building had received the accession of an admirable discovery. We do not suppose that the merit can be contested. It may be proved incontestably that M. Vicat was not less really the discoverer in the subject of hydraulic limes than Newton was when he published the "Theory of the Composition of White Light," or that Franklin was when he proposed lightning conductors to the civilised world. The great Smeaton vainly tried to render rich lime hydraulic by the addition of clay, without preparation. Smeaton mistaking, after repeated trials, the necessity of roasting the clay, showed, moreover, more clearly than all reasoning could do, the immense distance which separates simple appearances from realised and complete discoveries. M. Vicat occupied himself with equal success in investigating the properties of cements. Architects distinguish cements from mortars by their natural appearances. The sand contained in mortar exists there in the form of gravel more or less coarse, and more or less apparent. The composition of cement appears homogeneous, although it contains lime, silex, and alumina. No substance has gained more celebrity among builders than that known at the present day as Roman cement. This cement, called originally aquatic cement, was made in the year 1796 by Messrs. Parker and Wyatt. It was the result of subjecting to heat certain nodules of limestone of an ovoid form found in great abundance at some distance from London. Roman cement, mixed rather thick, solidifies in a few minutes either in air or water. There are certain works, the Thames Tunnel for instance, which could not have been executed without Roman cement. Under other circumstances this rapid solidification is a real obstacle, and in such cases it is necessary to substitute hydraulic lime, of which the price is much less. Parker and Wyatt manufactured their cement, and found a sale for it throughout Europe; builders used it, but no one took notice of the real cause of its singular properties. The discovery of this cause belonged incontestably to M. Vicat. We find, in fact, that after having indicated the proportion of clay which renders lime hydraulic, the skilful experimenter published in 1817 the categorical observation—"When we increase the proportion (of clay) to 33 or 40 per cent. we obtain a lime which does not slake; but it pulverises readily, and produces, when wetted and mixed up, a composition which quickly sets under water." The proportion of clay indicated is precisely that of the substance manufactured by Parker and Wyatt. M. Vicat made, then, from 1817, every kind, not only of hydraulic lime, but also of Roman cement. To render rich lime hydraulic, it is sufficient to wet it in proper proportions with pozzolana or tarras. What more simple or convenient mode could be imagined? But in many localities the expense of conveyance renders it impossible to use either pozzolana or tarras. Many attempts have been made to prepare substances which possess the same properties. Chaptal thought he had resolved the problem by very much calcinating certain schists or ochreous clay. But even supposing the properties of tarras and pozzolana to be reproduced in this manner, the difficulty was only shifted. The schists experimented on by Chaptal are not common in France; and there is, moreover, in the operation recommended, even if ochreous clay be employed, one circumstance which opposes an irremediable difficulty. It is the very high temperature requisite. M. Vicat resolved the question into its elements. This solution is as follows:—Artificial pozzolana superior, or at least equal to the best Italian pozzolana, may be obtained by a simple manner of using clay of the purest kind. This method consists in slightly calcinating the clay, in merely driving off the water of combination, and always keeping the temperature between 600 degs. and 700 degs. Centigrade (1·112 degs. to 1·282 degs. Fahr.). The mind rests with satisfaction on the solutions of problems of practical art when they possess this admirable simplicity. On the other hand, one is astonished to see an operation so easy that the workmen call it a *tour de main*, enrich a kingdom, or rather the whole world with a substance eminently useful, and which appeared as if it must inevitably remain the privileged property of a corner of the earth once the seat of volcanic eruptions.

Triumphal Arches.

J. GAILHABAUD.

The Greeks do not appear to have built any triumphal arches. All those in Greece or Asia Minor belong to the period of the Roman domination. The Romans must therefore be regarded as the inventors of these edifices, which at first were nothing more than wooden structures raised across the streets where the triumphal processions passed. These fragile and temporary constructions undoubtedly supplied the original model of the form and decoration of triumphal arches. The descriptions in ancient authors inform us that it was usual to place musicians and men bearing trophies on the top of these monuments, while the spoils of the enemy and representations of battles covered the sides. Such were the nature and object of the structure that the architect was afterwards required to produce in solid materials calculated to endure for centuries. The first permanent triumphal arches were reared under the Republic, but they had no pretensions to splendour. The Arch of Romulus was rudely built of bricks; that of Camillus of stones, almost as rough as they came from the quarry. For a long time these monuments consisted merely of a semicircular arch, surmounted by trophies and the statue of the conqueror. Such was the one which Cicero called Arcus Fabianus. Triumphal arches did not hold any honourable rank among the monuments of art until the time of the emperors; and it is a remarkable fact that, notwithstanding several were erected to Augustus, and very probably in his lifetime, Vitruvius does not even allude to them. At a later period, when a considerable number had already been erected, Pliny speaks of them as a modern invention. Down to the time of the Antonines, arches generally consisted of a single arcade; but this rule was not always adhered to, as the arch built in honour of Tiberius, Drusus, and Germanicus, on the bridge of Saintes, in the Department of the Lower Charente, had two openings of equal dimensions. This last style, though commonly and judiciously reserved by the Romans for gates of towns, was also employed in the Roman arch at Langres, in the Department of the Upper Marne, probably for the purpose of expressing the equality of the two Gordians, who both received the honours of a triumph at the same time. The use of three arcades at an earlier period is proved by medals of Domitian and Trajan, relating to arches no longer in existence; but we find instances of one principal arch, with a small one on each side, for the first time in the Arch of Orange, belonging to the early years of the empire; again under Septimius and his successors, as well as in most of those belonging to modern times. Thus we see, in accordance with the usual course of human affairs, that the richness of triumphal arches increases in an inverse ratio to the merits of the actions and men whose memory they were intended to perpetuate.

NOTES AND COMMENTS.

THE colossal statue of *Liberty* enlightening the world, by M. BARTHOLDI, which stands at the entrance to New York Harbour, was to have been inaugurated to-day. But Congress is inventive in raising causes of delay, and the ceremony is postponed until October 20. It is to be hoped there will then be an end to M. BARTHOLDI's trouble. He has gone through a veritable sea of troubles already, and he must be a staunch Republican or his loyalty would be damped long since. If there is a further postponement many people will suffer inconvenience, for the representatives of France are to embark on October 2.

IT may not be known to all English visitors to Paris, as it is not known to all residents of the city, that in addition to the Luxembourg and the Tuileries, NAPOLEON I. occupied eight buildings in the city between 1784 and 1815. He began as a military student with one of the small closets of the Ecole Militaire. In 1785 he was the occupant of a little belvidere in a house on the Quai Conti, near the Institut. It is at the corner of the Rue de Nevers. About 1790 BONAPARTE lived in a mansarde of the Hôtel de Metz, in the Rue du Mail, a shabby street near the church of Notre-Dame-des-Victoires. He is next heard of in the Rue des Fossés-Montmartre, which runs parallel with the Rue du Mail. In 1792 he was again in Paris. This time he lived at No. 19 Rue de la Michodière, which leads into the boulevard near the Opera House. The events of the French Revolution brought him to Paris as the friend of ROBESPIERRE, to be the saviour of the National Convention. On the 13th Vendémiaire he occupied a room in the Hôtel Mirabeau, in the Rue du Dauphin, facing the church of St. Roch. It was in that street he placed the cannon which mowed down the people who were on the steps of the church. BONAPARTE was, from that victory, a rising man, and a dwelling was found for him in the Rue Neuve-des-Capucines, the street between the Rue de la Paix and the Boulevard de la Madeleine. It is there where the Crédit Foncier has its offices. Under the Convention there were public offices in it. When BONAPARTE married JOSÉPHINE, she was the owner of the house No. 60 in the Rue de la Victoire, which then bore a different name. Originally the house belonged to CONDORCET; then TALMA, the actor, became owner, and he sold it to the widow of General BEAUHARNAIS. There BONAPARTE lived before and after his Italian and Egyptian campaigns, and it was his abode when he became First Consul. Afterwards he removed to the Luxembourg and finally to the Tuileries. During his consulship he held the part between the Pavilion Flora and the Pavilion Horloge. JOSÉPHINE occupied the ground floor on the garden side.

THE letter by Mr. W. H. WHITE, which appears in another column, relates to the deficiencies in the lectures which should be delivered in the Royal Academy. It is, however, an old story. About fifty years ago a return was furnished to the House of Commons showing the number of lectures given to the Academy students in the ten years between 1824 and 1833. We give a copy of that curious document:—

	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	Total	Deficient.
Anatomy .	6	6	6	6	6	6	6	6	6	6	60	none.
Perspective .	6	4	4	6	none	none	none	none	none	none	20	40
Architecture .	none	none	none	none	none	none	none	6*	6*	6*	18	42
Sculpture .	6	1	3	3	5	6	6	6	6	6	48	12
Painting .	6	none	4	6	6	6	6	6	none	3	43	17
											189	Total deficiency, 111.

Or by the four Academician Professors—delivered, 129, instead of 240—deficiency, 111.
* Given by substitute.

According to the original rule of the Academy, each of the five professors was expected to deliver six lectures annually. But the necessity for that mode of instruction is not so evident now as it probably was when the Academy was founded. The lectures on architecture, sculpture, and painting by Academicians, which have been printed, are little more than compilations from books that are not difficult to obtain. What is the advantage of a professor attempting the task of becoming a substitute for VASARI? In the eighteenth century there was a belief that it was necessary for an academy to show its relationship to the original one by prescribing discourses, and many of those delivered in the Royal Academy have been about as useful as the Gresham College orations. It is evident that REYNOLDS, although a fascinating talker, did not give much importance to the institution; and, according to him, the progress of the Academy rested with the visitors rather than with the professors. He says, in the most emphatic way, that art is better learned from works of art than from precepts about works of art, and he warned the students against trusting to any teacher but themselves. In the case of architecture the Academy's professional system is an absurdity. What can be taught about the art in a course of six lectures? The best of all the architectural professors was COCKERELL, but we see the value he attached to his discourses when we find that he would not publish them, nor allow more than the briefest abstracts to appear in any journal.

AFTER five years' exploration M. DIEULAFOY has succeeded in unearthing the remains of the palace of ARTAXERXES and DARIUS at Susa, and the French archæologists are anticipating many valuable additions to the Louvre collections from the excavations. The work was conducted amidst repeated attacks from brigands and fanatics, who allege that M. DIEULAFOY was violating Moslem sepulchres. The palace of ARTAXERXES appears to have been constructed on the site of the palace of DARIUS, and it is said to have some affinity with Greek work.

THE colonists who helped to create the exhibition at South Kensington have discovered, like their predecessors, the inventors and the producers of sanitary appliances, that they were put to enormous expense in order to serve other people's interests. It was supposed in Australia and Canada that the exhibition was intended to make the value of colonial products universally known. One of the Victorian commissioners, Mr. GEORGE MORRIS, is the first to express the thoughts which have been rankling in the minds of many men. He came over at his own expense, in the belief that he might advance the wine trade of Australia; but, on his arrival, he discovered that the authorities of the exhibition had disposed of the right to control that branch of industry to a firm of refreshment contractors. In consequence "one of the best opportunities that have ever been presented for bringing the wine industry prominently before the people of Great Britain has been lost." We are told that "the exhibition has entirely failed in one of its principal objects." Of course it has, for the promotion of colonial trade was not the purpose of the exhibition. It is very possible that we shall soon hear many other expressions of disappointed hopes. The colonials need not fear to say they were bamboozled, which is the conviction among the majority of exhibitors in the preceding exhibitions, although they consider it is more prudent to be silent on the subject, and to console themselves with reflecting on the number of distinctions which they were able to acquire for gentlemen who were not exhibitors.

WE are not always able to approve of the change of names in Paris streets, for they involve the loss of many historical and romantic associations. To the latest alteration there will not be much opposition. One of the last acts of M. GRÉVY before he departed on his holiday excursion was to approve of the decree of the Prefect of the Seine by which the Rue de Boulogne becomes henceforth the Rue Ballu. This is intended as an honour to the memory of the architect, one of whose latest works was the new Hôtel de Ville. The Rue Ballu is near the Boulevard Clichy, and not far from the Church La Trinité, which was designed by M. BALLU. It is a small street, and several artists reside in it. In 1836 several Roman works were discovered there. A bust of M. BALLU is in the Hôtel de Ville. He lived in the Rue Blanche, from which the Rue Boulogne or Ballu leads; but we suppose there were reasons against altering the name of that street, and its neighbour was substituted.


Cie Pluie
PLUIE
V. VARIABLE
BEAU FIXE
TRES SEC
TEMPETE
Baromètre Anéroïde
76
74
78
72
80



Alfred Beurdeley fils inv. & sc.

Champollion aquaf.

BAROMETER & THERMOMETER IN CARVED BOXWOOD

An Etching from L'Art.

Printed by Sprague & C° 22, Martins Lane, Cannon St EC

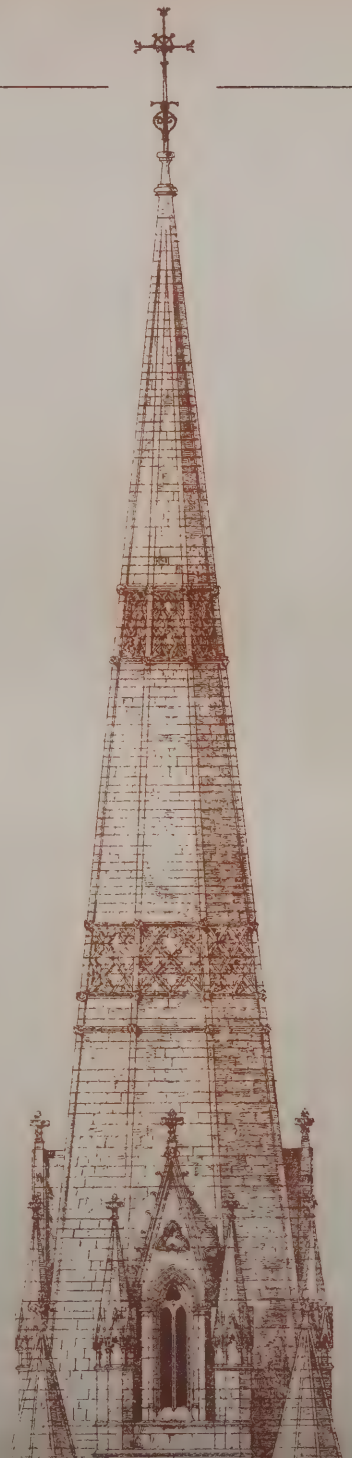




"INK-PHOTO." SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

JAPANESE LEATHER PAPER (SEVILLE PATTERN)

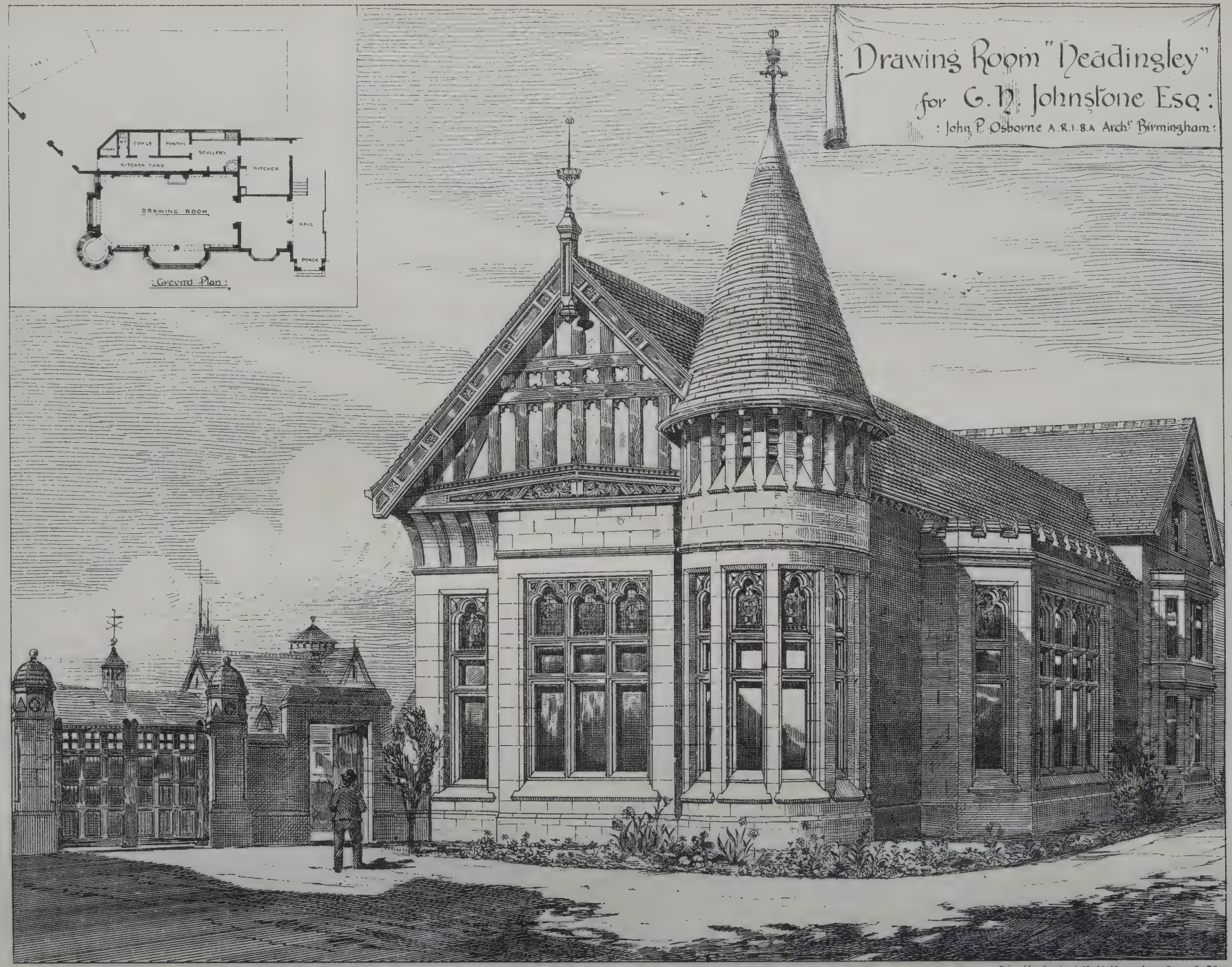
IMPORTED BY MESSRS A. SANDERSON & SON OF BERNERS ST, W.





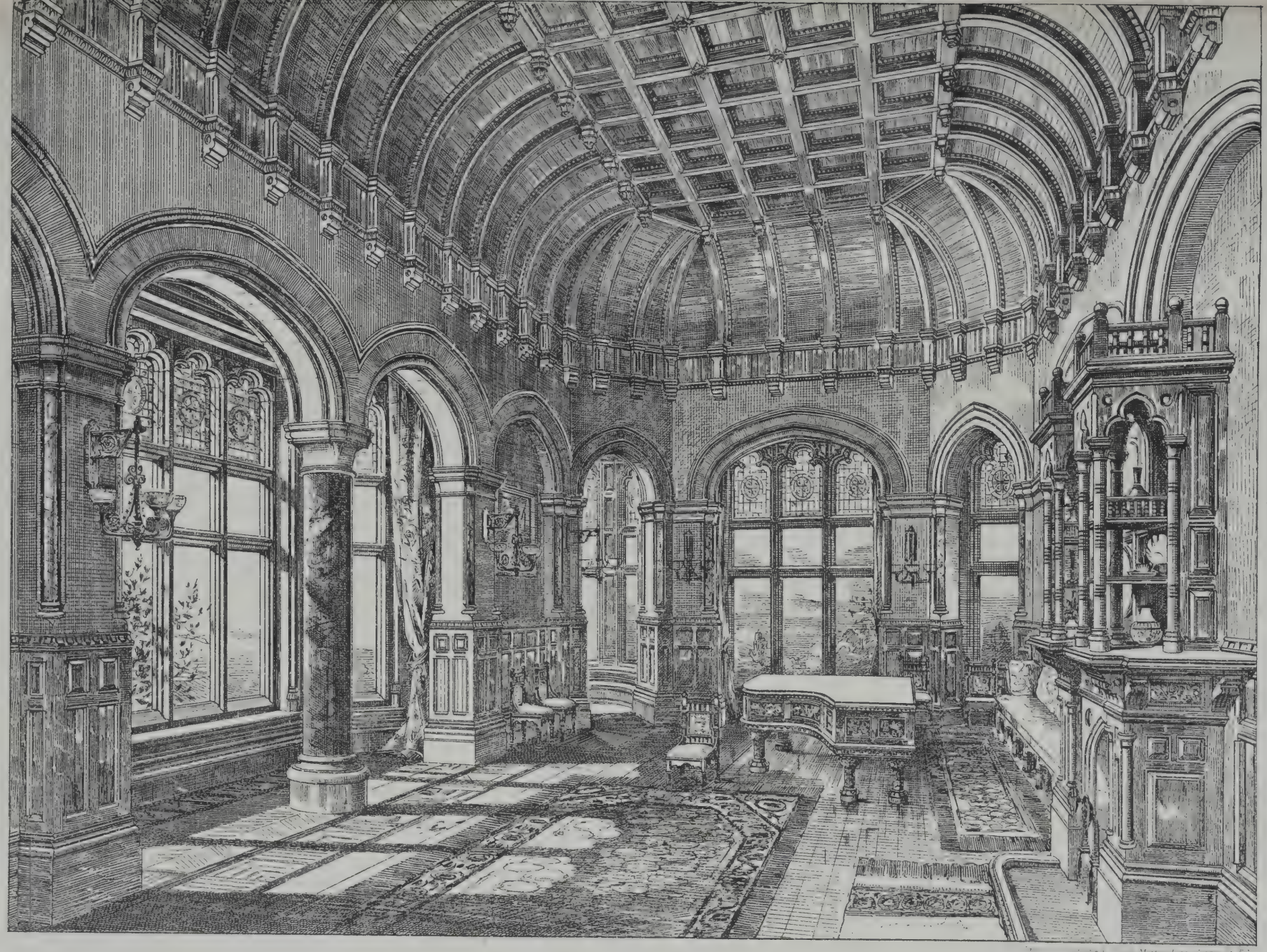
CHURCH IN GORDON SQUARE - WEST ELEVATION AND SPIRE.

JOHN BELCHER, Architect.



The Architect, Sept. 3rd 1886.

Printed by Sprague & Co. 22 Martins Lane Cannon St. EC



DRAWING ROOM "HEADINGLEY" HAMSTEAD, STAFF.

JOHN P. OSBORNE, A.R.I.B.A. Archt BIRMINGHAM.

The Architect, Sept 3rd 1886.

ILLUSTRATIONS.

BAROMETER AND THERMOMETER IN BOXWOOD.

WHILE *L'Art* gives etchings by the first artists of England and France from the masterpieces of painting and sculpture, it is not oblivious of industrial art. The etching which we give this week is an example of the care that is taken to illustrate works of that class. In this case it is difficult to draw the line between high and industrial art, for the philosophical instrument by M. BEURDELEY is so perfect in design that sculptors might claim it.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 21. WEST ELEVATION OF CHURCH IN GORDON SQUARE.

DRAWING-ROOM, HAMSTEAD, STAFFORDSHIRE.

THIS room has the whole of the internal woodwork of polished oak, the whole of the columns being of polished Devonshire marbles. The lead lights have been supplied by Messrs. R. W. WINFIELD & Co., and the gas-fittings by Messrs. BEST & LLOYD. The remaining work has been executed by Mr. WILLIAM BLOORE, from the designs and under the superintendence of Mr. JOHN P. OSBORNE, architect, Birmingham.

JAPANESE LEATHER PAPER (SEVILLE PATTERN).

THE material this represents is a leather paper manufactured in Yokohama, Japan, and imported by Messrs. A. SANDERSON & SON, of 52 Berners Street, London, W. It is a departure from the old Japanese paper both in style and quality; the emboss is far deeper than anything that has been used before, and all the raised parts are filled at the back, thus forming a solid raised material that has all the soft and artistic effect of real leather, which is, unfortunately, so entirely lost in most solid raised decorations. The treatment is also quite new, being an imitation of carved ivory, the effect of which is very fine and has been greatly admired. This pattern is also made, in imitation of the old leather, in gold and in crimson and gold, &c. We might mention here that the gold in these parts is imperishable, and will withstand damp and gas. The pattern we illustrate is a reproduction of an old and very famous Spanish leather which is known as the Seville pattern, and in this material it has the advantage of the Japanese fine work and high finish without losing the artistic design and feeling of the best Spanish work.

THE FOUNDATIONS OF VENICE.

THROUGH the kindness of Signor Boni, one of the architects of the Ducal Palace, I have been examining, says a correspondent of the *Times*, the data gathered by him and his colleagues as to the methods of the builders of Venice in preparing the foundations of their structures, data which furnish information of interest to those who love the city of the lagoons.

Signor Boni's examination of the cylinders drawn up from the artesian borings shows that the subsoil of Venice for at least 200 mètres is an alternation of clay, sea-sand, mud, and carbonaceous matter, showing that for ages before Venice existed its site was exposed at long intervals to the action of rivers, to the sun, and then to the sea, no fewer than ten different strata showing the evidences of as many periods of exposure to the sun, having been covered by vegetation, and then re-immersed, the sea coming and receding, followed by the floods from the mountains again. The present period of exposure has been a much longer one than has generally been imagined, for Cavalier Battaglini, the zealous custodian of the museum of Sorallo, has found in his excavations on the island vases of early Italic type, with others Etruscan, and many of the early Imperial epoch, so that when the people of Altinum fled before Attila, they took refuge in well-known and inhabitable localities, though sea-built isles.

When, therefore, it was intended to place the foundations of a mass of masonry like the palaces of the twelfth to fifteenth centuries or the huge piles of the campaniles, the practice was to excavate the unstable soil and *débris* of depositions, the constructions and demolitions of centuries previous, until solid clay was reached, rock being out of question at any depth. The first layer of clay being reached, piles were, when great stability was needed, driven in and down to and through the next stratum of firmer and more resisting clay into the stratum of sand beneath. These piles, first driven in a hollow square, were then driven within it until the square was filled as close as piles could be driven, and the interstices with fragments of stone rammed in. On this a raft of oak planks several inches thick was laid crossing in double layer, and on this were deposited masses of squared stone up to the wall bases. This wood, laid in the fourteenth century, is still found in perfect preservation. This, at least, was the process followed in the construction of the campanile of St. Mark's, the foundations of which were recently laid bare by Signor Boni, and the surprising fact was learnt that this foundation, bearing the greatest weight per superficial inch of any substructure in the world, only widens about two mètres on fifteen square at the pavement from the base of the campanile to the *palafitta*, as the mass of piles is called, a depth of five mètres. And this is the most solid foundation yet explored. That of the Ducal Palace lacks the *palafitta*, the stones of the substructure, 2·88 mètres deep, being laid directly on the first stratum of clay, and this in the structures of the various periods; that of St. Mark's has a *palafitta* only 2 10 mètres deep. The foundations of the church of the eleventh century show better work and better materials than the later constructions, the marble shell which was added a century later having only a semblance of foundation, even less than was the case with the pavilions of the south-west and north-west angles already described. This *palafitta*, where it exists, does not go down to that deep stratum of clay of great firmness on which the campanile rests, and therefore is more liable to subsequent and unequal subsidence, the stratum of clay on which the *palafitta* rests being unequal in thickness as well as compactness.

Now, as we do not know how far the general subsidence or elevation of the surface of the island has gone since the date of these constructions, it is impossible to determine exactly what may be the subsidence of the structures; but we have in St. Mark's an inequality between portions that must have been on a level once of nearly or quite a quarter of a mètre in the width of the portico. The campanile must have subsided as a whole, for the weight of the mass, calculated at nearly 20,000 tons, could not fail to make an impression on the stratum of clay already entirely traversed by the *palafitta*, the points of which enter into the sand beneath it, and it has certainly not failed to produce the partial subsidence which is found more or less in all Venetian buildings, the north side of the campanile having reached the perpendicular from the gradual greater subsidence of the foundation on that side, and the old pavement of the square is found at 72 centimètres below the present. A similar difference is found in the Ducal Palace, where were in the original construction three steps leading from the piazza up to the floor of the arcade, now on the same level. But this difference is difficult to apportion, as we have no data from which to prove the original elevation above the general surface of the island. What is clear is that the site of the Ducal Palace was much more trustworthy and equal than that of St. Mark's, as the permeability of the latter is still very great, the rise and fall of the tide being visible in that portion of the first church which lies under the great dome, as may be seen through the little window in the enclosed portion of it. The Ducal Palace, if sinking, is sinking solidly and equally, and though by its construction necessitating ties and braces of iron, does not show any serious cracks such as appear in St. Mark's, which, considering the slight difference in the substructures of the two buildings, can only be due to the fact that the palace was built on a natural ridge and the church on a more or less artificially formed soil.

This partial subsidence is the cause of the precarious state of St. Mark's, and, were the means forthcoming, would justify a far more radical statical restoration than anything hitherto attempted. This subsidence, besides the fracturing of the walls and general injury caused to mosaics and marbles of the facing, is, as I before said, destroying the pavement, and the committee of the English Society for the Preservation of Ancient Monuments, in the protest to which I have alluded, adduces the fantastic theory that the pavement was originally made undulating to show that St. Mark ruled the waves. It ought to suffice to study with even slight care the pavement itself to recognise the absurdity of this idea. In the first place, the position of the piers beneath is tolerably well indicated by the thrusting upward of the pavement, and then it will appear clearly, if one will examine the splendid slabs of Greek marble which cover a great part of the pavement of the nave, of which those under the nave, about 12 feet by 5 feet, are all sawn from one block, and were clearly intended to preserve their plane surface, but are now cracked, or in some cases badly broken over the resisting points of the substructure, the number of the fragments varying from half a dozen to three dozen, all, however, being broken. Of this the just issued annual report for this year says:—"In the interior of the church one of the most urgent works is the reconstruction of that large portion of the

pavement which lies under the central cupola, and this on account of the unequal subsidence (*avvalamento*, valleying) which seems to be increasing, and which causes numerous and dangerous falls." This portion of the church is that before the pulpit of the Patriarch, and the present state of it is a positive danger to his audience, which certainly was not the intention of builders of St. Mark's. I am glad to see that the report recognises the necessity in the future of the complete restoration of the pavement, some of the most interesting designs in which are already destroyed beyond recovery by wear, though for the present these plans are simply recommendations for consideration of the Government of Rome, which, on the recommendation of the Commission for the Preservation of Ancient Monuments, decides what part of the suggested works shall be carried out. And since I am on this subject I will, for the information of your readers as to the effects of the subsidence spoken of, quote a single sentence from Dr. Saccardo's report of the restoration of the ancient chapel of St. Isidoro, "the roof showed, still open, the crevices produced by ancient movements of who knows how many centuries, movements so great and grave that the head of one of the figures in the mosaic was removed a good palm from the body."

Of course much of this insufficiency of the foundations of St. Mark's is due to the facts that the church was not in its beginnings calculated for the scale which it has reached, and that work of the eighth century, which was for its then uses sufficient, became by the later additions buried beyond reach and reinforcement of the architects of the twelfth century, during the interval between which periods it was in progress. The basilica had four centuries of construction, four of embellishment—it is approaching its fourth of nursing and more or less intelligent restoration—in all a history unique in the existence of architecture.

THE ROYAL ACADEMY AND ARCHITECTURE.

THE following letter from Mr. W. H. White appeared in the *Times* on Monday :—

Sir,—To those who, like myself, believe that George III. established the Royal Academy "for the purposes of the arts of painting, sculpture, and architecture," the correspondence you have recently published on the subject is peculiarly painful. It would seem, from the letters of both Academicians and outsiders, that the country recognises only one artistic profession—namely, painting—and that a speculative annual exhibition is, if not the sole, at least the primary object of an English Academy of Arts. Moreover, it would seem that this Georgian institution is still so perfect as to merely require the better regulation of the number of pictures which each exhibitor should hang periodically within its walls; and I have patiently waited in the hope that some painter would write to remind his colleagues in what the true functions of a Royal Academy consist—that beyond the narrow limits of these isles an Academy of the Fine Arts is not simply an open market for the exposition of pictures, or even a fashionable emporium for their sale. But no one has yet ventured to do so. On the contrary, a triumphant majority of Academicians, through their spokesman, "R.A.," has gratuitously flung a gauntlet of defiance at all those who, besides painters, practise the arts of design, such as sculpture, architecture, engraving, drawing, for the cultivation of which, according to the instrument of foundation, the Royal Academy was established. "R.A.," admitting that the institution was founded for public objects defined in that instrument, fearlessly claims judgment upon the stewardship of its trust, which trust, he adds, "has to be tested by the objects thus defined." So, with your permission, sir, I will attempt to prove that, as far as concerns architecture, the Royal Academy has not fulfilled some of the crucial obligations imposed upon it by royal mandate.

Clause XI. of that instrument decrees :—"There shall be a professor of architecture, who shall read annually six public lectures calculated to form the taste of the students, to instruct them in the laws and principles of composition, to point out to them the beauties or faults of celebrated productions, to fit them for an unprejudiced study of books, and for a critical examination of structures;" and under another clause this professor is to be elected from among the Academicians. But there is not, and there has not been for at least a quarter of a century, any study of architectural composition in the Academy schools; for years there has not been any serious study of planning there, such as the Continental schools deem absolutely essential to the teaching of architecture. Mr. Street was the last professor, and as, since his death in 1881, no Academician has been found willing or fit to carry out this part of the trust, the Academy Chair of Architecture has remained vacant for five successive years.

Clause XIII. decrees :—"There shall be a professor of perspective and geometry, who shall read six public lectures annually in the schools, in which all the useful proportions of geometry, together with the principle of linear and aerial perspective, and also the projection of shadows, reflections, and refractions, shall be clearly and fully illustrated;" and under another clause this professor is to be elected from among the Academicians. But there is not, and for 26 years there has not been found one Academician willing or fit to perform this part of the trust—a part which in the higher schools of the Continent is regarded as vital to the teaching, not alone of architecture, but of all the arts of design.

Clause XX decrees :—"There shall be a library of books of architecture, sculpture, painting, and all the sciences relating thereto." But how many books of the last-named category can be found there? I ask this because, though the Royal Academy makes a vast pretence of teaching architecture, it has not and never has had a professor of construction. Indeed, when, two or three years ago, looking at the students' drawings at Burlington House, I perceived that the architectural design to which the highest prize had been awarded could not possibly hold together—that it would fall like a house of cards on a rickety table—I was gravely informed that the Academy gold medal for architecture is given for "design" not "construction." From that moment I have ceased to wonder at the many unkind things which have been printed about modern architects in the *Times*, for how can it be otherwise when in their very nursery they are encouraged to be unkind to themselves?

A statement of "R.A." also demands inquiry. If, as he says (August 14, 1886), the Academy schools since their foundation have given to the country most of its chief artists, at a cost of several thousands of pounds annually, how comes it that so few of the Academicians and Associates have entered as students therein? The architects alone concern me, and, since the foundation in 1769, there have been twenty-eight architects admitted to membership of the Royal Academy. Of these, ten were received as students, only six of whom obtained honours in the schools. Of the architects elected during the present century, neither Wyatville nor Wilkins, neither Cockerell, Barry, Scott, Burges, nor Street (all now deceased), neither Mr. Pearson, Mr. Waterhouse, nor Mr. Bodley were students of the Royal Academy. It is utterly misleading for "R.A." to claim such recognition by the country, and, as for the annual cost of the schools, how much of that cost goes to the Academicians themselves? It would be instructive to know the total annual amount of "the emoluments of the Institution," which, in compliance with King George's gracious intention (Clause XXIII. of the instrument of foundation), are to be divided as nearly as possible among all the members. In other art corporations, one or two, or perhaps more, of the executive officers, who give all or most of their time to the Institution, are paid; the general body of members join in the common work without pecuniary reward, after business hours and at their leisure. But each member of the Royal Academy receives a fee for his attendance, and every kind of work done there by Academicians is paid for in hard cash; besides which, every officer, from the president downwards, receives an annual salary, and all this over and above the comparatively large incomes assured to them by their position alone from public and private patronage.

"R.A." maintains that the Royal Academy was founded by King George III. "upon property which was his own." Observe how history grows by time and repetition. As far as I can learn, the King, after starting "his exhibition," gave the Royal Academy at different times 5,000*l.* out of his privy purse, and in 1771 ordered certain apartments in his old palace of Somerset House to be appropriated to its use. When this was pulled down and the present building erected for Government offices at the public cost, the King ordered a few rooms in the new building to be reserved for the use of the Royal Academy. Later on it was permitted to occupy half of the new building intended for the National Gallery in Trafalgar Square, the national collection of pictures being then comparatively small, and ultimately a part of Old Burlington House was presented to the Royal Academy at the cost of the taxpayers. It is this last gift which, in the words of "R.A.," has removed from the nation "the lien of the King's gift to the Academy." The gift is now regarded as the mere fulfilment of a pledge or as an outstanding debt at last happily paid. But when Parliament was voting supplies for the purchase of Old Burlington House, you, sir, did not regard the matter in such a light. The *Times* then wrote :—"It is not 70,000*l.* that we are asked to give the Academicians, but absolute and despotic control over British art;" and you added, "Is this right?" Sir, the events of the subsequent twenty-seven years have shown that it was not right. It was not just to deliver over the sculptors, architects, engravers, and draughtsmen of the country to the mercy of an exclusive majority of painters. At the present hour the representation of the arts of design at the Royal Academy is divided among seventy-three privileged persons (Academicians and Associates), of whom fifty-nine are painters, seven are sculptors, five are architects, and two are engravers. Such a proportion is not only not equitable, it does not constitute even an efficient

representation of the "arts of design," which are the words used in the instrument of foundation.

When, two years ago, I set myself to compare, from an architectural standpoint, the relations of School, Academy, and State in Paris and in London, I was amazed to find how complete and national is the French academic system; how hollow and personal is the English one. In France the Académie des Beaux-Arts (Institut de France) is a recognised tribunal of world-wide fame. It consists of fourteen painters, eight sculptors, eight architects, six engravers, and four musical composers, in all forty distinguished experts, always maintained at the same strength and in the same proportion. If an epidemic were to carry off the sixteen sculptors and architects of that Academy, sixteen others almost similarly accomplished would be forthcoming at once. But, awful reflection! if our four sculptor Academicians and our three architect Academicians were to be suddenly taken from us at one fell swoop, would their surviving brethren seek abroad for foreigners to fill the void, as John Bull sometimes does when he wants a sculptor? or would they advertise in the public prints for latent genius of the native sort, as the Government of this country does when it wants an architect? I have, however, no wish to appear funny or smart, for, thanks chiefly to the Royal Academy, architects have been left very little wherewith to make merry in this teeming corner of an overbuilt part of the world.

It has not been my intention to describe how the arts of design other than those purely architectural have suffered at the hands of the Academicians, but I ask leave to state that the Academy chair of sculpture, last filled by Mr. Woolner, R.A., has remained vacant for six successive years.

Mr. G. Aitchison, A.R.A., in reply to the foregoing, says:—

Mr. W. H. White, in his letter that appeared on the 30th inst., quotes from clause 11 of the instrument of foundation of the Royal Academy, which decrees that "there shall be a professor of architecture, who shall read annually six public lectures," and subsequently states that "the Academy chair of architecture has remained vacant for five successive years."

This latter statement is correct, but the council has not allowed this vacancy to wholly deprive the architectural students of their lectures, for lectures on architecture were delivered in 1882-3-4-5-6, and I know that the following gentlemen were employed for the purpose, viz.:—F. Penrose, M.A., Stanley Lane Poole, B.A., A. Waterhouse, R.A., G. F. Bodley, A.R.A., and myself.

Mr. White is also ambiguous when he says, "But there is not, and there has not been for at least a quarter of a century, any study of architectural composition in the Academy schools; for years there has not been any serious study of planning there, such as the Continental schools deem absolutely essential to the teaching of architecture." Mr. R. Phené Spiers, the master of the architectural schools, is not only an accomplished architect and water-colour painter, but he went through the course of the Ecole des Beaux-Arts at Paris. The architectural R.A.'s and A.R.A.'s serve in turn as visitors in the school, and every six weeks a subject to be illustrated by plan, elevation, section, and details is given out, drawn out by the students, and exhibited, when prizes are awarded for the best.

SWYNNERTON CHURCH.

THE members of the North Staffordshire Field Club lately visited the neighbourhood of Swynnerton. Mr. Charles Lynam, architect, supplied a description of the parish church. He informed the members that his first visit to the building was made as far back as 1850, when it was in an unrestored state, at which time, he said, it possessed an interest absent in its present more perfect condition. Its hoary age was then its prevailing characteristic, and it begot in one that strong sympathy which the upright wall and the newly-wrought stones never seem to command. Of the details which still retained their ancient character, attention was first directed to the beautiful Norman doorway in the east wall of the tower. Its western face was exceptionally fine both in its general design and in the elaboration of its details. It was of very rare occurrence, if not unique, he pointed out, to find an inner doorway of a tower treated with enrichment such as was to be seen here. Indeed, a second door at all to a tower was uncommon, and its existence here gave rise to the supposition that originally this was an external western doorway to the nave, and this suggestion involved the question whether the internal doorway was not of older date than the lower stage of the tower. Its bold details and the character of the carvings certainly pointed in that direction, whilst the work of the tower itself, with its spreading base weatherings and the slight remains of the original external doorway, showed later characteristics. Having pointed out other points respecting the tower and the principal features about the body of the church, Mr. Lynam dwelt at some length on what was interesting in connection with the chapel on the south side of the chancel. It was known as "The Lady Chapel," but he thought that in all probability it was erected as a mortuary chapel. It now contained two relics of interest, one the alabaster slab against the east wall, and the other the colossal seated figure of our Lord against the west wall. The figure was found, the rector informed him, beneath the floor of the chapel, on an occasion when the family vault had to be opened. Opinions differed as to the date of the sculpture. Some placed it as far back as the original church, and assigned to it a date as early as the twelfth century. Any master of Mediæval sculpture, however, should be able to fix the date with certainty. Having regard to the form of the seat occupied, and to what can be made out of its mouldings, his opinion inclined to a later rather than an earlier date. What its purpose was remained a further puzzle; it had been suggested that it was brought from Lichfield Cathedral, but that view the present rector discarded. It was certainly difficult to conceive its being in proportion to any part of the church which now contained it. From within the chapel might be seen a low window, commonly known as a "leper window," where, it was supposed, persons afflicted with disease came to receive the rites of the Church without coming in contact with the congregation. The original windows of the chancel were of an interesting character, from the fact that they pointed to the date immediately previous to the introduction of tracery—about 1245. Of the recumbent effigy in the south of the chancel, Mr. Lynam said it was a stately figure, and probably represented the founder, not of the original church, but of its rebuilding in the thirteenth century. It used to be considered that cross-legged figures (the right leg of this effigy being crossed over the left) were either Crusaders or were pledged in some way in reference to the same. The latest authorities now declaimed against this theory, and the last assumption he was aware of was to the effect that this position of the body was chosen as best representing that of complete repose, aiming at an expression of the idea of Sir Walter Scott—

> Soldier rest, thy warfare o'er,
> Sleep the sleep that knows no breaking,
> Dream of battlefields no more,
> Days of danger, nights of waking.

THE BUCCLEUCH ESTATE, RICHMOND.

THE Richmond Vestry having made application to the Local Government Board for powers to borrow 30,000*l.* in order to purchase the Buccleuch estate, containing twelve acres, and which adjoins a field already owned by the town, an inquiry into the subject was held before Mr. Harrison, C.E., on last Friday and Saturday. Mr. Michael, Q.C., represented the applicants, and Mr. Burt the opponents.

Mr. Michael said the population of the town was estimated to be 22,000, and the valuation for taxation was 169,349*l.* At present there were unpaid loans amounting to 91,594*l.* To that sum must be added the probable expenditure hereafter on main drainage, which might amount to 100,000*l.* But the total sum would not much exceed one year's valuation. Counsel then explained how the Duke of Buccleuch, having put his property into the market, had agreed to dispose of it to the Vestry for 30,000*l.* If it were purchased, and a light iron rail substituted for the existing wall, the finest walk in Europe would be secured. The Vestry had received offers amounting to 15,000*l.* for a part of the land; there was no reason why Richmond should be injured when a rate of three-halfpence in the pound would save it. If the estate fell into the hands of speculative builders, the property in the town would become deteriorated in value and inhabitants would be driven away. He calculated the rate in this way. The interest on the 15,000*l.* would amount to 600*l.*, the expense might be taken at 300*l.*, or in all say 917*l.* At present a penny rate produced 625*l.*, so that one of three-halfpence would be sufficient.

The first witness called was Sir Frederick Leighton, P.R.A. The President said he was very well acquainted with the view from Richmond Hill, and it was one of his greatest solaces after a weary day's work. He should contemplate any building on the Buccleuch Estate with horror and dismay. It would be the greatest public disadvantage. "I don't know the peculiar circumstances of property in Richmond, but," continued the President, "I feel in regard to that view that it is a view which is famous all the world over, which is enshrined in our literature and art, and Englishmen all over the globe are proud of it. People come from the Antipodes to see it. It is the property of all of us as it is our pride, and I venture to think, with all deference to the opposition, that it is in some sense the life-blood of Richmond. I do not speak of the gain that its acquisition would be to Richmond. I have only just visited the spot, and I cannot trust myself to speak of the extraordinary gain to the resources and beauty of Richmond that this would be, not only for the population of Richmond, but for every artist in the country, and if I am not out of order I should like to express at this moment the deep sense of gratitude of every

artist in the country to the Vestry of Richmond for their most patriotic action."

Sir J. Whittaker Ellis, M.P., said he agreed with Sir Frederick Leighton as to the scenic value of the estate. In a picture foreground was wanted as well as background. With many artists it was everything; in this case, if the foreground was removed the picture was gone. There was very little to be done except removing the wall and putting up some light fences, and from his experience in his own gardens he thought 250*l.* was an ample allowance for keeping up the grounds. If houses were built on the grounds they would decidedly affect the value of the property on the hill, owing to the smoke being driven upwards by the mist of the river. When asked if the view could be improved by removing some of the trees, Sir J. Whittaker Ellis said the work must be done carefully, because trees live and grow together—if one is destroyed its neighbour is likely to be destroyed. Hence if houses were built and drains made, it would be necessary to remove some trees, and the others would be sure to die.

The Inspector said he remembered hearing the late General Scott say that the effect of the drainage of the Albert Hall was the killing of several of the elms in Hyde Park. Evidence was also given by Mr. Driver, Mr. Ryde, Mr. Clutton, and Mr. Chancellor in support of the application.

Mr. Vicat Cole attended on Friday, but could not wait. In a letter on the subject he wrote:—"I could only have said in answer to any questions the Inspector might have put to me, that I, as an artist, do sincerely hope the purchase of the estate will be effected by the Vestry. It is the loveliest spot in all England. Driving through miles of crowded noisy streets one finds another world suddenly opened—one of exquisite beauty in form and colour, with the silver Thames gliding through it, and, above all, one of unspeakable repose. This I feel sure would be quite lost if the building speculator had his way. The effects of covering a part of the hill with buildings, and their accompanying smoke, or turning the estate into Cremorne Gardens with brass bands and fireworks, would be to utterly destroy the greatest charm of Richmond Hill. The situation of the estate is of inestimable value to the view. I remember when, some years ago, trying to paint the scene how important those trees on the right were to it, and how impoverished it would have been without them. I feel that the cutting up of this estate would be ruinous to Richmond and disgraceful to the country. I am thankful that Sir Frederick Leighton will be present at the meeting with his artistic knowledge and eloquence."

On Saturday the case of the opponents was heard, the contention being that the Vestry could not gain support in the town for the application, and had to depend on witnesses who did not reside in Richmond. In reply to a question from the Inspector, Mr. Michael, Q.C., said that if the Vestry only required the sum of 15,000*l.*, in consequence of the resale of a portion of the property not required for the public enjoyment, he assumed there would be no difficulty in amending the application, and that the Local Government Board would sanction the loan of 15,000*l.* only.

THE ARCHÆOLOGY OF THE SWANSEA DISTRICT.

THE Cambrian Archæological Society visited Swansea and its district last week. The president of the meeting was Mr. J. T. D. Llewelyn, who in his address said:—

The antiquities of Swansea have already received your attention at a previous meeting in the year 1861, but for two reasons another meeting on an already reconnoitred locality may be held with advantage. In the first place, a new generation will have sprung up after an interval of twenty-five years, to whom this meeting will come fresh and full of interest; and secondly, the information acquired by those who were here in 1861 will not only bear refreshing, but very possibly be the germ from which more matured opinion and views will have been developed, and if such find expression in the debates and transactions of the "Archæologia Cambrensis," it will be to the advantage and benefit of the history which it is our special point and object to clear up and emphasise for those who come after us. Truly it is for this that the Cambrian Archæological Association exists. The remains of past generations rapidly become obliterated by the ravages of time, weather, and careless and destructive man. We cannot well avoid the former, but it should be our constant watch and care to prevent the latter, and in such a cause every member of our association can act as though he were a member of a vigilance society, to prevent any Vandalism which he may observe, to secure that any excavation, disinterment of remains, such as opening a tumulus, barrow, or cairn, or laying bare a Roman tesselated pavement, shall not be carelessly done, or left to inexperienced workmen, but if carried out at all, be well superintended, and an accurate and reliable report prepared for the next meetin of our association. Remains do exist in our district, and it would be a lamentable loss if their destruction should be wanton or careless, and the histories on which they might shed invaluable light be left in the Cimmerian gloom which we, as an institution, exist to brighten. The district around Swansea abounds with material for reflection on the past, and interest for the archæologist. Whether it be in the Cymric, Roman, Norman, or Mediæval periods, remains exist in pre-historic cairns and encampments, giving a dim evidence of the rude quarrels and resistance to the intrusions of unwelcome invaders of the old land of their fathers, in the cromlechs and Druidic remains which testify to the earliest forms of their primitive worship; or whether we come down to the Roman period, when the evidences point to the probabilities that their roads and stations (which are still to be traced both by their names and their actual visible remains) were not destined to bring about that civilisation and colonial success which attended their engineering efforts in richer and more accessible parts of Great Britain, probably both on account of the distance and the poverty of the district, and of the resistance of the rude Welsh tribes, we find a scarcity of these remnants of the luxury which attended these settlers in other places. Villas with their tesselated pavements, baths, and other evidences of luxurious ease and rest are scarce here, while the names of castell and caer, one of Roman, the other of Cymric origin, are as suggestive in their opposition as the positions of the camps of these rival nations. Names and legends may, if taken alone, be of little real value, but they are suggestive to many.

The most interesting of the visits were those to Margam and Neath Abbeys. Mr. S. C. Gamwell read a paper on Margam Abbey. He said the conquering Robert Fitzhamon died in 1107, Lord of Glamorgan as well as Earl of Gloucester. He left but one child, a daughter, Mabel, who was, of course, a great heiress. It is on record in verse that King Henry sought her hand in marriage for his illegitimate son. The lady, knowing her own worth, asked what name the suitor should bear. The King replied that he should be called Robert Fitzleroy, and should be created Earl of Gloucester and Lord of Glamorgan. This settled the matter; the marriage took place, and this bold and powerful noble, who was known as Robert the Consul, founded Margam Abbey in 1147, the last year of his life. His body was buried at Bristol, which was the head of the honour of Gloucester. The abbey was dedicated to St. Mary, and its name was variously written Morgan, Margan, and Margam in that happy time when as yet there were no school boards and no plucking for unorthodox spelling. Margam Abbey existed for four hundred years, a period as long as, and probably involving nearly as many political and social changes, as have passed between our own day and the accession to the English throne of Henry VII., the first of the Tudors; and during these four centuries it no doubt passed through many vicissitudes, the history of which is now irrevocably lost, if it was ever written. Leland says the abbey possessed the right of sanctuary, a rare privilege granted by the Normans to their inveterate foes in Wales. But Margam's abbots appear to have held the balance fairly, and to have done much to soften, by the sanctions and prohibitions of religion, the painful condition of things subsisting between the invaders and the invaded. Margam was one of the 1,000 religious houses which Henry VIII. suppressed, and probably some of its revenues went into the general fund of 160,000*l.*, equal to about 1,500,000*l.* of our money, out of which the King founded six new bishoprics, several colleges, schools, and hospitals, repaired Dover Castle and other national defences, and pensioned a few monks and many favourites. There were many applicants for the lands of the abbey, notably St. John, ancestor of the Fonmon family; Carne, ancestor of the St. Donatt's family, and one Gunter, who was a farmer of abbey lands. These negotiations terminated in 1564 by the sale of Margam Abbey and its demesne to Sir Rice Mansel, of Oxwich Castle, Gower, for 678*l.* 1*s.* 6*d.* It was granted to him in fee, subject to a gross rental of 4*l.* 4*s.* 11½*d.* This document, with a great seal in white wax, is still at Margam.

Mr. T. S. Sutton, in his paper on Neath Abbey, dwelt mainly with the supposed original plan of the abbey. The story, he said, of the dilapidation of the abbey had still to be written, because time alone would not account for the devastations now seen. Some portions of the building had fallen within the past thirty years, probably through the vibrations of the trains which passed on the adjacent railway. There were, however, still standing many indications of what the abbey was before—a grand west window, a lofty nave, pillared aisles, handsome transepts, a rood screen, &c., the whole dominated by a square tower. Then there were traces of the domestic buildings, whose object was the dispension of hospitality, besides a small building which had the aspect of a porter's lodge. This last-named building, in comparatively recent time, had been utilised for the refining of ores, the chimneys being used as furnace stacks. As to its extent, there were buildings in the neighbourhood which showed that it must have been great, and had extensive dependencies.

THE PRESERVATION OF OUR ABBEYS.

IN a letter addressed to the *Times*, the Rev. Precentor Venables writes :—

The condition of Stonehenge—its constant exposure to mutilation and the apprehensions for its stability—has brought the preservation of our ancient monuments, which are among the most priceless treasures of our land, prominently before the public. Among these monuments of the past few are dearer to Englishmen, whether home-born or children of the Greater England beyond the sea, than our ancient abbeys, and yet none are in greater danger of being gradually lost to us. It is not generally recognised that a ruin, by the very fact of its being a ruin, deprived of the usual protection of roofs and eaves and the like, requires not less but more care than a perfect building to preserve it from further decay. Those who have watched our ancient buildings know well that even when they are carefully looked after no winter passes without loss of some kind to the fabric, while, where no attempt is made to secure their stability, their gradual destruction is certain, and is only a question of time.

May I then be allowed to employ your columns in urging on the proprietors of all ruined abbeys, and I may add castles, to take timely measures for their preservation, and to continue these measures year by year as circumstances require? I would not be supposed to be advocating anything in the way of so-called "restoration," which too usually means substituting a lifeless copy for the outcome of the genius of the original builder—a man who loved his work and threw his heart into what he did; still less any wholesale destruction of old work and replacing it by Brummagem nineteenth-century finery because the old is worn and homely and failing, such as every true antiquary has to lament at St. Albans. What I would urge is simply the removal of all causes of injury, such as ivy and trees and shrubs (which, however much they may add to the picturesqueness of a building, are the most fatal enemies to its stability); the erection of buttresses to keep up tottering walls, taking care that the additions show their date and character on their face; the supply of fresh masonry here and there, where for want of it a pier or an arch or a window is nodding to a fall; and, above all, the careful cementing of the tops of the walls to prevent the penetration of moisture. It may also be necessary sometimes to add iron bars, however ugly in themselves, to bind together tottering pillars and walls, as has been done with such excellent results by the Duke of Devonshire at Furness Abbey, and save them from a ruinous collapse.

It is needless to say that such work is costly work. A ruined abbey is something of a *damnosa hæreditas*. But if those who inherit these monuments of the past regard themselves as they really are, not in the light of owners who may do what they will with their own, but simply as trustees of a portion of our national heritage, they will be far from grudging the expenditure necessary to enable them to hand down their inheritance unimpaired to future generations.

This letter has been called forth by a recent visit to two of our most celebrated abbeys, both Cistercian, Valle Crucis and Rievaulx. I can remember both covered with the deadly Nessus robe of ivy, with trees and creepers growing from the walls, and slowly but most surely disintegrating the masonry—lovely, but fast sinking to decay. Now, in defiance of the outcry of the amateurs of the picturesque, the whole buildings have been disencumbered of this fatal beauty, the yawning fissures have been closed, and a coating of cement has rendered the summit of the walls impervious to moisture. The one is a work of several years back, due to the late Lord Dungannon and Mr. Wynne, of Peniarth. The other was only completed last year by Lord Feversham. When I visited Rievaulx last August the lovely choir was invested with a scaffolding, and was busy with workmen, under efficient superintendence, staying the progress of decay. Last Thursday I found the work finished, and rejoiced that so good a work was done. In one respect, however, the work at Rievaulx contrasts unfavourably with that done at Valle Crucis, as well as that at Fountains, Furness, and other abbeys. No attempt has yet been made to disencumber the buildings of the immense masses of *debris* which rise in huge heaps on all sides and conceal their original plan and arrangement and much of the architecture. The nave at Rievaulx is simply a confused pile of grass-grown rubbish, in which it is hopeless to discover any trace of its ancient form or details. The fragments of the lantern tower rise in a lofty mound on the crossing. The day-room or calefactory is heaped high with mossy *débris*, over which it is not very easy or safe to scramble. So also is the infirmary, a very curious room. The foundations of the chapter-house are quite hidden by turfy heaps of rubbish. The choir is least encumbered, but even that needs excavation, a work which would certainly bring to light interesting features of the original choral arrangements. Perhaps the work so excellently begun last year by Lord Feversham is only temporarily suspended. I hope this may be so, and that another season may see the commencement and earnest prosecution of a work of disinterment at Rievaulx, which will be certainly fruitful in discoveries, for which every archæologist will have cause to thank the noble owner.

I cannot close this letter, though already too long, without calling attention to the contrast presented by the neglected state of the noble ruins of Kirkstall Abbey. When I saw them last some of the most important parts of this historic building were in imminent danger of falling, and called for speedy attention to save them from ruin. I was told that the owner had been appealed to in vain, and that it was proposed to form a committee of the leading merchants and clergy and professional men of Leeds to consider what measures should be taken to arrest the decay which threatened the destruction of so noble a monument of antiquity, which by the spread of the town has almost become a part of Leeds itself. My informant also said that it was intended to call in the professional aid of Mr. Pearson. As far as I can learn, nothing has yet been done in this direction, and the ruin is fast becoming more ruinous.

Surely in the immediate vicinity of a town of such wealth and energy as Leeds such a building will not be permitted to tumble down for want of timely care. Even if the owner is unable or unwilling to undertake the necessary repair, let the movement be started, and Leeds will speedily provide the means for carrying out the work. Kirkstall, it is almost needless to say, is one of our very finest abbeys, any injury to which would be a national disaster.

EDINBURGH IN 1561.

THE visit of the Queen to the Edinburgh Exhibition has been taken as an opportunity by Professor Masson to describe in the *Scotsman* some of the circumstances relating to the visit of Queen Mary to the city when she returned from France. In his second essay he gives the following account of "The Plan and Fabric of the Town in 1561":—

Then, as now, the buildings that went by the general name of Holyrood were distinguishable into two portions. There was the abbey, now represented only by one beautiful and spacious fragment of ruin, called the royal chapel, but then, despite the spoliations to which it had been subjected by recent English invasions, still tolerably preserved in its integrity as the famous edifice, in Early Norman style, which had been founded in the twelfth century by David I., and had been enlarged in the fifteenth by additions in the later and more florid Gothic. Close by this was Holyrood House, or the palace proper, built in the earlier part of the sixteenth century, and chiefly by James IV., to form a distinct royal dwelling, and so supersede that occasional accommodation in the abbey itself which had sufficed for Scottish sovereigns before Edinburgh was their habitual or capital residence. One block of this original Holyrood House still remains in the two-turreted projection of the present Holyrood, which adjoins the ruined relic of the abbey, and which contains the rooms now specially shown as "Queen Mary's Apartments." But the present Holyrood, as a whole, is a construction of the reign of Charles II., and gives little idea of the palace in which Mary took up her abode in 1561. The two-turreted projection on the left was not balanced then, as now, by a similar two-turreted projection on the right, with a façade of less height between, but was flanked on the right by a continued chateau-like frontage, of about the same height as the turreted projection, and at a uniform depth of recess from it, but independently garnished with towers and pinnacles. The main entrance into the palace from the great outer courtyard was through this château-like flank, just about the spot where there is the entrance through the present middle façade; and this entrance led, like the present, into an inner court or quadrangle, built round on all the four sides. That quadrangle of château, touching the abbey to the back from its north-eastern corner, and with the two-turreted projection to its front from its north-western corner, constituted, indeed, the main bulk of the palace. There, were, however, extensive appurtenances of other buildings at the back or at the side furthest from the abbey, forming minor inner courts, while part of that side of the great outer courtyard which faced the entrance was occupied by offices belonging to the palace, and separating the courtyard from the adjacent purlieus of the town. For the grounds of both palace and abbey were encompassed by a wall, having gates at various points of its circuit, the principal and most strongly guarded of which was the Gothic porch admitting from the foot of the Canongate into the front courtyard. The grounds so enclosed were ample enough to contain gardens and spaces of plantation, besides the buildings and their courts. Altogether, what with the buildings themselves, what with the courts and gardens, and what with the natural grandeur of the site—a level of deep and wooded park, between the Calton heights and crags on the one hand, and the towering shoulders of Arthur Seat and precipitous escarpment of Salisbury Crags on the other—Holyrood in 1561 must have seemed, even to an eye

the most satiated with palatial splendours abroad, a sufficiently impressive dwelling-place to be the metropolitan home of Scottish royalty.

The town itself, of which Holyrood was but the eastward terminus, corresponded singularly well. Edinburgh even now is, more than almost any other city in Europe, a city of heights and hollows, and owes its characteristic and indestructible beauty to that fact. But the peculiarity of Old Edinburgh was that it consisted mainly of that one continuous ridge of street which rises, by gradual ascent for a whole mile, from the deeply ensconced Holyrood at one end to the high Castle Rock at the other, sending off on both sides a multiplicity of narrow foot passages, called closes, with a few wider and more street-like cuttings, called wynds, all of which slope downward from the main ridge in some degree, while many descend from it with the steepness of mountain gullies into the parallel ravines. Whoever walks now from Holyrood to the Castle, up the Canongate, the High Street, and the Lawnmarket, walks through that portion of the present "Old Town" which figures to us the main Edinburgh of Queen Mary's time, and is, in fact, its residue. But imagination and some study of old maps and records are necessary to divest this residue of its acquired irrelevancies, and so to reconvert it into the actual Edinburgh of three hundred years ago. The divisions of the great ridge of street from Holyrood to the castle were the same as now, with the same names; but objects once conspicuous in each have disappeared, and the features of each have been otherwise altered.

The first part of the long ascent from Holyrood was the Canongate. Though occupying nearly half of the whole, and in complete junction with the Edinburgh proper up to which it led, it was a separate "burgh of regality," which had formed itself, as its name implies, under the protection of the abbots and canons of Holyrood. By virtue of that original, it was not yet included in the municipal jurisdiction of the Edinburgh magistrates and town council, but held out under a magistracy of its own. Hence some characteristics distinguishing this lower part of the ascent from the rest. The old Canongate was by no means the dense exhibition of dingy picturesqueness now known as the Canongate of Edinburgh, with repulsive entries and closes on both sides, leading to cages of crammed humanity of the poorer sort, or to inner recesses of bone-yards, pipe-clay yards, and the like. It had the sparseness and airiness of a suburb of the court. The houses, whether of stone or partly of wood, were pretty thickly put together, indeed, along the immediate street margins, with the inevitable access to many of them by entries and closes, but did not go so deeply back on either side as not to leave room for pleasant gardens and tracts of vacant ground behind. A paved and causewayed street, ascending continuously between two rows of houses, of irregular forms and varying heights, but few of them of more than three storeys; other houses at the backs of these to some little depth all the way, reached by closes from the street, and generally set gablewise to those in front; and, behind these again, garden grounds and grassy slopes and hollows: such was the ancient Canongate. In token of its claims to be a separate burgh, it had its own market cross, and, near this, its own Tolbooth or prison and council house. The present Canongate Tolbooth, though an antique object, is only the successor of the older Canongate Tolbooth of Queen Mary's time.

The ending of the Canongate and beginning of the High Street of Edinburgh proper was at a cross street, the left arm of which, descending from the ridge into the ravine on that side, was called St. Mary's Wynd, while the arm to the right was called Leith Wynd. Here, to mark more emphatically the transition from the smaller burgh into the greater, one encountered the separating barrier of the Nether Bow Port. It has left no trace of itself now, but was a battlemented stone structure, spanning the entire breadth of the thoroughfare, with an arched gateway in the middle and gates for admission or exclusion. That passed, one was in the lower portion of the High Street, called specifically the Nether Bow. Here it was not merely the increasing breadth of the thoroughfare and the increasing height of the houses that showed one had come within the boundaries of the real civic and commercial Edinburgh. No such sparseness of building now as in the Canongate; no mere double fringe of houses to a short depth, with entries and closes ending in gardens and vacant ground; but a sense of being between two masses of densely-peopled habitations, clothing the declivities from the ridge to their lowest depths on both sides, and penetrable only by those courts and wynds of which one saw the mouths, but the labyrinthine intricacy of which in the course of their descent baffled conception.

The same sensation accompanied one on advancing still upwards into the middle and broadest part of the High Street. Here the street had much the same striking appearance as now. One saw a spacious incline of oblong piazza, rather than a street, lined by buildings, some of solid stone throughout, and very tall, others lower and timber-fronted, all of quaint architecture from their basements to their peaked roofs and chimneys, and not a few with "fore-stairs," or projecting flights of steps from doors on the first floor down to the causeway. It was here, too, that the lateral fringes of habitation down the steep alleys were of greatest width. That on the right was stopped only at the bottom of the ravine on that side by a lake called the North Loch, while that on the left, after reaching the bottom of the other ravine, mingled itself there with an independent and very aristocratic suburb that had grown up in the ravine itself, under the name of the Cowgate, as a southern parallel of relief to the main Edinburgh of the ridge above. This low-lying aristocratic suburb, though accessible from the piazza of the High Street by the wynds and closes on the southern side, did not come easily into the cognisance of a stranger that might be exploring the piazza itself. He had enough to arrest his attention where he was. One difference between the old High Street and the present, despite their general resemblance, consisted in a huge obstruction, now removed, which interrupted the old High Street at its very midmost point, immediately above the Town Cross. Just above the spot now marked in the causeway as the site of this Town Cross, and beginning exactly where the great church of St. Giles protrudes its complex pile on the left, and raises into the sky its remarkable tower and open octagonal crown of stonework, there stood in the old High Street a stack of lofty masonry, stretching up the centre of the street for a considerable way, and leaving only a gloomy and tortuous lane for pedestrians along the buttresses of the church on one side, and a somewhat wider channel, called the Luckenbooths, for shops and traffic, on the other. The lower portion of this obstructive stack of masonry belonged to the Luckenbooths, and was included in the name, the basement being let out in shops or stalls for goods, while the upper floors were parcelled out as dwellings. The higher and larger portion, separated from the lower by a narrow suture, called "The Kirk Stile," was nothing less than the famous Heart of Midlothian itself, or Old Tolbooth, which had served hitherto as the *prætorium burgi*, at once the gaol of Edinburgh, its Town Council House, the seat of the Supreme Courts of Justice for Scotland, and the occasional meeting-place of a Scottish Parliament. Little wonder if one lingered round this core of the High Street and of the whole town. The channel of the Luckenbooths on one side of the street, the lane between the Tolbooth and St. Giles's on the other, and the cross-passage or Kirk Stile, were worth more than one perambulation, if only on account of their amusing interconnection; at the back of St. Giles's Church, overhanging the Cowgate, was St. Giles's Churchyard, the chief cemetery of the town; and the Tolbooth alone might well detain one by its look and the interest of its associations. In 1561 they were voting it to be too old and decayed, if not too unsightly, for the various and important purposes which it had hitherto served; and within a few months from our present date there was to be an order for its demolition, and for the erection of another building more suitable for those purposes, and especially for the accommodation of the Lords of Council and Session. But, though they did then begin to take it down, and though a "New Tolbooth" or "Council House" was built near it in the same part of the High Street, the old or original Tolbooth escaped its doom, and was left standing after all. A little re-edified, it was to survive its more modern substitute, and to be known till 1817 as at least the Gaol of Edinburgh and real old Heart of Midlothian. Some persons still alive can remember it.

The Tolbooth having been passed, one was again in an open piazza of tall or tallish houses, nearly as broad as the former piazza, but further up the incline, and known indifferently as the High Street above the Tolbooth or as the Lawnmarket. Here, also, one could not but note the number of the closes and wynds on both sides, plunging down the house-laden slopes with break-neck precipitancy from the vertebral street. At the head of this piazza, however, where it began to narrow, and where there was an obstruction across it in the form of a clumsy building called the Butter Tron, or Weigh-house, there was one offshoot to the left of greater consequence than any mere wynd or close. This was the West Bow, a steep zig-zag or spiral kind of street of antique houses, bringing one down to the deeply-sunk Grassmarket or Horsemarket, *i.e.* to a large square space opening out from the end of the Cowgate, and convenient for the country people coming into the town with cattle. Refraining from this descent by the West Bow, and keeping still to the vertebral street, one reached the last portion of the long causewayed and inhabited ridge. This was the Castle Hill, a narrowish continuation of the High Street, so steep as to require climbing rather than walking, but up which, nevertheless, there was still a plentiful straggling of houses, perched anyhow, with closes and paved yards reticulating what lateral depth of earth they could cling to, and with views of dizzying profundity from their back windows.

All civic Edinburgh thus left behind, and a military portal having been passed, one entered the precincts of the castle itself, the high rocky stronghold which was more ancient than anything recognisable as most ancient in the Edinburgh be-

neath, which, indeed, had fostered that Edinburgh into its first existence and growth, and in which there were relics of days older than those of Malcolm Canmore and David I., older than the infancy of Holyrood Abbey. After the long walk upwards between the two lines of close-packed houses, with perpetual mouths of mere wynds and closes for a whole mile, it was something to emerge into the open air, even in the battlemented exterior esplanade or courtyard of this castle, slanting up the hillside to the moat and drawbridge. It was more to be allowed to pass the drawbridge and the other defences, and so to pursue the winding, rock-hewn track by which one mounted to the fortified aggregate of guard-houses, store-rooms, and royal towers, heaved together on the cliff-bound summit. What a platform then to stand on, beside the cannon, on any of the ledges of the embrasured parapets! The feeling for scenery, they say, had not been much developed in the sixteenth century; but no more in that century than in this could any human eye have gazed with indifference on the vast panorama of Scottish land and water that burst into the vision from Edinburgh's Castle Rock. To the north there were villages and farmsteads dotting the range of fields towards the Firth which is now covered with the streets of the new town, and beyond these always the unwearying loveliness of the face of the Firth, with the boundary of the Fifeshire hills; to the west, the near Corstorphines, and over these also a tract of varied country, fading away up the course of the Firth into a purple suggestion of Stirling and the first spurs of the Highlands; to the south, the Braids and the Pentlands, hiding the pastoral territory of the Esks and the Upper Tweed, with its sleepy stretch towards the Borders and England. Scores of castles and keeps, each the residence of some nobleman or laird of distinction, could be counted within this sweep of the eye, north, west, and south, over the immediate vicinity of Edinburgh. But, if one's interest were still rather in the town itself, it was the eastward glance that would help most to complete and define the previous impressions. The whole sea-approach to Edinburgh by the Firth was now splendidly visible, with the already described curve of the hither coast from Berwick Law to Leith; the road from Leith to Holyrood was plainly discernible; and the Canongate and Edinburgh could be looked down upon together, and seen in connected shape and ground-plan.

However slight the defences of the Canongate and Holyrood, Edinburgh proper, it could now be seen, was carefully enclosed and bastioned. On the north side, the North Loch, washing the base of the Castle Rock, and filling the valley through which the railway now runs, was sufficient protection; but all the rest of the town was bounded in by a wall, called the Flodden wall. It had been constructed mainly in the panic after the Battle of Flodden in 1513, to supersede an older and less perfect circumvallation, but had been much repaired and modified since. It started from the east end of the North Loch, and ran thence along Leith Wynd and St. Mary's Wynd, crossing the High Street at the Nether Bow Port, and so shutting out the Canongate; it then went so far south as to include the whole of the Cowgate and some space of the heights beyond the ravine of the Cowgate; and the west bend of its irregular rectangle, after recrossing this ravine a little beyond the Grassmarket, rivetted itself to the Castle Rock, on its most precipitous side, at the head of the High Street. There were several gates in the circuit of the wall, besides the Nether Bow Port, the chief being the Cowgate Port, which was also to the east, the Kirk of Field Port (afterwards Potter Row Port) and Greyfriars' Port (afterwards Bristo Port), both to the south, and the West Port, just beyond the Grassmarket and the sole inlet from the west. When these gates were closed, Edinburgh could rest within herself, tolerably secure from external attack, and conscious of a reserve of strength in the cannon and garrison of the dominating castle. Even if the town itself should yield to a siege, the castle could hold out as a separate affair, impregnable, or almost impregnable, within her own fortifications. Successful assaults on Edinburgh Castle were among the rarest and most memorable accidents of Scottish history.

ARCHÆOLOGY.

The Carlisle Clock Bell.—The old bell which was used for striking the hours in the Carlisle Town Hall was cracked in the recent fire. The following paper on it by the local archæologists, Mr. R. S. Ferguson and Mr. W. Nanson, appears in the Transactions of the Westmoreland and Cumberland Archæological Society:—

"Some time ago one of the writers drew up an account of the market bell of Carlisle, now in the Carlisle Museum, and dated 1584. The writer had no notion that the Corporation possessed a bell near two hundred years older than that, bigger and finer in every way. In fact it had never occurred to him to inquire on what the town clock struck the hours: a coil of wire for all the writer knew. However, Mr. C. W. Parker, to whose exertions local campanologists are so much indebted, informed him that the town clock struck on a large bell, which had an inscription on the shoulder. Of this Mr. Parker has since made a rubbing, and it turns out to be—

+ RADULPHUS COMES ⋮ DE WESTMORLAND ⋮ EFECIT ME FIE RI,

running round the bell in one line, except that the last two letters are put below the others for want of room. The initial cross is plain, but not precisely the same as that on any other bell yet discovered in Cumberland. The intervening stop, three roundlets, is the same as on the Scaleby tenor and on the fifth or 'Maria' bell in the cathedral. The letters are stately, floriated Gothic capitals, very like, but not identical with, those on 'Maria.' The initial letter in 'Westmorland' is a Gothic U. The bell, like the cathedral 'Maria' and the pair at Burgh-by-Sands, is long-waisted—a sign of antiquity. Its diameter at mouth is 26 inches; weight, therefore, about 4 cwt., exceeding that of the market bell (diam. 1 ft.) by about 3½ cwt., and only falling short of that of the cathedral treble (diam. 28½ in.) by about 1¼ cwt. It has three canons for suspension; no clapper, but a ring on the under side of the crown to which to attach one. The clock hammer strikes on the outside of the sound-bow.

"'Radulphus Comes de Westmorland' is Ralph Nevill, fourth Baron Nevill of Raby, 1st Earl of Westmorland, a K.G. and Earl Marshal of England. He was born about 1365; and in the 9 Richard II. (1385-6) when barely of years of discretion, was appointed by that king joint governor of the castle and city of Carlisle, and a commissioner for the guardianship of the West Marches; these honours were renewed in him in the 12 Richard II. In the 21 Richard II. (1397-8) he was appointed Constable of the Tower of London, and was also created Earl of Westmorland, and had a grant of the honour of Penrith from Richard II. On the landing of Henry of Lancaster he deserted his benefactor, and became one of Henry's chief adherents, fighting for him against the Percies, and by gross treachery getting into his power Archbishop Scrope and other partisans of Richard. By Henry IV. he was appointed governor of Roxburgh, and had a grant for life of the fee-farm rent of Carlisle. He accompanied Henry V. to France, and was one of the victors of Agincourt. He died October 21, 4 Henry IV. (1435), and was buried in the choir of the collegiate church of Staindrop (which he had founded and endowed), under a stately monument, whereon were the figures of himself and his two wives, Margaret of Stafford, daughter of Hugh, Earl of Stafford, and Joan Beaufort, daughter of John of Gaunt, Duke of Lancaster, whose portrait, by the way, is in the east window of Carlisle Cathedral. He was thus brother-in-law of Henry IV. His eldest son, by his second wife, was Richard Neville, Earl of Salisbury, who had also a grant for his life of the fee-farm of Carlisle, and was the father of Richard Neville, the great Earl of Warwick, commonly called the King-Maker. His youngest daughter, Cecily, married Richard Plantagenet, Duke of York, and of this marriage there were some twelve children, two of whom ascended the throne of England, namely, Edward IV. and Richard III. Another daughter, Phillippa, married the owner of Naworth, Thomas de Dacre de Gilsland.

"The Corporation have some other relics of Ralph Nevill besides his bell. There still exist six acquittances or receipts given by him to the mayor and bailiffs for the fee-farm rent.

"The Earl was probably governor of Carlisle in 1392, when a fire broke out in Carlisle which destroyed fifteen hundred houses in Castlegate, Rickergate, and Botchergate. Rickergate and Botchergate are what we now call Scotch Street and English Street, and though the number of houses burnt may be an exaggeration, the centre of the town and the north transept of the Cathedral were destroyed, including the seat of municipal government, whatever that was then called (Moothall, probably), and the neighbouring chantry of St. Alban's. It may be noted that the architecture of Redness Hall, formerly the property of the family of De Redness, and now called the Guildhall, points to its having been built shortly after the fire. If we knew what the Moothall, or Townhall, that preceded the present one was like, we should find it date from the same period.

"To go back to the bell, the citizens, impoverished by the fire of 1392, probably could not replace any bell which had been destroyed, or did not see the necessity of replacing it. But a governor of Carlisle would see the necessity of a good big bell to alarm the town and the garrison, and that is why Nevill seems to have caused this fine bell to be made. If such was his object, he was powerfully, though perhaps incidentally, assisted by William de Strickland, Bishop of Carlisle from 1400 to 1419, who in one of the earlier years of his episcopate raised the Cathedral tower 'a medietate ad summum,' and placed in it 'quatuor magnas campanas' (Leland); the sole survivor of which, the aforesaid 'Maria,' weighing nearly 17 cwt., attests the efficiency of the four as 'Fray bells.' Their predecessors, the bells which took part in the cursing of Robert Bruce by Cardinal d'Espagnol in 1307 (Holinshed), were probably

destroyed, like the predecessor of Ralph Nevill's bell, by the fire of 1392, the reality of which fire, doubted by Hutchinson and others, but corroborated during the work of cathedral restoration in 1856 (Purdy's lecture, p. 20), derives confirmation from the fact of new bells given by Strickland and Nevill in the very beginning of the fifteenth century.

"Of the intermediate history of this bell nothing is known; a conjecture has been made that Earl Ralph gave it to the chantry of St. Alban's, of which the name survives in St. Alban's Row, and that the city got it when the chantry was suppressed in the reign of Edward VI. How long this bell has been used for its present employment we can't say, or how old the town clock is; a portion of the train is of considerable age, though a modern escapement has been added during this century.

"It's long since this fine old bell was rung, but its tones must have sounded far and wide, even to Solport, if we can believe the old Border ballad—the 'Fray of Suport'—for the farmer's wife, who laments that the Mosstroopers have harried her farm, announces the arrival of her friends thus:—

> Captain Musgrave and a' his band
> Are coming doon by the Siller-strand,
> And the muckle toun-bell o' Carlile is rung."

CHURCH BUILDING AND RESTORATION.

Farnworth.—The church of St. Peter, Farnworth, will shortly be opened on completion. The building has been erected from the designs of Mr. R. Knill Freeman, architect, of Bolton.

Gorton.—Brookfield Church has been reopened after works of cleaning and decoration. A group of angels is depicted over the chancel arch. The chancel arch and wall margins are decorated in keeping with the picture. The spandrels of the nave contain rich Gothic foliage designs, with a medallion representation in the centre of each. Bands of fret ornaments, small battlement designs, &c., complete the treatment of these spandrels. The tones of colour are olive, citron, chocolate, &c., upon a groundwork of vellum colour. The aisle walls and the west wall have decorations in similar tones, with bands of pomegranate designs, quatrefoil ornamentation, &c. Upon the east wall of the south aisle a Gothic panel has been formed containing the Beatitudes. In the chancel the walls have been diapered of Gothic rose foliated design, with bands and borderings. On a label over the east window are the words, "Thy kingdom come, Thy will be done," the text being surrounded with hand-painted foliage. On the walls to the right and left of the window are, on one side a figure of Moses with the Tables of the Law, and on the other a picture of the Good Shepherd—the figures enclosed in a setting of canopy work and other enrichment. Throughout the church the stained woodwork has been re-toned. The work has been carried out, under the direction of the architects, Messrs. Worthington & Elgood, by Mr. Reuben Bennett, of South King Street, Manchester; and the pictures have been painted by Mr. J. Milner Allen, of London.

Netherton.—The new church of All Saints, erected from the designs of Mr. C. J. Ferguson, Carlisle and London, has been opened. The style of architecture is Early English, and the church provides accommodation for about 700 persons. The contractors were, for mason work, Messrs. Whillan, Netherton, and Messrs. Beaty Bros., Carlisle; joiners' work, Mr. Black, Carlisle; painting, Messrs. Kirk & Robley, Carlisle. Mr. Henry Luscombe was the clerk of works.

Pytchley.—The memorial-stones of a Wesleyan chapel have been laid. The building, which is being erected from the plans of Mr. Charles Saunders, architect, of Kettering, by Mr. George V. Henson, builder, also of Kettering, is shaped like the letter T. The centre portion comprises the chapel proper, and the two wings, two schoolrooms, a vestry, and a library.

Shustoke.—A new church is about to be built at Shustoke, Warwickshire. Messrs. Bodley & Garner are the architects, and the building is to be carried out by Messrs. Stephens, Bastow & Co., Bristol and London.

Shelf.—The memorial-stones of a Wesleyan chapel have been laid. The new structure is intended to accommodate 260 worshippers in the area and 120 in the gallery. The building will be Gothic, and is designed by Mr. Herbert Isitt, architect, of Bradford.

Wellingboro'.—The Roman Catholic Church was opened yesterday (Thursday). It is cruciform on plan, having a nave, transepts, and chancel with aisles, a lady chapel, an organ chamber, porch, and sacristy, 24 feet by 14 feet 6 inches, two storeys in height, with, in addition, a small fireproof room for the registers and treasures, above which is an oratory looking into the sanctuary. The porch has a richly moulded entrance doorway, with traceried windows above. The nave, 25 feet in clear width, has an open timbered roof, which is continued at the same height over the chancel, the division being marked on the exterior of a small lantern of pierced stonework. On account of the steep rise of the ground, eight steps are required at the entrance to the nave, six to the chancel, and three to the high altar. The rose window behind the altar is filled with stained glass by Messrs. Lavers & Westlake, and has double stone tracery, the inner stone tracery of arcaded form being designed for the evening effect when the beauty of the glass is lost. The altar is of the simple early form, a stone slab supported on marble columns in front, and also at the back by a low wall of alabaster, the wall being adorned with paintings by Mr. Joseph Bouvier, in gold and colour. The canopy of the altar is of stone of the ancient ciborium form, supported on columns 18 feet high. The whole is surmounted by a cross rising to a height of 30 feet, of the form of the labarum, the ensign of Constantine. In the lady chapel are paintings by Messrs. G. and J. Bouvier. The style of the church is late fourteenth century Gothic, freely treated. The main dimensions of the church are 100 feet in length by 50 feet across the transept clear between the walls, and the estimated accommodation, including the choir, is for about 400 persons. The contract has been carried out by Mr. F. G. Anstey, from the design and under the direction of the architect, Mr. S. J. Nicholl, of 1 Caversham Road, London, N.W.

GENERAL.

A Public Testimonial to Mr. Philip Horsman, of Wolverhampton, in recognition of his munificence to the town, is spoken of, and a committee has been formed for the purpose. A portrait of Mr. Horsman and a scholarship for the Art Gallery have been suggested.

M. Ferrario has obtained the commission for the scenery of Verdi's new opera, "Othello," which is to be produced during the winter at the Scala, Milan.

Mr. Alderman Goldschmidt, of Manchester, has invited the President of the Royal Academy, the Royal Academicians, and the Associates of the Royal Academy to dine with him on the 7th inst., on the occasion of the opening of the fourth annual exhibition of the City of Manchester Art Gallery.

Mr. H. H. Bridgman has been appointed architect to the Board of Guardians for the parish of St. Mary Abbotts, Kensington. A large number of applications were received. Six names were selected, from whom the appointment was ultimately made.

Columns have been found during excavations near the stairway at the northern wall of the Acropolis in Athens. They are said to belong to a period prior to the Persian wall.

The Vyrnwy Reservoir, which is only partly finished, has cost up to the end of June 1,382,213*l.*

Prince Putiakin has presented to the Russian Archæological Society a stone slab which was recently found in the course of some excavations at the Bologne Station on the St. Petersburg and Moscow Railway, along with some stone weapons and utensils. A representation of the constellation of the Great Bear was, although rudely, carefully drawn on the slab. Some years ago a similar slab was found near Weimar.

A Collection of Indian Folk Tales, gleaned by the Rev. Charles Swynnerton, is announced by Mr. Elliot Stock. The volume will contain a large number of stories gleaned from oral recitation by natives, and will be illustrated by native artists.

M. Devrez has been appointed successor to M. Bailly as architect of the cathedral of Notre Dame, Paris. The restoration of the south transept of the Cathedral of Meaux was directed by M. Devrez.

The Sixth Instalment of the Fantaisies Decoratives by M. Habert-Dys has been issued. It contains four novel subjects.

A Surveyor of Ecclesiastical Dilapidations will be elected for the diocese of Manchester in October.

The Tower of Pevensey Church is to be restored to its original proportions, the churchwardens of former years having solved the question of repairs by reducing the tower one storey.

Funds are being raised for the renovation of the church bells at Wootton. The bells are heavy for a village peal, and cannot be safely rung at present.

The Restoration of Earl's Barton Church Tower will soon be complete, the last stage of the work having just been commenced by Messrs. Harris, Knight & Simcoe.

A Fish Market is proposed to be built along the quay at Commercial Road, Aberdeen. The cost is estimated at about 3,000*l.*

The Severn Tunnel, which has been thirteen years in construction, and has cost 2,000,000*l.*, was opened for goods traffic on Wednesday. It is nearly four miles and a half in length, of which two miles and a quarter are beneath the arm of the sea. In its construction 75,000,000 bricks have been used.

The Architect.

THE WEEK.

Intending competitors for the Edinburgh Municipal Buildings should inquire how far the gift of 50,000*l.* by Mr. Carnegie for a free library will affect the proposed arrangements. When the offer was first made, it was suggested by the Lord Provost to Mr. Carnegie that the free library might form a part of the new buildings. Mr. Carnegie rather approved of that plan, for he said the money could be made to go much further than if a new site were necessary. On Tuesday the subject was brought before the Town Council, when it was agreed to take the opinion of the citizens at a public meeting. The only suggestion about a site that was given at the Council meeting was by one of the bailies, who proposed George IV. Bridge. It is, of course, necessary to gain the approval of the people to a scheme which will entail a rate of a penny in the pound, and many in Edinburgh say there are libraries enough already for students whose reading is not confined to novels. But, meanwhile, the question of site must remain in abeyance, and with it the arranging of the plan of the Municipal Buildings.

The meeting of the British Association was not utilised to announce many important discoveries relating to practical science. One, however, is worth attention. On Tuesday Mr. Turner was able to demonstrate that it is possible to increase the tensile strength of cast iron by the addition of silicon. It must be in proportion to the quality of the metal, for with too much silicon cast iron becomes weak. Hard iron requires less than soft. Examples were exhibited, of which the tensile strength was found to range from 15·8 to 18¼ tons per square inch, the average being 17 tons. A strength of 13 tons was obtained in a very soft working iron, made from cheap mixed scrap and silicon pig used in proper proportion. Hitherto 7 tons was supposed to be the average tensile strength of cast iron. Silicon has been used on a large scale in Middlesbrough, where about 20,000 tons of sound castings were produced from the mixture during the past fifteen months.

The Morris columns in Paris no longer present their monotonous appearance, for they are becoming quite gay with the announcements of the reopening of the theatres. The Théâtre Français and the Porte St.-Martin have bravely kept their doors open in the hottest part of the season, but when one is confined to the city the young comedians or "Patrie" cease to have perennial attractions. Therefore every resident looks to the octagonal columns as soon as the last days of August are approaching, and it is astonishing how interesting the first sight of a common play becomes to eyes that are wearied with white limestone. There are some changes. The Varieties has been altered, and will no longer suggest the architectural style of the early part of the century. The Palais Royal, warned by the failures of the past season, tries to bring back its old luck by introducing the electric light. M. Porel would gladly do so in the Odéon, but it is a subsidised house, and he has to obtain the approval of the Minister of Fine Arts before he attempts the innovation. We suppose it will be granted, for few theatres are more broiling.

Professor E. A. Freeman appeals for help towards the restoration of the Saxon church at Bradford-on-Avon, which is being carried out by Mr. Adye, architect. "Not long ago," says the Professor, "we were in great fright lest the whole building was coming down. The ancient, massive, unbuttressed walls seemed altogether giving way, and we had to shore them up while we devised means to make them safe. The walls were made of a casing of stone inside and out, with cement poured in between. In the course of ages the cement had vanished, and there was nothing to tie the inner and outer faces of the wall together. Mr. Adye has made the whole safe by gradually and warily pouring in new cement. It was a long business, but it has been successfully done, and St. Ealdhelm's walls stand again quite safe. The wooden roof, of course ages later than St. Ealdhelm's day, was getting in many places thoroughly rotten. The nave roof we have made good; we have kept every timber that could physically be kept, and have made no kind of innovation in those timbers which were necessarily new. But the walls and the roof have used up nearly all our money, and we have still two things to do. We want to mend the chancel roof, as we have mended that of the nave. We also want to do another thing, about which there may be some difference of opinion, but in which I firmly believe we are doing right. A great part of the south side of the church was covered by a building which had been added during the time when the church was lived in as a house. It is a building, I suppose, of the seventeenth century, of no architectural value, and it hides the south doorway and part of the blank arcade, which is such a characteristic feature of the church. We have, therefore, settled to take the late building down, all except the east and west walls, which act as buttresses to the ancient walls. These we design to leave, after giving them the shape of buttresses." To an appeal of this kind there can be but one answer from lovers of old English work.

A sort of federation of local scientific societies has been accomplished in connection with the British Association. One of the first ways of utilising the new organisation is likely to be the preparation of a record of prehistoric and historic remains. With the ordnance map so nearly complete, the work would not be difficult. But the Association might as well make arrangements for exhibiting maps, having remains indicated on them, in accessible places throughout the country. Railway stations and post-offices might with advantage have a sheet of the survey hung up as a guide to the position of the objects having scientific or archæological importance which are to be found in the neighbourhood. The case of Stonehenge was brought under the notice of the delegates of the societies. The owner will not be persuaded to hand over the care of the stones to the Inspector of Ancient Monuments, and there is no law to compel him. It remains to be seen whether he will continue inexorable against an appeal that would be expressive of the opinion of the few people who have any real interest in the preservation of the stones.

During the past year it appears there were 340 cases tried in the English County Courts under the Employers' Liability Act. The amount of compensation claimed was 49,446*l.*, but only 7,356*l.*, or about one-seventh, was awarded. Thirty-four cases were struck out, and seventy-five were settled. In Scotland there was a more remarkable difference. The number of cases tried was 143, and the amount claimed was 35,628*l.* 16*s.*, but all that was awarded was 2,377*l.* 10*s.* It is supposed that in several Scottish cases the award was only formal, and much larger sums were paid out of the courts. Ireland can only show fifty-seven cases. Whether that arises from the absence of employers to become liable, or from the difficulty of injuring so tough a race, might be subject for discussion in several departments of the British Association. The claims amounted to 6,526*l.*, and the awards amounted to 1,116*l.* 6*s.* 10*d.*

Dr. Schliemann is trying to obtain a firman to enable him to carry out excavations in Crete under similar conditions to those fixed by the Greek Government for the German exploration of Olympia, which has produced such important results. A colossal statue of a woman has been found in Crete at Hagiri Deke, the site of the ancient Gortyna. The head is wanting, and one arm. The other arm is broken off, but was found with the statue. The woman is richly attired, with one foot forward as if in the act of setting out to walk. On the base there are traces of an inscription which would make it the work of Eisidotus of Athens. The statue has been placed in the museum lately established at Heraclea. Grotyna has been prominently mentioned as a place where abundant remains ought to be found; it was there that Halbherr and Fabricius found the ancient legal inscription. England seems to have forgotten that explorations are worth the care of a Government.

FIFTEENTH-CENTURY WINDOWS.*

THE characteristics of a Perpendicular window are not difficult of recognition, for they are in general sufficiently distinct, although, as RICKMAN pointed out, there are some of them which may be taken for Decorated at first sight. But it would be strange if there was an equally definite variation in the character of the painting of the windows. Alterations in masonry and in figure-painting were not necessarily synchronous. Indeed, in the fifteenth century the painters were seeking for freedom, and apparently they were less disposed than their predecessors to exhibit loyalty to architecture. Like many men before and since, they confounded liberty with license.

The fifteenth century was a period of transition, and, in spite of the splendid windows which were produced, it is not every authority on glass who cares to praise the work of that age. Its best effects are supposed to be illegitimate, and as we are sticklers for legality in everything in England, Perpendicular glass has been treated as if it were a "nobody's child." The late Mr. WINSTON went so far as to suggest that when modern architects are erecting buildings in the style of the fifteenth century, however careful they might be in details of wood and stone, they were to avoid the imitation of fifteenth-century glass. Windows of the fifteenth century, he said, should be designed on the model of the glass paintings of the sixteenth century. Mr. GAMBIER PARRY, while recognising that improvements were introduced in the fifteenth century, cannot find a more appropriate phrase to describe them than "poison drops" by which the art was destroyed.

It is not an agreeable task to write the history of work that is supposed to be false art, for if it is praised the writer is said to be deficient in taste, or to go against accepted opinions in order to appear singular. But as an artist, Mr. WESTLAKE knows that much of what is condemned is excellent. In every period good and bad work was produced at the same time. Greek sculptors scamped their work occasionally; there were Mediæval men who can be called "jerry builders," and, on the other hand, this nineteenth century, which is supposed to do everything in a mechanical way, can show examples which are inspired by as noble motives as those which prevailed in Athens or Amiens.

Mr. WESTLAKE has a fellow feeling for artists, and, when he sees a fine example of glass, he forgets the consequences of admiring it. We are all supposed to be under the sway of a single style, and of one only, and it is not unlikely that people will forget all that Mr. WESTLAKE has written in praise of earlier work, and declare that he is an imitator of the fifteenth century.

Whatever may follow, Mr. WESTLAKE writes what he thinks. He tells us how "a thoroughly glass-like character of design was practised during the greater part of the fifteenth century, and some of the work of this period is of the finest quality." The heads of the first quarter are described as "drawn with knowledge and very great care, whilst the hair and features are lined with great delicacy." The foliage is said to present "greater simplicity of colour and design." We read that "whatever tone of colour was used it was harmonious; the rubies, blues, yellows, and whites were not chosen for their own individual value or brightness, but for the harmonised value that they gave to each other." Some or all of these judgments are the opposite of the accepted opinions on the qualities of Perpendicular glass.

Mr. WESTLAKE does not, however, overlook the real defects of the period. He explains, for instance, the influence of the endeavour to obtain pictorial or rather picturesque effects, by which the artist sought distinction for his own work without any care of its relation to the architecture. We learn also that as glass became only a ground like paper or canvas, it was no longer thought necessary to employ an expensive description, and in consequence a material "which is really little better than ordinary window sheet glass was in use from thence nearly to our own time, and, in fact, it is still used in some ateliers, especially on the Continent." It is only right for the fifteenth-century artists to have their defects brought to light, but there is no use in condemning the imaginary evils, as is too often done.

It is almost impossible to avoid rash judgments when general views of the history of art are taken. It will be remembered that Mr. WESTLAKE'S book is distinguished by the care which is given to particular examples. All the most typical specimens of a period are described in detail, and with this arrangement it is not easy to indulge in sweeping condemnations unless there is evidence for them.

The ideas of the time, coupled with the increased power which the artists possessed, impelled them to seek after richness, or, we might say, expensiveness in their details. The canopies which are generally introduced over the figures are so elaborate that a carver would find a difficulty in copying one of them in stone. The figures are clad in sumptuous robes, generally so capacious in size that one wonders how they could be borne in this life, and if the character of the subject was not an impediment the stuff is profusely ornamented. We can understand Mr. WINSTON when he said that an assemblage of the figures reminded him of court cards. A further element of richness is found in heraldry, for in no previous style was so much use made of shields and devices. It would be wrong in us to condemn the fifteenth-century mode of treatment. Artists and patrons had their own theory of æsthetics, and the way in which costly things are introduced in the windows enables us to realise the ideas which prevailed at a time when a new world was discovered which was supposed to abound in gold and silver, and where precious stones were to be picked up. The glories of paradise were no longer taken in a metaphorical sense. If they did not go so far as to believe, like CHRISTIAN in the "Pilgrim's Progress," that they were to be "put into an equipage" and ride about Heaven, the people could at least realise a place where the streets were paved with gold, where the inhabitants wore golden crowns and played on golden harps.

The English windows of the period are divided by Mr. WESTLAKE into three classes, viz., figure windows, Jesse Tree windows, and subject windows. It is too often taken for granted that the last are the most characteristic, as the artists would not regard the obstacles offered by mullions, but carried their composition across the window as if they were working in an open field. There are fortunately important examples surviving of the other classes to show us that there were cases where the design was accommodated to the stonework.

The South Kensington Museum possesses three figures from Winchester College Chapel. How they came there is related by the Rev. Mr. LLOYD, and as the transaction illustrates the way in which old glass can be treated at the whim of the clergy of a church, we reprint the story:—

> Early in the present century Messrs. Belton & Evans, glass stainers at Shrewsbury, were employed by the authorities at Winchester to fill with modern work some windows both in the cathedral and in the college chapel. Much of the old surviving glass fell into their hands, though I know not on what terms. The three great figures at Kensington seem to have been the only entire works; but a large quantity of unsorted fragments were carried off at the same time. The greater part was purchased by the Rev. W. G. Rowland, the then vicar of St. Mary's, Shrewsbury, to whose taste and liberality the collection of painted glass in that church is due. He set the Winchester glass at first in the chancel, where it remained for eleven years, but having afterwards obtained glass which he prized more highly, viz., the life of St. Bernard, in a series of panels, of which the drawing was attributed to Albert Dürer, he removed it, with the intention of re-erecting it in the south transept. He died, however, before his intention was carried out, and at the sale of his effects the glass fell into other hands, and the choicer pieces were purchased for the Kensington Museum.

Mr. WESTLAKE well says that what was left undone by fanatics was completed by cool and earnest men. With such an account before us, we can well believe all the stories of destruction which have been related.

The windows of Merton College, Oxford, are so near in character to those of Winchester, that Mr. WESTLAKE supposes them to have been produced under WYKEHAM'S influence. In All Souls College, among other figures are two of St. AUGUSTINE and St. GREGORY, which are interesting, as they are accompanied by the evangelistic eagle and bull. In the chapel of Exeter College there was some fifteenth-century glass. "I cannot find it in the present

* *A History of Painted Glass.* By N. H. J. Westlake, F.S.A. Vol. III. James Parker & Co.

building," says Mr. WESTLAKE, "after having searched most carefully; to me it was of more than ordinary interest, as it contained, amongst other portraits, those of WILLIAM PALMER and JOHN WESTLAKE, Canons of Newbury and Principals of Exeter College."

York Cathedral must be a place of pilgrimage to every student of fifteenth-century glass. The great east window is one of the glories of the art. It is known to be the work of JOHN THORNTON, of Coventry, who probably had settled in York. Mr. WESTLAKE believes that he also had in some way come under the influence of WYKEHAM. But the cathedral is not the only church in the city containing fine windows.

The English figure windows of the period are described in succession, and most of them are illustrated to some extent, but it would be impossible within our limits to refer even to the names. We therefore pass to what is said about the Fairford windows. Everyone knows that they have given rise to more discussion than any other windows in the country, and the controversy between Dürerites and anti-Dürerites has given an impetus to the study of stained glass. Mr. WESTLAKE is a doughty champion among the latter party, and he goes so far as to doubt whether DÜRER, with all his versatility, ever made a design for glass. The chief grounds for the belief that DÜRER was connected with the windows are the peculiar individuality of several of the figures, and the monogram of a capital A with a stroke above. There is no documentary evidence worth notice on the subject. Mr. WESTLAKE admits that there is a foreign aspect about a part of the work, but that is not unusual, he says, as the design of Continental glass was sometimes adapted to English needs, and there was intercommunication between the artists. In respect of some of the details he says :—

The canopies and ornaments are not more varied in design and execution than would ordinarily occur in the period occupied by the whole series of windows; the diversities of design in the figures were, as far as possible, neutralised by placing them in canopies suitable to the architecture and in one style. We find little of the foliage ornament, or of the interpenetrating mouldings, ever recurring in German work. There is a certain Flemish or German-like method of design in a great deal of English, French, and Spanish art of this period; and one is not entirely surprised that those who were not thoroughly acquainted with all our own productions of this period considered it to be German. The canopies are full of late Perpendicular peculiarities, mostly English looking, and the foreign features are not more frequent than is found in other glass of this period and in the country.

The windows with the Tree of JESSE for a *motif* are believed to have had their origin in the east window of Winchester College, which possesses additional interest from having figures of the designer, the carpenter, the mason, and the clerk of works. Gloucester has a window on a nearly similar plan, which is again found in York. The stem of the tree follows lines that are roughly straight, but in Margaretting, Essex, it is curved. The latter is a fine example, and on the strength of the mannerism in the costumes Mr. WESTLAKE infers it to be the work of JOHN PRUDDE, of Westminster, who designed the window in Beauchamp Chapel, Warwick.

The subject windows begin with the York windows, and then follow descriptions of those at Malvern Priory, Ticehurst, Long Melford, &c. Fairford is again described, and here also a subject of controversy is indicated. In one of the chapels is a representation of the *Transfiguration*, but on the breast of the figure of Our LORD are the letters I.H.S. surrounded with rays. Mr. WESTLAKE argues that the chapel must have been a Holy Sacrament Chapel, which seems reasonable, but he does not appear to have gained supporters among exegetists. He restored some of the windows, and a portion of the ruby glass was on that occasion analysed. It was found to correspond with English rubies, and Mr. WESTLAKE is justified in offering the circumstance as evidence. But the best evidence that the west window is English is, he says, found in the fact that the subject was designed for the window, and by an artist who probably had seen the stonework.

Mr. WESTLAKE next takes his reader across the Channel to examine fifteenth-century glass in France, Germany, Belgium and Italy. In France, the difference between the fourteenth and the fifteenth century is said to be less distinctly marked than in English examples. In Germany there was a change about the middle of the century, when the style that is represented by DÜRER and others became popular. Mr. WESTLAKE attributes it to "an accentuation of that angularity found in the Romanesque style, which had never died in Germany, rather than to any new infusion."

The chapter on Italian glass is of much interest. Mr. WESTLAKE says that a window in Siena Cathedral, which in his second volume he described as fifteenth-century work, is of the thirteenth century. The windows in the Cathedral of Florence, which are supposed to be GHIBERTI'S work, have been lately cleaned, and are said to be partly in the style of the fourteenth and partly in that of the sixteenth. In Florence there is uncertainty about their production. According to some accounts they were painted in Lubeck, after designs by GAMBASSI, a Florentine, who in one of the cathedral records is described as the greatest master in the art then living. Some of the windows have a startling effect of brilliancy. Mr. WESTLAKE says it was Mr. BURGES'S opinion that talc or a similar material was placed behind the glass; but from his own experiments he believes that the effect is owing to some burnished gold which is fixed a little way behind the glass. The most consummate example of Florentine glass is, according to Mr. WESTLAKE, the east window of Sta. Maria Novella. The church contains many treasures, and our author becomes indignant over the way in which the herd of tourists treat the building as a mere museum. What he says is applicable to other places as well :—

The *Frati* did make this as far as they could "a House of God" or "a Gate of Heaven." But in our days visitors, not only travellers from that vast Continent across the Atlantic—perhaps the chief sinners—but Englishmen and other foreigners forget that it is a place of prayer, a portico of heaven, and, instead of resting in studious delight or pious prayer, rush through the edifice guided by some cicerone whose object would appear to be only to earn some small fee quickly. Surely one is almost inclined to say, We are not living in an Art age, nor a pious age, nor even, with all its boastings, a great scientific age, but in a century of "Society," when we are satisfied with merely seeing things to boast of and talk about in this "Society." Is not this a period when few minds are seriously occupied with any subject above the hour taken over a short article—the stuffing of the goose who carries it about to flavour his conversation? The reader must forgive this bitter digression; but if he is a student, and sits in churches or palaces, or in art galleries, afflicted by this species of tourist, he will add his protest to mine, and perhaps think that, much as we talk of æsthetics, the ethics of art are ignored.

The final chapter in the third volume treats of heraldry, roundlets, monograms, quarries, &c. The history will be completed in four volumes, and it will be the best of all works on the subject, especially for the artist. Mr. WESTLAKE does not trust any eyes but his own; there is little taken on the authority of his predecessors. With a conscientiousness that is rare, he examines every fragment of glass that he considers worth description, and his remarks are those of a practical artist. We must say that the more often we refer to the volumes the higher becomes our esteem for the enthusiasm of the author who has placed such a treasury of information within our reach.

THE FADING OF WATER-COLOUR DRAWINGS.

THE Sections of Chemistry and Physics of the meeting of the British Association were occupied with subjects relating to light and colour. On Saturday Professor Hartley read a paper on a subject which has of late given rise to some controversy, viz., the degree of permanence belonging to water-colour drawings. He said there have been two ideas brought forward—one being that water-colour drawings fade on keeping, while others have contended that the tints increase in depth on keeping for a length of time. Hence, on the one hand it has been recommended to keep water-colour drawings in the light, while others have suggested that darkness is preferable. Colours used are of two kinds, mineral and organic. Mineral colours are generally unalterable, except in special cases, such as lead. The tendency is for red light to act as an oxidising agent on such colours, while violet light exerts a reducing action. But in the case of organic colouring matters

oxidation is promoted by light from either end of the spectrum. Acidity in any form is a great cause of the deterioration in water-colours. The chief sources of acidity are the impurities in the atmosphere in presence of moisture, imperfectly prepared colours, and the acidity of the paper. The paper is always itself slightly acid, and the use of size or gum is a source of acidity, while the burning of coal and of gas in towns produces a sensible amount of sulphurous acid in the atmosphere. The author has carefully examined the effect of acids, of exposure to sunlight, of hydrogen peroxide, and of sulphurous acid in the case of sixteen common water-colours. As a result he concludes that the character of the colours examined is very creditable to the manufacturer. Lakes are very permanent in pure air; while cases are known where indigo has remained unchanged for upwards of 1,800 years. Indigo is, however, liable to be attacked by acids. Generally the effect of chemical agents upon water-colours is what might have been expected from their chemical composition. Thus yellows containing cadmium sulphide are bleached by oxidising agents. In some few cases, however, unexpected results were obtained. Ultramarine is very readily affected by dilute acids; no preparation of lead should be used as a pigment either for oil or water-colour drawing. It is shown that many water-colour drawings have been exposed to light for fifty years or more in properly-arranged galleries without appreciable deterioration. The tendency is to produce apparently darker tints owing to the lighter tints being most liable to fade, while the brown colour developed in the paper itself tends to produce a similar effect. To preserve delicate sunlight effects the drawings should be kept in rooms imperfectly illuminated, and preferably with blinds transmitting a yellow or brown light. They should be carefully protected from the effects of an impure atmosphere, while paste or gum should not be used in affixing them. A slight wash of borax on the paper destroys its acid reaction, and makes the colours fix readily on the fibres. A small quantity of borax might be used in the water employed for mixing the colours. For illuminating galleries incandescent lamps are to be preferred to lighting by the electric arc, as the latter may be regarded as a sure means of destruction of the colours.

Mr. Crookes, after referring to the value of the paper to which they had just listened, mentioned that a committee had been appointed by the Science and Art Department to work with artists and chemists, and from the labours of this committee much benefit might be anticipated.

ST. ALBANS CATHEDRAL.

IT is gratifying to find that the elevation to the peerage of Sir Edmund Beckett has not, as often happens, put a stop to his racy letter writing. The letter of Canon Venables, which appeared last week on the "Preservation of Our Abbeys," has called forth the following rejoinder from Lord Grimthorpe, which is as characteristic as any of the preceding letters on the iniquities of architects:—

I agree with most of what Canon Venables says of the proper treatment of buildings which can never again be anything but ruins. It had all been said often enough before in one sense, but truth requires telling a great many times, and the example of the Duke of Devonshire and Lord Feversham may possibly influence the female owner of Kirkstall, and the male one of Castle Acre Priory, and others. So Canon Venables has probably done good by publishing it.

But why does he spoil a good case by chaining it to a bad one? One of the weaknesses of the present age of "great principles" is the inability to perceive differences. I should have thought a canon of a grand living cathedral which is always needing restoration could see the difference between the *mortua corpora* of defunct buildings and what we may call live ones for the use of living souls, though the canons of Peterborough could not. But these Mezentii who call themselves "true antiquaries" can see very little that they don't like, and invent in abundance to make up for it. As he chooses to try another kick at the walls of St. Albans and their preservation as a living church, I have a few questions to ask him, to which if he does not give distinct answers I shall know what it means.

1. What is the particular "Brummagem nineteenth-century finery" for which "all true antiquaries lament the wholesale destruction of old work, worn, homely, and failing" (*i.e.* falling) here? And what old work?

2. When did he last see it, and has he seen at all the nave since it has been restored and used for service? If he has, does he prefer it as it was before?

3. Does he think the windows, which have been very nearly all rebuilt and eight new ones added as much like twelfth and thirteenth century ones as possible, ought to have been built and rebuilt "so as to show their date and character on their face;" and is that the way he tries to get the Lincoln restorations done? It is true that architects' restorations always do show their modern character only too well, because they do not know how to get them done in the old way or will not take the trouble, and that is why they are so much and justly complained of, though few people know the reason. What Mr. Woodward said lately of the restorations here before I was master of them only erred in being short of the truth. The Scotts, father and son, would not let Mr. Longmire entirely rebuild the Early English windows and clerestory, but made him stick in new Chilmark stone in patches wherever the old clunch was not very much decayed. The result is that those are now the shabbiest parts of the nave, and yearly getting worse, and some day another set of patches will have to be put in.

4. What does he know or suppose (without writing to somebody to tell him) is now being done here in the way of Brummagem nineteenth-century restoration? And what fault has he to find with it?

5. Did he not himself, in a lucid interval in 1878, write in favour of our restoring the high roof over the nave instead of the later low one, which a great majority of "true antiquaries," and the R.I.B.A., led by the immortal author of the Law Courts, and all the ruinationists, swore by all their gods was the original one, and that the high "weatherings" or grooves on the faces of the tower meant anything but high roofs round it?

6. Does he maintain, as all those people do, that "architecture" as applied to restoration does not mean building as well in every respect as you can, but means either making incongruous additions intentionally unlike old work or copying any ugly or defective thing that must be rebuilt somehow? You may copy what is bad, but not what is good, for fear it should be mistaken for original.

7. I occasionally hear of true antiquaries making delightful mistakes of from five to eight centuries in distributing their abuse and praise between me and the old abbots, most of whom, I am sorry to say, were shamefully cheated by their architects and builders in the quality of their work. And an architect who is restoring a church near here thinks he cannot do better than imitate them, by building the walls of a tower as a thin shell of 4½-inch brickwork and flints with common concrete poured in between. Does Mr. Venables think such work as that, or mine and Mr. Longmire's instead of it, the best; and if "Brummagem" means bad (which he may settle with Messrs. Chamberlain and Bright), which is the Brummagem church-restorer—he or I?

TESSERÆ.

Precedent and Criticism.

HERBERT SPENCER.

THE influence of precedent has been much increased by unfair criticism. It has been the universal custom to enlarge upon all the beauties of the old buildings, and to pass over all the defects, and on the other hand all the imperfections of the modern ones are sought out and magnified, and all the merits passed over as unworthy of remark. The fact is that to an unprejudiced eye there are in many ancient examples far more glaring errors than in any modern buildings of the same character. For instance, if I recollect rightly, in the nave of Gloucester Cathedral we have ranges of plain and massive Norman columns supporting small circular Norman arches, producing the impression of great stability, and then we find the adjoining aisles lighted by pointed Gothic windows, with all the usual characteristic lightness of this style of architecture. What can be more inharmonious than such a mixture? If one of the moderns had perpetrated such an incongruity, his reputation as a man of taste would have been irrecoverably lost. Again, if one of the profession of the present day, a little more liberal than his brethren, happens in making a design in accordance with the style of some particular period, to introduce an ornament which was only used at some other era, although all the architects in England should not be able to offer any cogent reason why it should not harmonise with the other features of the building, he is at once sneered at by the critic, and stigmatised as a man of no purity of taste. But, on the other hand, if there should chance to be in the elevation of some cathedral a range of Gothic windows with angles of half a dozen different degrees of acuteness, producing evident want of unity in character, and anyone draws attention to the fact as a great defect, the case is quite different. Oh, no! this is one of the works of our great ancestors, and we must not dare to criticise the designs of such superior men. It is much to be regretted that such erroneous impressions respecting the ancients and their works should ever have crept into society: that same veneration for antiquity is one of the greatest obstacles, not only to the advancement of architecture, but to the progress of every species of improvement. Perhaps no more effectual method could be adopted to lower the dignity of mankind, and to reduce the general tone of society, than to accept the doctrine of the superiority of our predecessors: no

method better calculated to produce want of confidence and consequent danger of incapability than to instil the belief that we have retrograded instead of advanced.

Opportunities for Cement-making in Ireland.

ROBERT MALLET, F.R.S.

Henri Sainte Claire Deville, the illustrious French chemist, in the course of certain recent researches, has discovered that some compounds of hydrate of lime and hydrate of magnesia afford a cement of eminently hydraulic properties, and setting rapidly under water. He has further found that the natural dolomites, which consist of carbonate of lime and carbonate of magnesia, in proportions either of one atom of each or of two or three atoms of the lime carbonate to one of magnesia, if calcined at a very low red heat and ground to powder, produce without any other treatment a fast-setting hydraulic cement, which becomes so hard that it may be employed also as an artificial stone, which for architectural purposes retains the fine warm tint of colour of the dolomite in its natural state. Now, in many parts of Ireland dolomite is abundant as a quarry rock. It can be obtained of a fine creamy white colour, and very free from iron and manganese, which would in the preparation darken its colour as a cement. The amount of heat required for its calcination is very slight, and may with great advantage and cheapness be communicated in furnaces heated by gas evolved by the imperfect combustion of peat, employing a modification of Charles Siemens's regenerative furnace. The calcined stone can be ground by water power, and the casks for packing the cement may be a subsidiary manufacture, and even made from small native timber; but little skilled labour is required. The materials are all at hand; the product directly marketable. The process which has been given to the world by Deville is hampered with no patent. Here seem to be the conditions for at least one new industry in Ireland. Let us hope that the hint may not fall wholly unproductive.

Classical and Jewish Architecture.

PROFESSOR COCKERELL.

The resemblance of the plan of the Tabernacle in the Wilderness, with its surrounding court (the first in our series, B.C. 1491), and, still more, of the temple of Solomon, with the arrangement of the Greek and Roman temple, down to the Antonines at the end of the second century of our era, is very remarkable. In the first the parallelogram is preceded by a portico of an irregular number, namely, of five columns. In the second (1012 B.C.) we have the temple in antis. If we enter into particulars we are still more struck with their correspondence; we find, for instance, the irregular number in the temple of Jupiter at Agrigentum, one of the largest and most important of antiquity. Seven columns compose the front, and we are reminded of Solomon's saying (Prov. ix.), "Wisdom hath builded her house; she hath hewn out her seven pillars." Again, at Pæstum we have a temple (miscalled a basilica) with nine columns in the front. Other examples also might be cited. Again, of the temple of Solomon, that of Themis at Rhamnus, and the frequent temple in antis, with its pronaos and heiron, is the constant copy. The altar of sacrifice, that of incense, the laver, the table of shewbread, are all traced either in existing remains, in bas-reliefs, or in medals. The connection of classic and sacred architecture is thus apparent; and the author of "The Plagiarisms of the Heathen Detected" (Mr. Wood, of Bath) is borne out in this comparison of the plan and arrangement of temple architecture. The common error (and one to be carefully avoided) is the attempt to trace this resemblance in the styles, or the ichnographic figure of the parts and orders—the mere vesture of the scheme; and the failure in straining the texts and examples (Corinthian or Doric) to a perfect correspondence, either in Wood, Villalpandus, or his learned predecessor, Wilkins, has always thrown a doubt upon these interesting investigations; but the comparison of the plans makes the Tabernacle the type of the Greek and Roman temple, a work which Paul as well as Moses assures us was inspired by the Deity, "for see, saith He, that thou make all things according to the pattern showed to thee in the mount" (Heb. viii.). It is remarkable that the earlier contemporary works of Egypt show no similar arrangement; nor was it likely that Moses should adopt and recommend any form associated with Egyptian recollections. The circular form of plan is indeed traced in Greece, and Rome more especially, and amongst the Druids, but the most frequent by far is the parallelogram after the Tabernacle; in fact, the earliest inhabitants of the bordering countries were apparently monotheists. Their connection with the Jews through Tyre and Sidon, their respect for a people of superior knowledge and religious instruction, may well have sanctified their form with them. The ritual was the same with them. The idol took the place of the ark. With both the temple was the Domus Dei. Both were religions of sacrifice. The ritual was thus the originator of the form of the temple, and must always be so. The temple in antis became (with a view to ornament, and by the successive inventions for decorum and dignity) the prostyle, peripteral, dipteral, and pseudo-dipteral. The much boasted beauty of the Greek temple was not then an invention of taste, but one of ritual; and in the consideration of templar architecture, in all times and countries, this important fact must be carefully borne in mind. Another point of resemblance of classical and Jewish architecture of great import, since it is the hinge upon which the whole system of ancient architecture turns, is the employment of "costly stones, even great stones, stones of ten cubits, stones of eight cubits." Upon this practice the whole character and taste of sacred and classical architecture depends. The tenth book of Vitruvius treats chiefly on large stones and their transport. The type of Domus Dei admitted of no extension; the only mode of giving magnificence and dignity to temples, thus circumscribed in form and composition, was by the employment of monolithic masses, and by the exquisite detail of proportion, order, and sculpture bestowed upon them. The ancient world is full of examples of this remarkable principle, and the last and most signal one is that in the temple at Baalbec, by the Antonines, in which three stones measure in the aggregate upwards of 199 feet in length. The Saviour, whose religion was soon to supersede all ancient laws, constantly illustrates His arguments by this practice: "the head stone, the chief of the corner, which the builders rejected," are His constant metaphors; and His prediction that of these great stones "there shall not be left one upon another," is literally verified in the subsequent history of architecture.

Quarrying Granite.

G. W. MUIR.

The forces employed in breaking the masses of rock into the dimensions desired are powder and the wedge. In using powder, a hole is "jumped" to the depth required, and being filled with powder and closed at top, it is fired with a fuse, timed to allow the workmen to retire to a safe distance. The first shot generally does no more than shake the rock round the hole, and make a number of cracks. The hole is again charged, and these cracks become filled with powder. The greater quantity of powder produces a greater effect, and the rock is further shaken and opened up. A third shot generally brings down the mass, and makes it available for the cutters to shape into blocks. This is done by wedging, or the "plug and feather," the latter being a short piece of steel inserted in a hole in the stone between two thin pieces of iron. By striking the plug with a heavy hammer the stone is split into pieces of the size desired. At the Kirkmabreck quarries no powder is ever used, but the stone lies in the most favourable position for detaching. It is desirable to use as little powder as possible, as otherwise the rock is frequently shattered in a way not intended, but it is not possible in every quarry to dispense entirely with its use. In selecting granite it is advisable to consider the purpose to which it has to be applied. The stone best suited for a monument or a column in a position where it can be closely inspected, may be of a finer grain than if it has to be placed at a higher elevation. I have seen buildings with very fine columns of grey granite, so small in the grain that at the distance from which they could be seen the effect was no better than if they had been so many cylinders of zinc.

Italian Builders' Work.

C. H. WILSON.

Although there is not much employment for architects in Italy, there can be no question of the skill displayed in erecting their designs. The masonry is excellent, and the ancient Roman brickwork is rivalled by that of the present generation; houses are built of brick, in which all the exterior decorations are moulded in that material as perfectly as if executed in stone. The skill with which the Italian workmen build in brick may be exemplified by a notice of the Florentine practice of arching over rooms without centering of any description. Two thin moulds of board, the shape of the intended arch, alone are used; these are placed at each end of the apartment which it is intended to cover in, and pieces of string are stretched from the one to the other, guiding the workman as he advances in the formation of his arch, which he builds, uniting the bricks by their thin edges (greatly thinner than in those we use), and trusting entirely to the tenacity and quick setting of the cement. Plastering is carried to a perfection in Italy of which we have, I believe, no idea in this country; rooms are so exquisitely finished, that no additional work in the shape of house-painting is required, the polish of the plaster and its evenness of tint rivalling fine porcelain. At times the surface of the plaster is fluted, or various designs are executed in intaglio upon it, in the most beautiful manner. Scagliola, a very fine preparation from gypsum, is the material chiefly used. As an instance of the cheap rate at which this work is done, I may mention the ball-room in the Palazzo Pitti at Florence, which, including mouldings, figures, bas-reliefs and ornaments, was executed at a cost of two crowns for every 4 feet square.

NOTES AND COMMENTS.

THE regulations for the Paris International Exhibition of 1889 announce that no work of art or other object exhibited will be allowed to be copied or reproduced in any form, without the authority of the exhibitor and of the director-general. The latter officer has of course the right to sanction the production of general views of the courts. The removal of any work of art before the closing of the exhibition will be prohibited. In other cases special permission must be obtained. Intending exhibitors will be glad to hear that Customs duties at the ports, and all duties payable in Paris, will not be levied. Rent will not be charged for location in the building, but exhibitors will have to pay for expenses of installation and of decoration. The Government will take measures to protect the exhibits, but it declines to become responsible for accidents from fire or other cause. The exhibitors will have to insure their goods at their own expense. Foreign sections will have to provide their own guardians, who in case of need can summon the French police to assist them in case of necessity. It is recommended that exhibitors should mark the price of their goods in every case.

IT is evident that Corporation art galleries can be made to pay. Liverpool is not much of a patron of art, but the last autumn exhibition produced a profit of 1,803*l.* 17*s.* 7*d.* If to that sum be added the balance from the year before, the result is a surplus of 2,339*l.* 2*s.* 2*d.* The figures speak well, for, including catalogues, 3,419*l.* 2*s.* 1*d.* was received from the visitors. It is proposed to credit the library and museum rate account with 2,000*l.*, and to allow the remainder to be held towards the expenses of this year's exhibition. When it is found that so much is obtainable in Liverpool the question will be naturally asked how much is paid for admission to Burlington House? The Academicians do not publish accounts. Up to 1836 the average income was calculated at 5,000*l.* a year. Since that time the interest in art has grown, and three or four times the amount would probably be under the average receipts.

IN the erection of the Berlin Museum of Decorative Art the London example was imitated, and instead of finding a site where operatives and designers congregate, a fashionable quarter was substituted. The museum is in consequence a failure, and in Berlin that crime is not easily pardoned. The authorities of the museum are now deliberating about their next course of action. The wisest course would be to abandon the building, but that means a public confession of want of foresight. It is likely, therefore, that a branch museum on a grand scale will be erected. The Committee of the proposed Museum of Decorative Art in Paris will no doubt be warned by the Berlin example.

IT is already a question among the Belgian painters whether they ought to exhibit in Paris in 1889. They apply the old test, "Cui bono?" They are apprehensive that they will not sustain a comparison with the works of their neighbours. In Berlin, France was an absentee, and extraordinary precautions were taken in the selection of Belgian works. Whether the best pictures were selected is, of course, doubted by the artists of the rejected works; but the Belgians confess that they were beaten by England. What position can they hold against France and England combined? The Government appear to recognise the shortcomings of the Belgian artists, and therefore purchase modern French pictures for the public galleries. This remedy raised a storm, and it was increased when the local artists and visitors saw in the exhibition just opened in Ghent the best positions assigned to French pictures.

IT is difficult to please everybody, and when we find the Art for Schools Association going back for subjects to the Civil War between Royalists and Puritans, we suppose it was with the intention of satisfying two classes of patrons. There are probably school managers who think it is improving to children's minds if they are obliged to look every day upon portraits of *Charles I.*, his children, *Laud*, *Strafford*, and *Montrose*. For those of the opposite way of thinking there are *Cromwell*, *Fairfax*, *Hampden*, *Pym*, and *Milton*. The selection may have been forced on the Society, but there is no necessity that we can discover for bringing out the portraits on a scale that will try children's eyes. Subscribers are charged a shilling a portrait, and non-subscribers double that price. For that money reproductions ought to be obtained of the size of the original engravings. Photographs measuring $7\frac{1}{2}$ inches by $5\frac{1}{2}$ inches will not tell on the walls of a big schoolroom. It is the first time in which the Society's arrangements are of questionable advantage.

THE Wallace Tower at Abbey Craig, Stirling, which was designed by the late Mr. ROCHEAD, architect, is one of the most effective and picturesque memorials in Great Britain. It can be seen from a long distance, and the view from it suggests the exclamation of FITZ-EUSTACE, "Where's the coward that would not dare to fight for such a land?" The structure is to be a Walhalla of Scotsmen who were inspired with WALLACE's patriotism. A bust of BURNS, the poet, by Mr. D. W. STEVENSON, was unveiled in the hall on Saturday last. It was a gift from Mr. CARNEGIE, who has given other proofs of the interest he takes in Scotland, and it is appropriate, for next to WALLACE there is no more powerful factor in Scottish history than the Ayrshire song writer. Other gifts of the kind will follow. The Marquis of BUTE has promised a bust of ROBERT BRUCE, and a commission has been given for a bronze statue of WALLACE. The bust of the poet is modelled after NASMYTH's portrait, and it is placed on a bracket designed by Mr. KINROSS, architect.

PEOPLE occasionally are heard to complain of the arbitrary conduct of the Metropolitan Water Companies, but there is no power in London that can be compared with what is possessed by the Glasgow Corporation. Everyone knows that the Glasgow supply is so affluent as to excite the envy of visitors from southern towns, but the Waterworks Acts are drawn as if Loch Katrine was a small reservoir with a limited catchment basin. A Glasgow house is occupied by many tenants, but if any of them is found wasting, misusing, or unduly consuming water, the whole supply to the house can be cut off without going through the formality of a notice. What is more extraordinary, if the ratepayers are deprived of water for a year they are bound to pay their water rates to the farthing. Apparently the Water Commissioners have unrestrained powers, but the sheriff who presides over the Small Debt Court of Glasgow takes an equitable view of their position, and acts as if the Commissioners had duties as well as rights. A man had claimed 5*l.* 5*s.* damages because the water to his dwelling had been cut off for five days, while one of his children was seriously ill. The cause was a leak which was readily repaired. The representative of the Commissioners stood on his rights, but the sheriff said their conduct was unwarrantable, and awarded 2*l.* damages with costs.

AN amusing book might be written on the "Curiosities of Competitions," and if the subject were treated at the length it deserves it would occupy a good many volumes. One story that has come from Genoa is too good to be omitted from such a work, especially as it throws a light on the way in which judges go through their work. There was lately a competition among sculptors for a statue of VICTOR EMMANUEL, of whom, by this time, there must be as many effigies as we have of the PRINCE CONSORT. The models were stowed in a spare room of the theatre Carlo Felice. The caretaker was an old cavalry sergeant, who was loquacious on the subject of horseflesh. He says the committee who were the judges in the competition consulted him about the designs, and it was by his advice the model by Messrs. BARZAGHI & PAGANI was selected. But with all his desire to see the best form of horse perpetuated, the worthy guardian was not oblivious of his own interests. He made a legal demand of the customary percentage on the commission, and as the fortunate sculptors did not recognise his rights forthwith he has instituted an action. The issue will be watched with interest. Contractors say that it is impossible to carry out public works in Italy or to obtain a contract without a very liberal expenditure on what the French call *courtage*, which is one of the survivals of seignorial rights. It is comprehensive in its action, and extends from statesmen to sergeants.

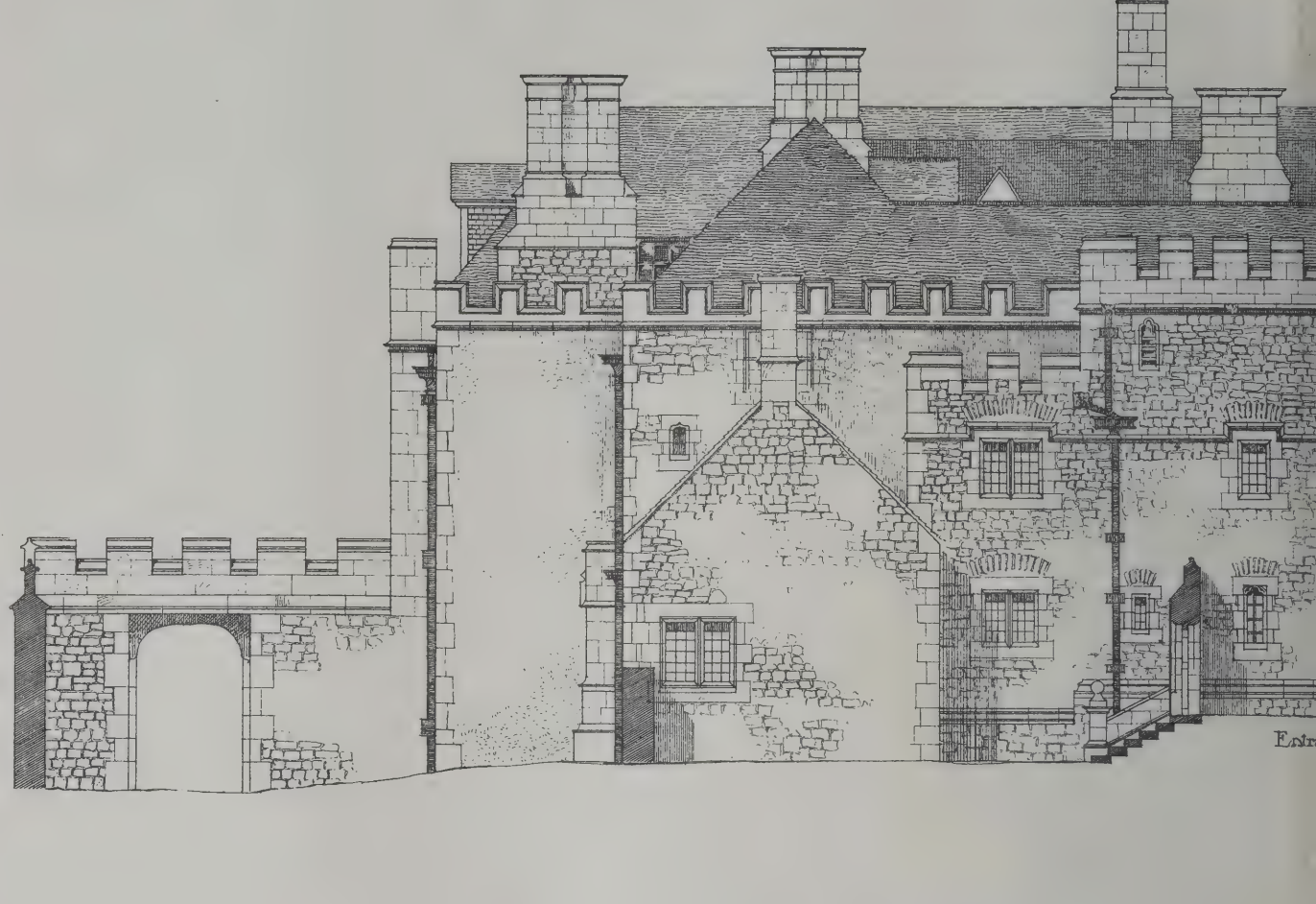


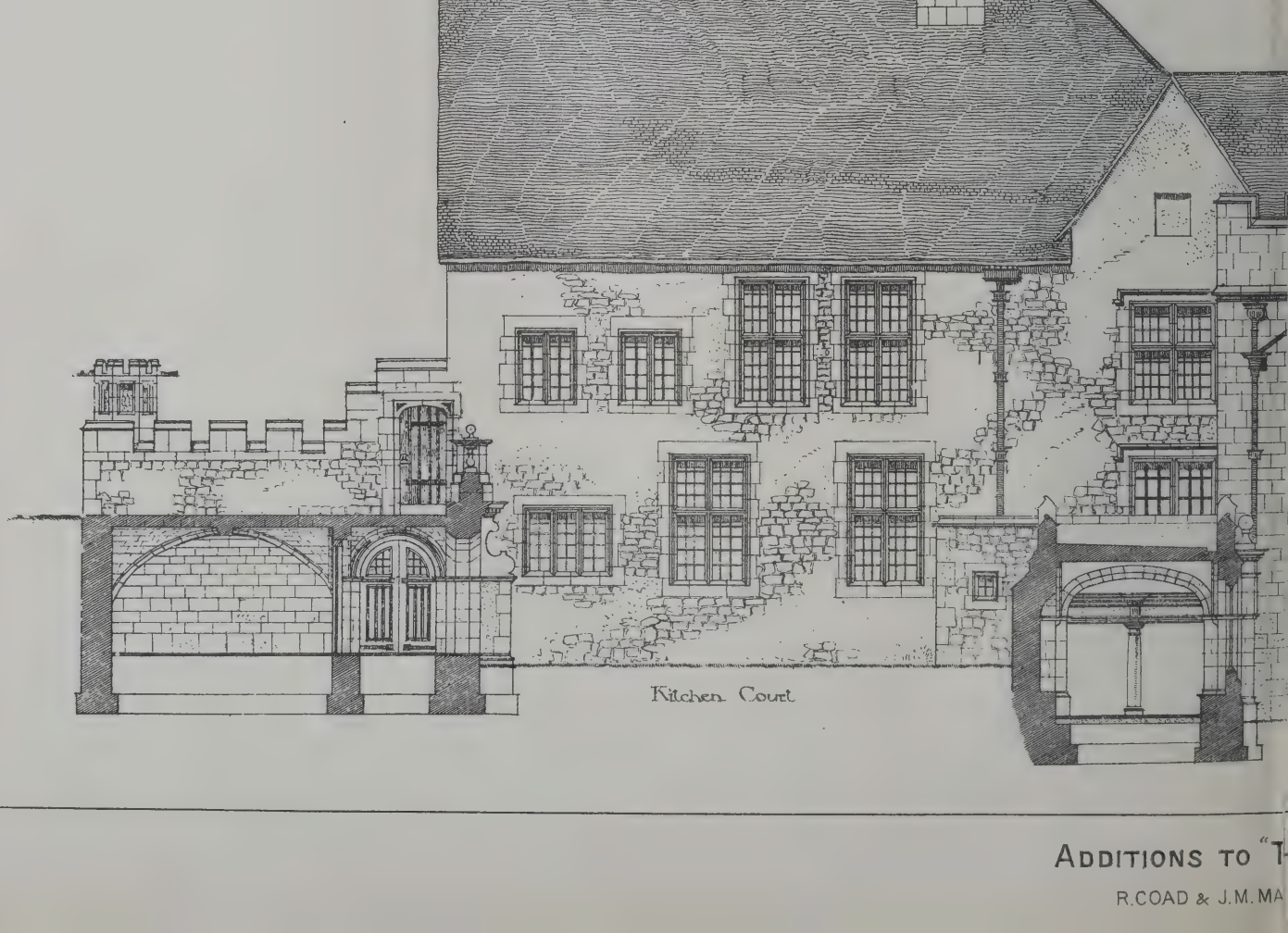


A. Brunet-Debaines, del. et sc.

THE OLD CHÂTEAU OF MOULINS.

Printed by Sprague & C° 22, Martins Lane, Cannon St. EC





ADDITIONS TO "T

R.COAD & J.M.MA



Tower

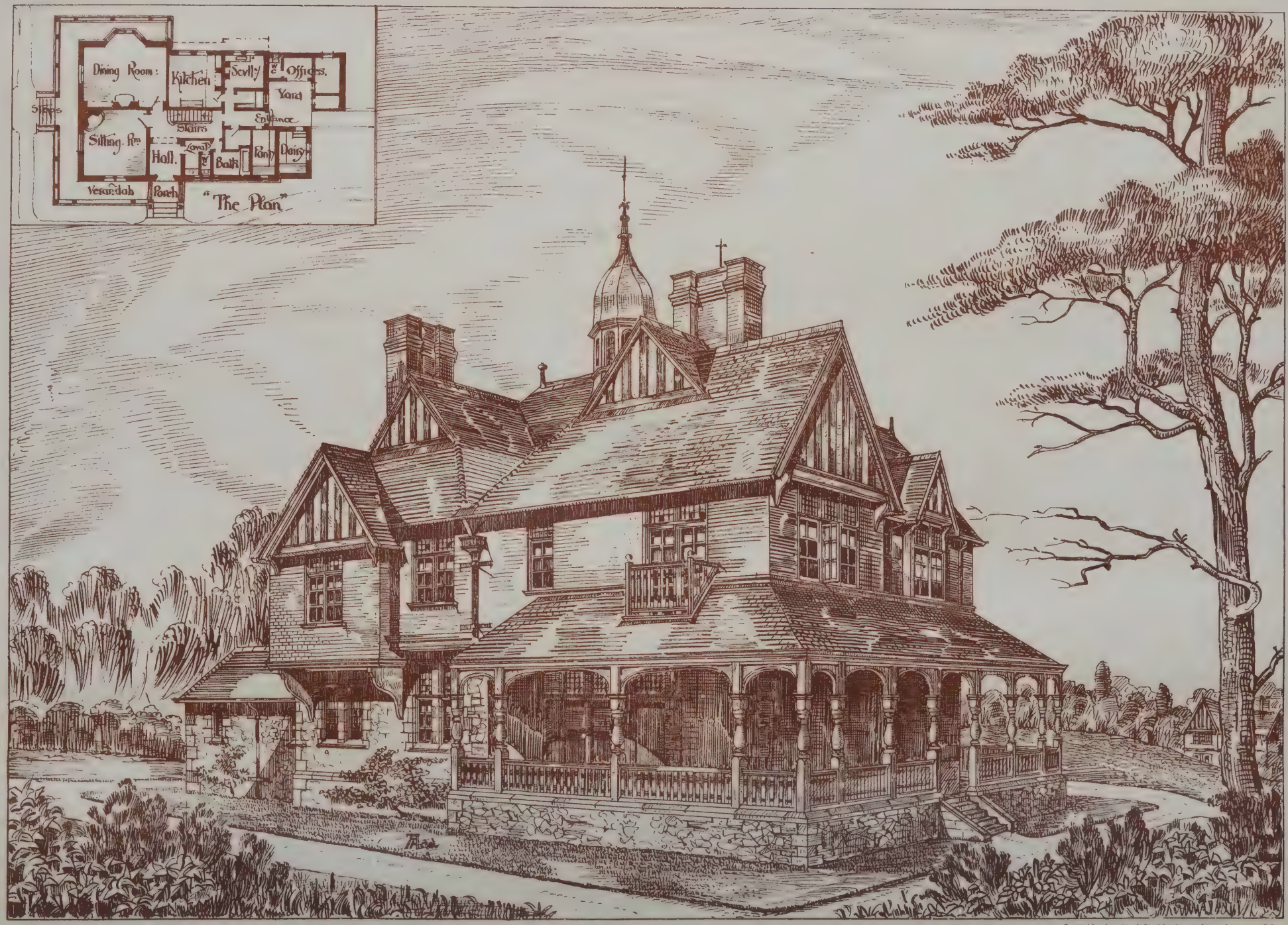


Green Court

Printed by Sprague & Cº 22 Martins Lane. Cannon St EC

PARK", LEDBURY.

EN, Architects.



The Architect, Sept. 10th 1886.

Printed by Sprague & Co 23 Martins Lane Cannon St. EC

HOUSE CROCKHAM HILL, EDENBRIDGE.

ARTHUR ARDRON, Architect



HOUSE CROCKHAM HILL, EDENBRIDGE.

ARTHUR ARDRON, Architect.

The Architect, Sept.r 10.th 1886.

ILLUSTRATIONS.

THE OLD CHATEAU, MOULINS.

THE etching we give this week is another example of the illustrations of architecture which appear from time to time in *L'Art*. The style of M. BRUNET-DEBAINES is well adapted for work of this class, and it will be interesting to compare his manner of producing effect with M. GAUTIER'S and M. LITOUX'.

Moulins is about midway between Bourges and Lyons, but it is not much sought after by artists, for the buildings shown in the illustration are all that are worth notice in the town as examples of Mediæval art. Of the fifteenth-century castle, the tower—locally known as La Mal Coiffée—is the sole survivor. The cathedral is only a choir.

The town is not without interest for the English visitor. Lord CLARENDON lived there while writing a great part of his "History of the Rebellion," and there STERNE laid the scene of the story introduced in "Tristram Shandy," and known as "Maria."

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 22. ADDITIONS TO "THE PARK," LEDBURY.

HOUSE, CROCKHAM HILL, KENT.

THIS house, designed by Mr. ARTHUR ARDRON, stands upon a very picturesque site on the main road, about equidistant between Westerham and Edenbridge. The external walls up to first floor level are built with local hammer-dressed stone, with Bath stone dressing for moulded work. The upper storeys are constructed of timber framing, with red tile hangings, the roofs being covered with strawberry-coloured Bordesley tiles. The plan, as shown, was arranged by the owner to be used during the summer as a simple cottage residence. There is stabling for six horses, with residence accommodation for gardener and coachman. Messrs. J. & J. GREENWOOD, of London, were the builders.

ANDREA VEROCCHIO.*

BY EUGÈNE MÜNTZ.

VASARI, when writing of Verocchio, tells us that the artist had a somewhat hard and crude manner in painting and sculpture, suggesting that his art had been acquired through infinite labour and study rather than through natural endowments. That judgment upon the author of the *Incredulity of St. Thomas* may appear to be rather severe, but after a close investigation one cannot say that the biographer was in error.

All that we propose to do now, however, is to consider the Florentine master as a precursor. Whatever may be the merit of his own productions, his importance to us consists essentially in the indications he has left and the path which he opened. The strongest title of Verocchio to fame rests on the fact that he was the master of Leonardo da Vinci, to say nothing of Perugino or Lorenzo di Credi. The Renaissance offers several of these apparent contradictions. The painter Mantegna was the pupil of the sculptor Donatello; the sculptor Michel Angelo was taught by the painter Ghirlandajo; Andrea Pisano began with Giotto, and Benozzo Gozzoli with Ghiberti. Is not all this another proof of the relationship which in those privileged days united one art to all the others?

Andrea Verocchio was born in Florence in 1435. His father, Michele de Francesco de' Cioni, belonged to a humble grade among the industrial classes of the city. He may have been a brickmaker. Andrea began with a study of the sciences, and like Brunelleschi, Piero della Francisca, and many other famous artists, he especially cultivated geometry. He was apprenticed to a goldsmith, and in gratitude Andrea joined his master's name to his own. Besides Baldinucci, he had Donatello for a teacher, and may have assisted the latter when he was engaged on the marble lavabos in the sacristy of St. Laurent. What seems certain is that Andrea, in common with the majority of artists among his countrymen, followed the goldsmith's craft in his early days.

The knowledge acquired in that way, and the initiation into the mysteries of a most delicate and difficult class of work, were advantageous to Verocchio when he tried his hand in sculpture. They accustomed him to fathom all the technical secrets, and to impart to his works that finish which distinguishes them. We must admire particularly his ability when he is dealing with bronze. His skill was so well recognised that in 1467 Luca della Robbia confided to him the casting of the two last compartments of the door of the sacristy of the cathedral of Florence.

Among the goldsmith's work of Verocchio mention is made by Vasari of certain brooches or buttons used for fastening copes, and which were preserved in the Duomo, together with pieces of plate. One of the latter class was a cup or vase, which was renowned. It was distinguished by a frieze composed of animals, foliage, and other ornaments. On another cup was a dance of children, remarkable for grace and beauty.

But as these works are not to be traced, Verocchio as a goldsmith is better known to us from a little bas-relief, *The Beheading of St. John the Baptist*, which was chiselled between 1477 and 1480 for the famous altar of silver which stood in the Baptistery. Taken as a whole, that altar, on which Pollajuolo, Bernardo Cennini, Antonio de' Salvi, and Francesco di Giovanni worked together, is not very attractive. The arrangement is still Gothic; there is no precision or distinction in the disposition, and, looking at it, one might suppose that the Renaissance spirit had not yet penetrated to the banks of the Arno, or that the goldsmiths were not so far advanced as the sculptors. But if judged separately, the little relief by Verocchio will be found to have originality and a vigour that is impressive.

I can well imagine Verocchio as slow and undecided in manner, and as a bad man of business. It took him a long time to emancipate himself; he was supposed to have abandoned goldsmith's work for sculpture, but after a time he as suddenly resumed it. Donatello and many others sought and preserved their liberty in a different way. When he took up painting it was with hesitation, and in truth it would have been better not to have meddled with that art.

The youth of Verocchio was marked by an event which must have often troubled his mind. In 1451—he was then sixteen—he and some of his comrades were amusing themselves outside the walls of Florence. They took to stone-throwing. Andrea had the misfortune to strike one of his friends in the temple and killed him. This homicide being due to accident, was not followed by any punishment from the magistracy, but the remembrance of it must have preyed on him and increased the indecision of his character.

The first statue that Verocchio executed was the *David*, in bronze, which was completed in 1476, and for which 150 fl. were paid. It was for the Palace of the Seignory, but all the world knows that it is now in the National Museum. The conception is most original. It was to stand in face of the *David* of Donatello, and to the exuberance of life, the poetry of that figure, Verocchio opposed the leanness of a Florentine *gamin*. The contours are clear, hard, almost angular; the expression of the face is exasperating and almost impertinent. Artists find great pleasure in the figure, but I must own that I am not so much touched by it. The realisation of character rather than of beauty was sought after, and the meagreness is pushed to the verge of caricature. Original the *David* is undoubtedly, but it is not beautiful.

During the pontificate of Sixtus IV. (1471–1484) Verocchio visited Rome, and we may ask, Did the journey have all the influence over him which is supposed? We are told how he was impressed by the masterpieces which were then in the city, and especially by the equestrian statue of *Marcus Aurelius*; how he resolved to give up goldsmith's work in order to devote himself to sculpture, and with what resolution he carried out his project. In all this exaggeration we may recognise the customary rhetoric of our old friend Vasari. If Verocchio studied and imitated antiquity, it was not in the fashion of Donatello, Mantegna, and Ghirlandajo. He may have admired antiquity, but his admiration was altogether platonic. No style differs more sensibly from that of the ancients than his; every one of his works proclaims this fact; every one shows that his bent was not towards classicism, but towards realism.

The monument of the wife of Jean Tornabuoni—of which the bas-reliefs are now deposited in the National Museum of Florence—is said to have been executed during his sojourn in Rome. But can we believe that Verocchio, a year after he had shown himself by his bronze *David* to be familiar with all the secrets of a statuary, could display the inexperience, heaviness, and rudeness which mark this work? It is not merely the declamatory character of the style, the execution itself is open to criticism. The construction is bad, the proportions are vicious, and the types are ugly. It is more reasonable to suppose either that what we see is not the tomb of Francesca Tornabuoni, and was executed before 1477, or that it is the work of one of Verocchio's pupils.

The oratory of Or San Michele, which is adorned with masterpieces by Orcagna, Donatello, Ghiberti and Nanni di Banco, also possesses one of the finest creations of Verocchio,

* From *L'Art*.

the group of the *Incredulity of St. Thomas.* It appears to have been commenced about 1476, and was fixed in its place in 1483. There is no other work of the master which shows such depth of religious emotion. The expression is grave, without being severe or hard. In the exchange of sentiment between Christ and the apostle, in the fine and penetrating psychological analysis, we can see the dawn of that power which was manifested fifteen years afterwards, when Leonardo painted his *Last Supper* in the refectory of Santa Marie delle Grazie. The deeply-cut and somewhat conventional draperies, with their angular folds, as Mr. Perkins remarks, suggest that Verocchio employed wet cloths for his model, a method which forbids a happy development of the lines, and those happier accidents which often result in most graceful dispositions.

The *Child and the Dolphin* originally was intended for Careggi, the favourite villa of Lorenzo the Magnificent, and afterwards placed on a fountain in the court of the Palace at Florence, is one of the most pleasing of Verocchio's creations. The *motif* is treated with equal simplicity and freedom. It may be remarked that in spite of what is said by Vasari about Verocchio's admiration for antiquity, no artist has less imitated the neatness and sweep of the contours of the Greco-Romano sculpture. His statues have a character that is essentially supple, with faces that have none of the antique regularity of outline, and which are more suggestive of painter's work.

The *Madonnas* in bas-relief by Verocchio (one is in the National Museum, the other in the Hospital of Santa Maria Nuova) are important works, and have exercised great influence on painting. The composition is of an extreme simplicity, the work is a little weak and in parts too subdued. To the polish of Mino, Benedetto da Majano and Civitale, Verocchio opposed suppleness and softness of flesh ; the infant Christ is represented as a chubby child, with dimples on the arms and legs ; in a word, we can see everywhere with what ardour the master studied nature, and how well he could utilise the casts which he took from different parts of the human body.

The bust of a young woman holding a flower, now in the National Museum, shows the personality, suavity, and incompleteness that marks the style of Verocchio. Some parts, such as the hand and the wrist, have a delicacy that Leonardo might not disown : the countenance is sweet, and wears a smile of exquisite grace. But how much exists to provoke critics in the construction of the figure, on the setting up of the parts, and in the contours ! The artist was so absorbed in the details that he overlooked the general effect. But what signify defects against the salutary reaction which the figure exemplifies, in its softness and ardent curiosity, against the coldness, dryness, and banality that the Tuscan school with Mino and Civitale helped to introduce into sculpture ? Verocchio wished to make flesh palpitate ; a little later he would try, like Leonardo in the *Joconde*, to make the throbbing of the temples be felt.

The cathedral of Pistoja possesses the sketch of a grandiose monument of the Cardinal Fortequerra, which Verocchio dreamt of erecting. But he was surprised by death before he executed more than a few of the figures. Two angels in particular, who seem partly running, partly flying, are among the most characteristic and the most charming of his creations. The attitudes are uncomfortable, the foreshortening rather hazardous, the draperies are broken up and crumpled ; but what grace is found in the heads—although it may be a little affected—what charm in the smile of the two divine messengers, who are indeed angels and not genii, which is another proof of the independence of the artist when tested by antique tradition.

Verocchio, as we know, had abandoned goldsmith's work for sculpture. His ardent spirit, always eager to extend its knowledge, wished to have a turn with painting. He began with a cartoon representing a combat between naked men, for among the Italian innovators anatomy held an important *rôle*. He worked hard at drawing. Vasari gives great praise to the beauty of his female heads, and points out their distinction and the coquettish arrangement of the hair. I believe, however, that his drawings with a pen, which were lately exhibited in Paris, are more suggestive of the sculptor than of the painter. The style is hard, unfinished, without delicacy or picturesque effect.

Of all the pictures by Verocchio, one alone has come down to us bearing marks of authenticity. It is the famous *Baptism of Christ* in the Academy of Fine Arts at Florence. According to tradition, the young Leonardo da Vinci painted the angel that is near Christ, and when Verocchio saw the skill of his pupil he renounced painting forthwith. The work is far from being satisfactory. The Baptist appears to be a portrait, and the model was not of a kind to inspire an artist. The man is beardless, but not young, and without any sign of enthusiasm. He was probably some Florentine merchant or artisan. Verocchio was no less independent of the traditions of Christian art than of those of antique art. His Christ is without beauty. The figure is stunted, and without anything that would suggest a superior nature. As if to impart an air of vulgarity and poverty, the veins of the hands, arms, and legs are emphasised with elaboration. As to the draperies, they are more contorted than those of St. Thomas in Or San Michele. The two angels, on the contrary, especially the figure painted by Leonardo, are full of grace, and afford a contrast to the remainder. The background—a fantastic landscape—is also in Leonardo's manner. The colouring is thoughtful, and we there see the influence of brown as in his pictures. It is remarkable that the painters who issued from Verocchio's atelier—Lorenzo di Credi, Perugino, and Leonardo—were colourists of the first order.

Although he may have rarely used the pencil, the influence of Verocchio on painting has been very great. M. Bode has explained that a series of pictures must have been produced under the inspiration of the painter-sculptor, or in his atelier. The principal among them is a Madonna in the Louvre, in the "Galerie des Sept Mètres," and attributed to Cosimo Rosselli. The pictures are generally of an extreme simplicity. The Blessed Virgin is seen standing in half-length, and the infant Christ is standing or seated ; that is all the composition.

There are numerous designs in public or private collections which enable us to follow the preoccupations of Verocchio, his attempts, his conquests. We can see among them parts highly finished beside attempts almost formless, some foreshortening that if timid is not conventional, heads carefully studied, horses which are rearing or neighing, entirely in the style of Leonardo.

The principal work of Verocchio is the equestrian statue of the famous condottiere, Colleone. It and the *Gattamelata* of Donatello are the finest of the Renaissance works of the class.

Colleone having enriched himself in the service of the Venetian Republic, bequeathed to it considerable sums. In recognition of his munificence and as a souvenir of his exploits, the Senate resolved in 1479 to erect a monument worthy of him in one of the principal places of the city. It was also considered that a master could not be found for its execution more justly famous than Andrea Verocchio. The price fixed was 1,000 Venetian ducats, or about 100,000 francs (4,000*l.*).

The artist undertook the work with ardour. He had completed the model in clay of the horse, and had commenced the preparations for the founding, when, after a course of intrigue, Vellano of Padua obtained the commission for the figure of Colleone. Verocchio became indignant. He broke the legs and head of the horse and then fled to Florence. The Venetian Senate decreed that if he should ever return to Venice he was to be decapitated. The reply of Verocchio to this threat was a proud one. "You had better be cautious," he wrote, "about cutting off my head, for it is not in your power to readjust human heads once they are separated from the trunk, or to make a head like mine, which knows how to put a head on the horse much better than the one that was broken."

The senators were struck by the answer : they recalled the sculptor, and doubled his price. Verocchio succeeded in mending the model he had broken, and completed the clay model of the horse and rider. But he died before he was able to cast the colossal mass, leaving the task of carrying out the operation to his pupil, Lorenzo di Credi. As Lorenzo was not competent to undertake a work of that magnitude, it was entrusted to a Florentine, hitherto unknown, named Giovanni d'Andrea de Domenico. We are ignorant of the circumstances under which Alessandro Leopardi came to terminate the statue.

The *Colleone* is distinguished alike by the power of the horse and the pride of the rider. Superior in this respect to the *Gattamelata* of Donatello, Verocchio has been able to suggest the influence of the man over the horse ; the fusion is more complete, the rhythm and harmony are grander.

By his will Verocchio made his pupil, Lorenzo di Credi, his universal legatee. To his brother Thomas he left two houses in Florence and his claims on the guild of merchants, to each of his two nieces ten florins, to his servant five florins. Like Donatello and Da Vinci, he remained unmarried. Verocchio was only fifty-six when he died. His remains were brought to Florence by his favourite pupil, Lorenzo di Credi, and were honourably interred in the church of St. Ambrose.

Verocchio was at once goldsmith, perspectivist, sculptor, engraver, painter, and musician. The last accomplishment is worth notice, for it shows by what affinities of taste Leonardo resembled his master. There were other analogies. Leonardo also made an equestrian statue like Verocchio, and like him, but with a far wider grasp of intellect, he studied the positive sciences.

Verocchio resembled Donatello in working in all materials of sculpture, terra-cotta, marble, bronze, and wood. He had a great reputation for his works in terra-cotta.

The atelier of Verocchio was a fertile nursery. Beside several artists of talent, there came from it Nanni Grosso, Agnolo di Polo, and Francesco di Simone Ferrucci, the sculptors ; two of the greatest painters of the early Renaissance, Perugino and Lorenzo di Credi ; and, above all, Leonardo da Vinci.

A man like Verocchio, with his spirit of inquiry, his love of investigation, and his inquietude, could hardly fail to open

many new ways for art. In the first place, he did much to extend the use of casts. He took casts from hands, arms, feet, knees, legs, and torsos. In this way he contributed to develop the taste for funereal masks, by means of which the features of a large number of Florentine celebrities have been preserved for us.

The Tuscan master gave to his pupils something else besides ready-made formulas. He taught them to think and to inquire. The atelier of Verocchio was a laboratory of inventions. Lorenzo di Credi, who was of a contemplative nature, had his share in the experiments which were so dear to Verocchio and his co-disciple, Leonardo. Vasari speaks of his copies of medals in clay, which were done on a waxed cloth with a liquified earth, and which were deceptive reproductions of models. If we consider the elements of the style created by Verocchio, we are in the first place struck by the predominance of effects which are purely picturesque. They form the most complete contrast with the manner of his predecessors, beginning with Donatello. The outline, except in the *David* and the *Colleone*, may not have monopolised his attention, but what a latent life appears in his figures; how his draperies approach reality, as if the sculptor had been seeking effects of chiaro-oscuro.

The type of beauty that found most favour with Verocchio is of the sorrowful kind, but with a vivacity that is not free from malice. The Florentine women of Ghirlandajo are proud and impassible, those of Botticelli are bewitching from their naïveté and tenderness, but those of Verocchio are dreamers and melancholic; they have upon their lips that saddened smile which is so alluring in the figures of Leonardo. Whatever there are of feminine or effeminate qualities in the art of Da Vinci, the delicacy, the softness, the suavity are to be found—although often in the state of germ—in the works of Andrea Verocchio.

In him we see the modeller enamoured of form, and pleasing himself with the search for it, and with the power of his plastic hand in modifying it; while in Donatello and Mantegna we see rather the literary temperament, and in order to express the passions which excite them, and to realise their ideal, these masters need a vast theatre, numerous scenes and dramatic subjects. With Verocchio and Leonardo there is no necessity for *mise en scène*, or pursuit of ideographic effects. The simplest *motif*—a boy playing with a dolphin, a woman holding a flower, gives sufficient opportunity to them to exhibit all their science and poetry. Artists of their class rarely exercise influence over the multitude, but their works will always give delight to men of refinement.

METHODS TO BE USED IN TAKING QUANTITIES AND MEASURING UP WORKS.

BY THE MANCHESTER SOCIETY OF ARCHITECTS.

IN 1866 the Manchester Society of Architects issued a "General statement of the methods recommended to be used in taking quantities and measuring up works." A revised edition was issued in 1873. A further revision took place in July of the present year. By permission, the whole of this important document will be reprinted in *The Architect*. As it forms an authoritative manual on the subject, we feel assured that it will be found useful as a standard to architects, surveyors, and builders throughout the country:—

Note.

In taking quantities it will always be desirable to bear the character of the works in mind, and so to measure and describe them as to give parties estimating the clearest idea, and at the same time in the most concise manner, of their cost and character.

In measuring-up works already executed, it is of course only necessary to ascertain on what principle of measurement the prices have been determined, and then proceed accordingly.

Generally.

Fees to corporation, hoarding, propping sides of foundations or walls, and use of water for the different trades, to be mentioned in the trade that has to provide them, or under the head of charges to be borne by the general contractor. (If the right of advertising on hoarding is to be reserved by the proprietor, it should be so stated.)

Each trade to provide its own scaffolding, unless specially mentioned.

Each trade to provide its own mortar.

Protecting masonry with slabs, &c., to be put by preference in carpenter's work.

Expense of watchman, making good damaged work, &c., to be inserted as occasion may arise.

Each trade to provide for the expense of the attendance on the other tradesmen, and for cutting holes and making good, &c.

When the general contractor is expected to be responsible for damage by fire, an item for insurance is to be put in the quantities, by preference in the carpenter's work.

Any provision or sums of money or values for articles, shall denote the net cash to be paid by the builder, exclusive of his profit and of the cost of materials and labour required for fixing, which, however, should be fully stated.

Clerk of works' office and custody of drawings to be provided for.

Excavator.

1. Stripping surface soil deep, and wheeling in heaps yards run, to be measured in superficial yards.

2. Excavating to be given in cubic yards, measured to three inches beyond the outer edge of footings, with extra beyond for batter of sides of excavation, depending on depth and nature of soil. State whether material is to be left on the ground or carted away; and if wheeled, state the distance. Extra price for wheeling every twenty yards run additional. The excavating for each successive depth to be kept separate, and the nature of the material to be excavated to be mentioned if possible.

3. Excavating to trenches for walls, &c., to be measured in cubic yards, and to be kept separate from the above, as also for underpinning or any special work that has to be executed separately.

4. Filling in and ramming to foundations, to be given as an item, or, if thought desirable, to be done by day work.

5. Clearing away rubbish from time to time, to be given as an item.

6. Filling in or forming foundation for paving and flagging to be taken in superficial yards, and state depth and material; or add this to the item of paving or flagging in mason's work.

7. Drains to be given in lineal yards with description thereof, to include cutting trenches and laying; describe method of jointing and filling in; and state average depth of each kind, and when practicable, mention whether in rock or other kind of ground.

8. Junctions, bends, &c., to be counted extra beyond the length of drains.

9. Cutting trenches and filling in to gas and water-pipes (see plumber), to be given in lineal yards.

10. Wells, cesspools, eyes, &c., to be given with proper particulars, as the work may require.

11. Keeping foundations clear of water beyond ordinary rainfall, and for propping to streets or adjoining buildings, to be given as items.

Bricksetter.

1. Give description of materials and mortar and quality of work. The work, unless otherwise mentioned, to be reduced to one brick thick, and called "Brick-length Walling" in yards super. If sand, gravel, or water on the spot is not intended to be used, state so. If there be much work of half a brick only it is desirable to mention it. Where a building is lofty, it is desirable to divide the work into stages vertically.

2. To obviate any misunderstanding as to so-called trade usages, with regard to other materials, as stone, &c., built in, it is proposed to measure the net quantity of brickwork to be executed, deducting entirely all labour and materials in openings having more than 100 square feet "face" measure, and deducting materials only (leaving "hollows" for labour) on the following:—

a. All other openings than the above, the shape they are actually executed, provided they are openings in the walls and built above with the same materials.

b. All sills, strings, cornices, &c., and other masonry or dressings built in, and being six or more inches high. The "hollows" thereon being assumed to pay for the labour in providing proper bed therefor, filling up thereto, and pointing up.

c. Fireplace openings from underside hearth, and all flues, to be deducted as "hollows," and the lineal dimensions of flues (with size, if various) to be given for extra labour forming, pointing, and coring out.

3. Joists and beam ends, wall plates, door frames, band and gudgeon stones, codge stones, beam stones of ordinary dimensions, not to be deducted if built in with the work.

4. All walls finished with a bevelled upper edge, as to gables, eaves, &c., to be measured to 3 inches above the average height, and the lineal dimensions of "beam filling" between spar feet and of "gable cutting" given.

5. Any work intended to be whitewashed, to be measured "superficial," over all openings for pointing.

6. All splay cutting (with width), bevelled arrises, moulded arrises, bands of fancy work (with description), cutting to any shape not square, for ramps, hood moulds, &c., &c., double or other shaped reveals, to be given lineal.

7. Stops to chamfers, and other single points requiring special labour, to be counted.

8. All brickwork in projecting bands, cornices, &c., to be measured as walling, the labour as above in No. 6.

9. Facing to be measured super for "extra price over common," and the net quantity executed only to be given, after deducting all strings, sills, &c., &c. All openings less than 100 feet to be deducted and kept separate as "hollows for extra labour over common work," to pay for the labour, plumbing and setting out. Reveals to be measured for facing separately.

10. Cavity walling to be measured the actual thickness of the bricks, as, for instance, to be measured at 1½ bricks or 2 bricks, &c., as the case may be, and the superficial dimension of the wall measured across all openings under 100 square feet, as "extra labour and extra materials for bond, forming cavity walls." The nature of the ties to be mentioned.

11. Work in cement, or other material than the general run, to be taken for "extra price over mortar," and the description of the material given.

12. Backing up to ashlar walling to be kept separate from the ordinary walling.

13. Wrought-iron bond, if used, to be given in lineal feet.

14. Common relieving arches to be counted with average span, and separated into various thicknesses of wall, and number of rims in depth, and this to cover all extra labour and materials.

15. Arches in facing to be either counted, with spans, depth, and soffit given, and this to include all extra labour and materials, including skewbacks, and cutting super-imposed work to fit the rake; or else measured super as executed for "extra labour and materials over facing," girthing the face and soffit net, and measuring separately the skewbacks, and cutting super-imposed work to fit the rake when the shape of the arches requires it.

16. Ordinary arching to fireproof floors, &c., to be measured stuff and work in square yards, with description and thickness, girthing along the line of average thickness, and measure the lineal feet of skewbacks with description. Groins to be measured lineal. Allow for cutting and fitting to ironwork.

17. Trimmer arches to be counted, with average size for "stuff and work," including backing-up, and state whether solid or concrete backing is intended.

18. Backing to arches that have been measured as in No. 16 to be taken super, with average thickness and description of material.

19. Damp-proof courses to be given lineal with widths.

20. Risers for slopstones, steps, flag shelves, &c., to be counted for "stuff and work," or, if measured as walling, to be kept separate, and so stated.

21. Wine bin divisions measured super, with thickness, and kept separate, or with the above.

22. Eyes, air-grids, chimney-pots, setting grates, or other special items, to be counted with description, and the mode of executing the work.

23. Covering walls to protect them on special occasions, and manner of doing it, to be added to the bricksetter's contract.

24. Items: To cleaning down, making good, pointing, &c., at finish.

25. It would be well to call the contractor's attention to the fact that his price must include making good any damage done by frost.

26. Concrete in foundations to be measured by the cube yard.

(To be continued.)

THE AIR OF SCHOOLS AND DWELLINGS.

IN *The Architect* of July 2 a description was given of the new process of testing air that was devised by Dr. Carnelly, the professor of chemistry in Dundee. A paper was read by Dr. Carnelly at the meeting of the British Association, in which he described an elaborate series of experiments undertaken by him at Perth and Dundee, in connection with the sanitary and school authorities, the object being to determine the relations between the composition of the air and the death-rate in houses and schools, and also the effect of various systems of ventilation. For this purpose the carbon dioxide, organic matter, and micro-organisms were determined, both in the outside air and in the room to be examined. In the air of the towns of Perth and Dundee a distinct increase of impurities could be detected in close parts of the towns as compared with the open spaces. In examining the dwelling-houses the experimenters had authority from the sanitary officers, and visited bedrooms and similar places during all parts of the day or night, while actually occupied by the inhabitants. Houses are divided in the tables into one, two, and four-roomed dwellings, and mention was made of some cases in single-roomed dwellings in which eight persons were found sleeping in a single bed, and in many cases no bed was found in the dwelling at all. The impurities in the air of such houses were naturally much greater than in the better class, and by a careful comparison of chemical composition of the air with the death-rates from various causes in the various classes of houses it was shown that on an average the length of life in a one-roomed house was only twenty years, whilst that in better-class houses is forty years. Hence a person born and living in a one-roomed house has a chance of living only half as long as those born and living in a four-roomed house. This depends naturally to a considerable extent on other causes than impure air supply. Some irregularity was observed in the cases of consumption, scarlet fever, and diphtheria, which is, however, quite capable of explanation. The influence of cubic space on the purity of the air in dwelling-rooms was somewhat unexpected, the best results being noticed when 1,000 cubic feet was allowed for each person. With larger rooms, owing to stagnation of the air, the result is not so good. Sixty-eight schools were examined; of these twenty-six were mechanically ventilated, while the others were ventilated by means of windows. The advantages were distinctly in favour of mechanical ventilation, the micro-organism being one-seventh and the carbon dioxide one-half of that in the other schools. Mechanical ventilation not only materially improves the quality of the air, but also has less influence in unduly reducing its temperature. On comparing together boys and girls' schools, the air is almost invariably less pure in boys' schools. The amount of carbon dioxide does not afford any indication of the amount of organic matter or micro-organism, except by taking the mean of a large number of experiments. Cleanliness of person has a comparatively small influence on the number of micro-organisms, but cleanliness of dwelling-rooms and schools has a most important effect. Hence the air of new schools is distinctly better than that of older buildings. In conclusion, the author suggested that in many cases the evil said to be due to over-pressure in schools was doubtless due to imperfect ventilation, and that if Dundee may be fairly regarded as an example of a British town, then certainly our schools are most imperfectly ventilated; and that for improvement in this respect the advantage of mechanical ventilation should be strongly insisted upon.

SUBSIDENCES OF BUILDINGS IN MINING DISTRICTS.

THE subsidence of buildings caused by underground workings is becoming quite common of late, owing to the necessity of removing the material which formerly was used to give support. Some intricate questions of law are involved in the disturbances. The paper which was read at the meeting of the British Association by Professor Benton had for its object the minimising of the amount of compensation which owners of mines have to pay to the owners of houses which are injured through settlements. It was asserted by the Professor that it was obviously impossible with the annual output in Great Britain of about 160,000,000 tons of coal to avoid surface subsidence. The subsidence might cause permanent injury to buildings by destroying their verticality. These damages might result not only from the removal of the subjacent mineral, but also from the removal of the adjacent mineral. After dealing with the common law of the country with regard to damage to property by mining operations, the author explained that in order to avoid such damage direct and lateral support was given to the surface by leaving considerable areas of coal unwrought. A small building standing in an area 20 yards square might require for its support a pillar of coal of 390 yards square and 6 feet thick, weighing about 180,000 tons. This weight of coal would provide lateral support for one seam only. In working four other seams of similar depth and thickness near the same building a total of weight of more than 720,000 tons of coal might be left unwrought. If it be borne in mind that there were between 2,000 and 3,000 distinct colliery enterprises in this country, it might be safely inferred that much coal was annually left unwrought for the lateral support of the surface. This coal was sacrificed for ever, and was a loss to the owner and the lessee of the coal, and also to the nation. The author then proceeded to point out the circumstances which govern the amount of lateral support given under the various conditions of coal-mining so as to avoid on the one hand leaving too much mineral, whereby the waste of individual and national wealth is incurred, or, on the other hand, leaving too little support, whereby a double penalty is incurred by the mine-owner. He considered that some alteration was needed in the common law with regard to the matter, for the sake of equity and economy. Equity, because both mineral and building property should have equal protection, whereas at present the mineral interests were sacrificed for the protection of the building interests. This preferential protection was moreover abused in a variety of ways. For instance, all fractures of buildings due to defects in foundations and construction were attributed to mining operations in the locality, for which compensation was obtained. No compensation was allowed to the mine-owner for mineral left for lateral support. He pointed

out certain alterations in the law, suggesting that a building should be banded with iron during the subsidence, and the actual damage afterwards assessed by the Crown Authority. By the creation of some such statutory provision buildings would be saved from much damage, their owners compensated for real damages, mining interests would be less hampered, and the nation enriched to the extent of the mineral rescued.

Professor Hull said that anything which tended to economise coal should be encouraged. In the neighbourhood of Birmingham large quantities of coal were destroyed by floods and by being reserved for such purposes as lateral support. Therefore the public as well as the mining interest should welcome any proposal that tended to lessen the amount of coal left in the mine, and which could not afterwards be recovered, or if recovered, was in a damaged condition.

THE ORNAMENTATION OF RUNIC CROSSES.

ACCORDING to the paper which Professor Boyd Dawkins read before the anthropological section of the British Association, it is an error to suppose that what is known as Celtic ornament is purely Celtic. It was very generally assumed by archæologists that the early Irish MSS., the Book of Kells, and the illuminated gospels of St. Cuthbert and St. Chad were of pure Irish art, and that consequently the interlacing "rope" or "basket" work pattern was distinctly Irish and Celtic. It was, however, an assumption which might readily be disposed of by an appeal to the designs on ornaments and monuments in the British Isles and in France, Scandinavia, and Germany. These the Professor considered under two heads, viz., the scroll, spiral, and flamboyant work, consisting of graceful combinations of curves; and, secondly, the interlacing work, more or less square and angular, the "rope" or "basket." The first of these two styles first appeared in the British Isles, Scandinavia, France, and Germany in infinitely remote prehistoric times, in the Bronze Age, and subsequently became more and more elaborate in the prehistoric Iron Age, constituting the "late Celtic cut" of Mr. Franks. This art was probably ultimately derived from the centres of civilisation in Southern Europe, principally Greek and Etruscan, and had been proved to have been introduced into France from Italy. From its prevalence among the Celts of the British Isles and of France, it was justly termed Celtic. The interlacing pattern of cross, too, was conspicuous by its absence from Irish art until the days of early Irish Christianity. It might be traced far and wide over Europe, and among nations who owed nothing to Irish art. From certain facts, it might be concluded that it was distinctly Germanic and not Celtic, and still less "pure Irish." The assimilation of the Celtic, graceful, spiral, and flamboyant, with the German design, not only in the early Irish manuscripts, but in Irish chalices and ornaments, might readily be accounted for by the influence of the Germanic tribes (including Scandinavians), not only in Ireland in the eighth and following centuries, but in those parts of Europe traversed by the Irish missionary. The conclusion to which he arrived was that the Irish illuminated manuscripts could not be taken as the tests of pure Irish, or even of Celtic art, but that a large part of the ornament was due to contact with Germanic art.

LEAD PIPES.

A REPORT was read by Dr. Tidy, at the meeting of the British Association, on "The Action of Drinking Water on Lead." It had been prepared by him in co-operation with Dr. Odling and Mr. Crookes. The following were the conclusions of the authors:—

"1. We deem it impracticable, even were it advisable, which we doubt, to replace the lead pipes by iron pipes, or by pipes of tinned lead. And even supposing we were able to suggest some protective coating for the lead pipes, it would be a huge undertaking and entail a heavy expense to take up hundreds of miles of lead pipe already laid and to replace them by pipes of improved construction. As regards tinned lead pipe, the tinning is found to be not only detrimental to the strength of the lead, but is likely, unless the coating be perfect, to assist the dissolution of the lead. Iron pipes, although strong, and safe so far as health is concerned, are more likely to break, more difficult to adjust and repair, very easy of oxidation, and liable to obstruction from accumulation of the oxide. We are not able to say how far some of these evils might be met by lining the service pipes with Angus Smith's or other innoxious material, such as a silicious glazing. Tin also is acted upon by water, although no doubt its toxic action is far below that of lead. It is fairly flexible, but four times as expensive as lead. Being, however, a more tenacious metal than lead, a thinner tin pipe would suffice. But there is reason to believe that waters do not afford a protective coating to tin in the same manner that they habitually do to lead. The advantages of lead service pipes are their cheapness, durability, flexibility, and the ease with which they can be wrought out and repaired. 2. We consider that our results, as set forth in the pages of this report, warrant us in recommending with confidence the systematic and continuous filtration of the water, recourse being had to such modifications of the ordinary filter-bed as will insure the efficient silication of the water. Efficient silication would, in our belief, minimise to the utmost, and practically altogether prevent the action of the water on the lead services, thereby effecting a real hygienic improvement, and allaying the justifiable apprehension of consumers as to the possibility even of injury resulting to them from the lead-dissolving character of the water supply. Such filtration would, moreover, in a special manner improve the brightness and colour of the water, and would lessen the quantity of organic matter held in solution."

Mr. A. H. Allen (Sheffield Borough Analyst) congratulated the authors of the report on having come to definite conclusions. In Sheffield many persons had suffered from lead poisoning, and he was glad that the authors of the report had provided a remedy.

Dr. Leeds said that organic matter in soft water had a considerable effect in dissolving lead.

Dr. Odling suggested that the carbonic acid in the metal itself was an important element. The question of lead pipes was raised when it was proposed to supply Glasgow from Loch Katrine. But the fact was that soft water soon ceased to act upon lead.

CORRESPONDENCE

Society of Architects' Visit to the Indian and Colonial Exhibition.

SIR,—Will you allow me to inform your readers that the visit paid to the exhibition on Saturday last was one of great interest to members of the society, who gathered many valuable ideas regarding our Colonial and Indian materials and workmanship. The visit will be repeated on Saturday, the 18th inst., when, by the kind permission of the Royal Commissioners, Mr. C. Purdon Clarke will conduct the visit, and show the closed portions of the Indian palace and other objects of interest not otherwise available to the public. Owing to the crowded state of the exhibition on Saturday, it has been found desirable to meet in the main entrance at 9 A.M., but as notices have been issued for members to meet at 3 P.M., a second visit will be held at that hour as well. May I, further, say that all architects, whether members of the society or not, will be gladly welcomed, especially at the 9 A.M. visit, and if they will bring their sketch-books, I am sure they will not regret a visit. There is a vast amount of information to be gathered from this exhibition. Your obedient servant,

HUGH ROUMIEU GOUGH,
President of Society of Architects.

12 Carlton Chambers, Regent Street, S.W.:
September 7, 1886.

Carisbrooke Castle.

SIR,—I should like to draw the attention of the Crown officials to the state of Carisbrooke Castle, Isle of Wight. It is so entirely surrounded by trees and covered with ivy that nothing can be seen from the outside but a bank of green leaves. The Princess Elizabeth's apartments are discreditable to official conservation. It is true the governor of the castle provides a book for visitors who wish to hand down their names to posterity; but the chief necessity for its existence is in the fact that every inch of wall is already covered with the patronymics of uninteresting nobodies.—Yours obediently,

16 Austin Friars, E.C. HENRY OUGH.

Corporation of Nottingham.

SIR,—Will you please insert in your next Friday's issue of *The Architect* the fact that the Corporation of Nottingham's sixth annual autumn exhibition of modern pictures at the Art Gallery, Nottingham Castle, will open to the public on Saturday next, September 11, the private view being on Friday, Sept. 10. The President and Council of the Royal Academy contribute *Napoleon on Board the "Bellerophon,"* by W. Q. Orchardson, and many other important works are in the exhibition.—Yours obediently, G. H. WALLIS, Director and Curator.

Midland Counties Art Museum,
The Castle, Nottingham: Sept. 6, 1886.

SCHOOL BUILDINGS.

Bradford.—The Fairweather Green school, erected by the Bradford School Board, has been opened. The style of the building is Domestic Gothic. The cost of the buildings and furnishing has been 9,224*l.*, making with cost of site (2,083*l.*) a total per head for the 1,003 children accommodated of 9*l.* 3*s.* 11*d.* The following were the contractors :—Masons and joiners, Messrs. John Moulson & Son ; plasterer, Mr. S. Sunderland ; plumber, Mr. Alfred Higginbotham ; slater, Mr. James Smithies ; painter, Mr. D. E. Hutton. The heating apparatus has been supplied by Messrs. Walton and Brear. Mr. Peterson is the architect.

Falkirk.—The old parish school has been opened after alterations as a high school for the Falkirk School Board. The conversion of the building has been carried out from the plans of Mr. Wm. Black, architect, Falkirk.

Halifax.—The memorial-stones of a Wesleyan school chapel at Caddy Field, Halifax, have been laid. The building has been designed by Mr. James Farrar, of Halifax, the style adopted being Gothic.

Wednesbury.—The memorial-stones of the new wing of the Wesleyan schools at Spring Head have been laid. The extensions will take the form of six new classrooms, teachers' room, and an extension of the upper schoolroom. Mr. A. Lynex, of Walsall, is the builder, and Mr. C. H. Newman, of Wednesbury, the architect.

CHURCH BUILDING AND RESTORATION.

Durham.—The new Congregational church, designed and superintended by Mr. H. T. Gradon, architect, of Durham, was opened on Wednesday, September 1. It has been erected at a cost of about 3,500*l.*, and has accommodation for over 500 people. Messrs. Geo. Gradon & Son, of Durham, were the contractors.

Dumbarton.—The foundation-stone of a United Presbyterian church has been laid. The building is designed by Mr. John M'Leod, architect, of Glasgow and Dumbarton.

Farnborough.—The chancel of the parish church of Farnborough, Hants, has recently been entirely rebuilt, from designs and under the superintendence of Mr. A. R. Barker, architect and diocesan surveyor, of 11 Buckingham Street, Strand, the contractor being Mr. Smith, of Farnborough.

Glasgow.—The foundation-stone of the Queen's Park Baptist Chapel has been laid. The style of the building is Romanesque, with some introduction of Transitional detail. The architects are Messrs. M'Kissock & Rowan, of Glasgow.

Gildersome.—The memorial-stones of a Wesleyan chapel have been laid. The building is being erected from the plans of Mr. T. A. Buttery, architect, of Morley.

Hanley.—The Methodist chapel has been reopened after considerable internal alterations. The whole of the works have been satisfactorily carried out by Mr. Cornes, of Hanley, and the painting and decoration by Messrs. Greenwood Bros., of Leeds, under the superintendence of Mr. William Hill, architect, of Leeds, and involving a total outlay of about 2,300*l.*

Mansfield.—A Primitive Methodist chapel, built from the plans and under the direction of Mr. R. Frank Vallance, architect, of Mansfield, has been opened. The walls are of Mansfield Woodhouse limestone, rock faced, and Matlock stone has been used for the dressing of the building, the style being Gothic.

Strathpeffer.—A new church, erected on an elevated site immediately above the pump-room at Strathpeffer, has been opened. The building, which is in the early Gothic style, is designed to accommodate between 600 and 800 people. Mr. Joass, Dingwall, is the architect.

Tunbridge Wells.—The dedication-stone was laid by Mrs. Weare, on Monday last, of the new Church Mission Room, High Brooms, Tunbridge Wells. This building is now in course of erection from the designs of Mr. Brett A. Elphicke, of London and Tunbridge Wells.

Whitby.—The corner-stone of the church being erected on the West Cliff has been laid. The estimated cost of the building, the style of which is fourteenth-century Gothic, is about 10,000*l.* Mr. Robert J. Johnson, F.S.A., of Newcastle-on-Tyne, is the architect, and Messrs. Padbury & Son, Scarborough, are the builders and contractors. Mr. Dean is clerk of works.

Wolverhampton.—The memorial-stone of the new chancel to Christ Church has been laid. The contractors for the work are Messrs. G. & F. Higham, who built the church, and the architect is Mr. T. H. Fleeming, all of Wolverhampton.

REVIEWS.

THE CONSTRUCTION OF SILOS. By THOMAS POTTER. London : B. T. Batsford.

Few processes in farming have excited more interest in a short time than the conversion of green stuff into silage. At first it was supposed to be a new discovery, but the process is now said to be a very ancient experiment in agricultural chemistry. Everyone has his pet scheme of producing the fermentation of the stuff by applying weights, and there is an advantage in having so many experts taking an interest in the process. Mr. Potter has built silos, and from his position he was bound to examine many varieties of them. In the little book which he has lately published he gives a fair description of the principal systems. He is not prejudiced in favour of his own or any other way of producing ensilage. Throughout Mr. Potter takes the builder's point of view, and in describing constructive modes he is sufficiently precise about dimensions, materials and cost of work. Although so many silos exist, there is apparently an opening for a more perfect one, and, indeed, some farmers think that a better result is obtainable from a stack built up in the open air, and which is compressed from time to time by winding a number of wire ropes that cross the mass. The book is addressed primarily to builders, but it is no less useful to farmers. Amateur agriculturists of a scientific turn, and with money to experiment, will find it fascinating reading.

GENERAL.

Sir John Savile Lumley, British Ambassador at Rome, has offered to the Nottingham Castle Art Museum a collection of specimens of classical antiquity which he found on the site of the Temple of Diana, near Rome. The collection comprises a large number of objects and fragments in terra-cotta, bronze, and marble, as well as specimens of money inscriptions. The Nottingham Town Council have accepted the offer.

The Associates' Sketching Club of the Leeds and Yorkshire Architectural Society held a monthly meeting on Monday evening, when the sketches produced by the members during the month were exhibited. Amongst the best are Mr. Alf. Whitehead's *Entrance to Chapter House*, *York Minster*, and *Kiddal Hall*, near Leeds ; Mr. F. W. Bedford's *Interior*, *Chester Cathedral*, and *Benthall Hall*, Salop.

Mr. Howard Thomas has received a commission for a statue of the late Mr. Samuel Morley to be erected in Bristol.

Mr. G. Cox, of Birmingham, has obtained the first prize in competition for new schools to be built at Harborne. Mr. D. Arkell, of Birmingham, obtained the second prize.

A Carved oak church interior has been sold by Messrs. W. & F. C. Bonham, auctioneers, for the sum of 2,900*l.* Its destination is King's College, Cambridge.

The Edinburgh Exhibition having been assessed at 17,500*l.* for rating purposes, the executive has objected, and plead that if the principle of assessment on the rental was admitted, they would also become liable to the Income-tax Commissioners for taxation on profits.

Mr. Richard Davis, Lord-Lieutenant of Anglesey, and late member of Parliament for the county, has announced his intention of erecting a new chapel at Menai Bridge, at a cost of 4,300*l.*

Mr. T. E. Smith, of Bolton, has prepared designs for a new hotel at Horwich in the old English post and plaster fashion, with overhanging gables and balconies.

Mr. W. Emden is preparing plans for a new theatre which Mr. E. Terry, the comedian, proposes to erect.

A Bazaar held last week in aid of the Alyth Town Hall building fund reached in the total drawings a sum of 1,021*l.*

The German Government have declined to subsidise the holding of a national Exhibition of Industry at Berlin in 1888, and the scheme will now fall to the ground. The reason assigned is the negative attitude of a very large class of those who are concerned in industrial pursuits.

A Hall is to be erected in Bridgwater at a cost of 4,000*l.*, as a memorial of Mr. George Williams, the founder of the Young Men's Christian Association.

The Drainage Works in progress in the Houses of Parliament are to be completed on October 31.

The Glasgow Town Council have agreed to expend 600*l.* in the purchase of articles from the Indian and Colonial Exhibition.

Two Pottery Kilns of the late Roman period have been found, with fragments of Samian and other ware, during the course of levelling the ground for the new Corporation sewage works on West Stow Heath, near Bury St. Edmunds.

The Architect.

THE WEEK.

The case of the new Admiralty and War Offices seems as far as ever from settlement. On Monday the First Commissioner of Works was asked to explain how it was that a sum on account of the work had been entered in the Estimates but was afterwards withdrawn. Mr. Plunket said that during the last Parliament a suggestion was made by Mr. W. H. Smith, the present Secretary for War, that a Committee should be appointed to reconsider the plans. The suggestion was approved by the Liberal Government. It was afterwards proposed that a Committee should be appointed for the purpose of reconsidering the whole question; and a Committee was proposed and nominated with the assent of the House. It had been stated in reply to questions in both Houses that nothing would be done beyond what was absolutely necessary in the way of demolition until Parliament had had an opportunity of reconsidering the matter. In these circumstances he considered it would not be proper to proceed with the vote. According to Mr. Plunket, it was, moreover, the intention of the Government to bring the subject before the House as early as possible next session. That session will need to be elastic if all the work that is assigned to it can be performed within the time. It is not advisable to be precipitate, but the present Government would add to their reputation by settling this affair. The architects are entitled to commiseration for having to endure so long a period of uncertainty.

The official announcement of the medals awarded to English artists for their contributions to the Berlin Exhibition has appeared. Grand gold medals have been gained by Sir John E. Millais, Mr. Herkomer, and Mr. Ouless. A special medal for "Science" has been awarded to Sir Frederick Leighton. Mr. W. B. Richmond and Mr. J. R. Reid have obtained small gold medals, and there is honourable mention of the works of Mr. F. Goodall and Mr. W. F. Yeames. In sculpture, Mr. Thornycroft and Mr. A. Gilbert are awarded small gold medals, and Mr. George Simonds an honourable mention.

During the last six months good progress has been made with the works of the new Tay Viaduct. The whole of the foundations have been completed, and they have all been tested with satisfactory results. The brickwork and masonry are nearly completed. The ironwork of all the girders has been fitted and drilled. Thirty of the spans have been erected, and the decking has been fixed upon them. The ironwork of all the pier shafts or superstructures has been prepared, and 57 have been erected. Of the large girders (245 to 227 feet spans) eight pair out of thirteen have been floated off; two more pair are nearly ready for floating off, leaving only three to be done.

Many of our readers will hear with regret of the death of Rowland Mason Ordish. There were few men more closely associated with the history of iron construction in our time. He was one of the principal assistants to the late Sir Charles Fox when working out the details of the ironwork of the Great Exhibition building of 1851, for Sir Joseph Paxton contributed simply a general plan, and was incompetent to deal with construction on so large a scale. The application of wrought iron for bridges had been demonstrated by Stephenson and Fairbairn, but developments were introduced by Mr. Ordish. He patented a system of rigid suspension bridges which was applicable to large spans and to railway traffic. One example, at Prague, was illustrated in the first number of *The Architect*. For it the Emperor of Austria awarded to Mr. Ordish the large gold medal. The Albert Suspension Bridge at Chelsea is also on the principle, and bridges designed by Mr. Ordish are to be found in many parts of the world. Several large roofs for exhibition buildings, markets, and stations were constructed under his direction. The roof of the hall of the Albert Palace at Battersea is taken from the Winter Palace in Dublin, of which Mr. Ordish was the designer. His aid was also sought in the preparation of the plans for the great roof at St. Pancras, the roof at St. Enoch Station, Glasgow, and the Albert Hall; indeed, in al questions relating to iron construction his opinion was accepted as authoritative. He came to the rescue of Captain Fowke in preserving the domes of the Exhibition building of 1862 from collapse. All the large books on ironwork comprise some of his designs. For a time Mr. Ordish was in partnership with Mr. Lefeuvre. He was also a president of the Society of Engineers. Of late years he was engaged by Messrs. Dennett & Ingle, in whose London offices he aided in solving many intricate problems. He was superintending the fixing of some of their ironwork up to Saturday evening. On Sunday he died suddenly. He was sixty-two years of age. Mr. Ordish was distinguished among engineers in giving an architectural character to his work. He always insisted on the necessity of co-operation among architects and engineers, and wrote articles on the subject in this journal. In both professions there will be mourners for his loss.

According to a correspondent of the *Standard*, in the excavations undertaken by the Greek Archæological Society on the Acropolis of Mycenæ portions of a building, which is supposed to be the palace of the Atrides, have been laid bare. Three passages lead to a court, in which there were traces of buildings of more recent date. Behind this was a hall, in the middle of which was a hearth, the whole agreeing with the Homeric descriptions. Near the hall were two small rooms, communicating with one another. The architecture is similar to that discovered at Tiryns.

The competition for the Fine Art Gallery at Leeds, which is to cost 8,000*l*., was limited to the architects of the town, and, since able architects are to be found there, it cannot be said that the ratepayers were likely to suffer by the arrangement. The Free Library Committee are dissatisfied, and have come to the following resolution:—"That in the opinion of this Committee the condition imposed by the Special Fine Art Gallery Committee, restricting competition plans for the erection of a gallery to architects practising in Leeds, is unwise and contrary to the principle of free and open competition hitherto adopted by the Leeds Corporation, and this committee is also of opinion that the Special Committee ought at once to remove the restriction adopted." It is possible that the resolution was inspired by a little jealousy. The Free Library Committee may have thought that the arrangements belonged to them, and there was no need for the formation of a new body. Whatever is the cause of the ill-will, we trust the arrangements will not be altered.

The extract from the despatch received from the Chargé d'Affaires at Dresden which is printed by the Board of Trade will be read with interest, for it is another illustration of the maxim that in the mishaps of our best friends we can find something to console us. Mr. Strachey, writing of the iron trade in Germany, says:—"My informant said that, taking the metal all round, from pigs and ingots to steam-engines and penknives, the situation here was disastrous. The only consolatory circumstance was that, thanks to the protective tariff, which kept up some slight pressure against foreign commodities, the outlook of the iron-masters and machinists of Germany was not quite so black as that of their British rivals. My informant proceeded to ascribe this slackness to over-production. I asked how over-production was to be defined. Did it mean that the blast furnaces of Silesia and Westphalia were surrounded by mountains of unsaleable crude iron, and that Chemnitz had no dealings in locomotives and looms? Or was over-production only the capitalist's term for very low profits? He added that there was a positive material glut of the articles which are made for stock. For instance, the crude iron in hand at the blast furnaces was normally 1-24th of the annual output, whereas the actual surplus was double that proportion, or about 1-12th of the output. There was a similar augmentation of the visible supply in other iron-making countries, so that the aggregate output was in excess of the requirements of the market." German trade has been conducted in so surprising a way since the war with France that disasters of the kind described in the report are inevitable.

FRA BARTOLOMMEO DELLA PORTA.*

IN spite of the prejudice which is excited by the Order from association with the Inquisition, the Dominicans merit grateful remembrance for their encouragement of art in all its forms. Among the members have been architects like Giovanni da Campi and Jacopo Talenti, who completed Sta. Maria Novella in Florence; Giovanni Giocondo, whose fame was known throughout Europe as an authority on military and civil construction; Francesca Colonna, the author of the architectural romance, "The Dream of Polifilo"; Ignatius Danti, who built part of the Vatican; Domenico Paganelli, who planned the great fountain at Faenza; Vincenzo Maculano, who fortified Genoa, and was the only architect of whom it can be said that he was within one vote of the Papal throne; Francesco Romain, who was king's architect in France; and others. There have also been sculptors in stone and bronze, workers in intarsia, glass painters, and engravers. The painters were the most numerous, and the greatest of them were Guido of Vecchio, known as Fra Giovanni of Fiesole, and more generally as Fra Angelico; and Baccio della Porta, known as Fra Bartolommeo.

Fra Angelico was one of those men who seem like stray spirits that have somehow been wafted to this troubled world, and pine for the time when they are to escape from it. His pictures stand apart from all others, for his figures have as little of the earthly about them as he had. The forms may have some resemblance to mankind, but they are embodied spirits rather than mortal beings. "The saints that he painted," says Vasari, "have more of the air and resemblance of saints than any other painter," and if so, it is because they are reflections of the gentle spirit of the man who produced them, and who was exempt from all the influences of passion and care.

He was not an artist who can be "understanded of the people." Fra Angelico kept aloof from the turmoil of life, and lived among idealities. It was his maxim that to be a painter a man should live in quiet, and be free from anxiety. There are few painters who would not agree with him, but destiny is less favourable to them than to the Dominican.

Delaroche suggested the separation between Fra Angelico and the painters who are born to suffer like their fellow-men, when in the *Hemicycle* he represented the monk with his back to the students. What could be their victories or their ambitions to his soul? But near him is another Dominican, who contemplates the scene with a sympathetic look. He had known a little of what a painter has to endure, for this artist who is seen standing between Da Vinci and Raphael is Fra Bartolommeo di San Marco. Unlike so many of the men near him, there is nothing in his homely face to suggest aristocracy of birth or intellect. But he is the sort of man to whom one might go for advice in a difficulty, or who could be asked without fear of offending to come and look at a picture in progress, and even if it were not easily reached.

It is satisfactory to find that a life of Fra Bartolommeo has appeared early in the series of the "Artistes Célèbres," for the publication is evidence that the conductors have no fear of temporary prejudice. At the present time there is a disposition among many in France to imagine that an artist who lived and painted within a convent cannot have a high standing, and more popularity would be gained by a book which corresponded with the prevalent belief. As in other cases of the series, the author, M. Gustave Gruyer, has an esteem for his subject, and he is not to be debarred from expressing it. He has investigated the authorities, and by a comparison is able to do something towards a complete memoir. Two writers, viz., Vasari and Padre Marchese, furnish the chief sources of information, but something has been added by later inquirers, and the examination of the artist's works by Messrs. Crowe and Cavalcaselle, and other critics, throws a light on questions of dual authorship. For it is worth remembering that for a part of his life Fra Bartolommeo worked with one or more partners.

According to Vasari's account (which was written about fifty years after the artist's death) Bartolommeo was a native of Savignano, a village ten miles distant from Florence. In what year he was born is not stated, and nothing is said about his family. Subsequently it was discovered that the time was 1469. Padre Marchese says that Bartolommeo was the son of a peasant proprietor, who was called Paolo del Fattorino because the nickname was given to his father, who was useful as a factor or agent to his neighbours. Apparently Paolo gave precedence to his own interests, and contrived to buy a house in Florence near one of the city gates. In consequence, a new sobriquet was applied to his son, the artist. He was known, prior to joining the Dominicans, as Bartolommeo or Baccio della Porta. The family history is differently stated in M. Gruyer's biography. According to it Paolo was in the service of one Fattorino as a mule-driver, and his employer's name was applied to him. At last he was fortunate in marrying a widow who lived near the Gate San Pier Gattolini, and afterwards he bought a house in the same place. The accounts differ in detail, but it is clear from them that Bartolommeo came from a humble class, and he was called Della Porta for want of a more precise surname.

He was not ashamed of his origin, and the homeliness and simplicity which are found in his pictures suggest the peasant's son. When he was renowned he is said to have visited Savignano, and to have made himself known to some of his humble relatives. Nor are we to think any the less of Bartolommeo because he announced to them that the King of France had sent for him in order to paint pictures in a palace. He had his weaknesses, but they were of a kind that were easily pardoned, and Bartolommeo would be less interesting without them.

In what way he displayed an aptitude for painting remains untold, but on the advice of Benedetto da Majano, the sculptor, Bartolommeo, in his ninth year was apprenticed to Cosimo Rosselli, who could hardly be called one of the great artists of Florence. M. Gruyer says he was an excellent master, and had not at that time undertaken the experiments in alchemy on which he squandered all his wealth. Padre Marchese, on the other hand, doubts whether the advice of Benedetto was honestly given, as Cosimo was the least distinguished of the Florentine painters, and was remarkable only for poverty of design. In the atelier, Bartolommeo found two young artists at work. One was Pietro da Cosimo, the weird painter who is introduced by George Eliot in "Romola." There was nothing in common between him and Bartolommeo. With the second, who was called Mariotto Albertinelli, he soon became a friend, and afterwards a partner.

Florence at that period was divided into two parties. One was fond of playing with paganism. Venus to them was not only the goddess of beauty, but of culture and liberty. It was the policy of the Medici to encourage the Florentines to believe that they patronised art and literature, because they were eager to free the citizens from the restraints imposed by narrow-minded spiritual and temporal lawgivers. The people who wished to be thought advanced in their ideas did their best to please the Medici, by attempting to live according to Classic ways. There were out-of-door pageants got up to charm all classes, feasts where the guests were crowned with roses, festivals in honour of the immortal gods. It was hardly surprising that artists who had studied the Greco-Roman marbles in the garden of the Medici should be subjected to the new influences, and end by thinking that it would be well to make forms more agreeable to the eyes than those of confessors and martyrs. The gods and goddesses of Olympus were accordingly utilised for Christian art, to the great delight of some ecclesiastics who took a broad view of life, and sought for renown in piquant stories, also of the Classic kind, rather than in sermon writing.

But there was also a party among whom old-fashioned notions prevailed. They distrusted alike a make-believe Classicism and a real tyranny under the form of Medicean enlightenment. They were led by the Dominican Savonarola. With keen insight he saw how artists were made the tools of craftier men in order to corrupt the Florentines, and his most impassioned appeals were to them. Bartolommeo, as we might expect from the cut of his

* *Les Artistes Célèbres: Fra Bartolommeo della Porta et Mariotto Albertinelli.* Par Gustave Gruyer. Paris: J. Rouam. London: Gilbert Wood & Co.

features, as they are represented in the old woodcut of Vasari, belonged to the party of Savonarola; his friend, Albertinelli, adhered to the side of Medici and liberty.

When an attack was anticipated on Savonarola's convent, Bartolommeo was among the Piagnoni who volunteered to defend the building. He appears to have exercised self-control as long as the enemies were outside. But when the Arrabbiati were seen to scale the walls he became panic-stricken, and in his terror made a vow that if he escaped in safety he would become a monk. As soon as Savonarola surrendered to his enemies, the contest ceased, and Bartolommeo was free; but in his extreme sensitiveness he felt that, with more bravery on his part, the great friar might have been saved.

Like other artists who were of the same party, he fled from Florence, and in July 1500 he fulfilled his vow by entering the Dominican Order at Prato. He was then twenty-five. Bartolommeo's abandonment of the world seemed like a catastrophe to Albertinelli. We are told by Vasari that he was desperate at the loss, life became a burden to him, and, if it had not been for his life-long aversion to monks, he would have entered a convent in order to be near his partner. The two artists painted so much alike that it was difficult to discriminate between them. The unfinished *Last Judgment* in the chapel of the cemetery of S. Maria Nuova, which was left in an unfinished state by Bartolommeo, was therefore entrusted to his friend.

It is likely that on embracing the monastic life Bartolommeo believed he had done with painting. This seems evident from a transaction which arose respecting a younger brother. He also was to become a painter, and Bartolommeo, who was his legal guardian, apprenticed him to Albertinelli, and assigned him his own share of the farm. A copy of the curious indenture which was signed on the occasion was printed in *The Architect* of January 24, 1885. It is evident that if Fra Bartolommeo intended to resume painting, he would have kept his brother under him instead of entrusting him to an artist of a flighty disposition.

It is difficult to speak with certainty of the characteristics of the works of his first period. Most of them exist no longer. Bartolommeo was one of the artists who cast his paintings of secular subjects into the huge pile of worldly things that was lighted at the dictation of Savonarola. According to the Padre Marchese, there was timidity in his first manner, his outlines were harsh, and his perspective uncertain, but skill was seen in his draperies and colouring. The work which is sure of perennial interest is the portrait in profile of Savonarola.

The Ages of Faith could not have come to an end in Vasari's days, for we find him expressing the belief that whenever Nature creates an artist of retired habits, she is careful also to provide for him the means that are requisite for a quiet life. Her ladyship is not always so bountiful to modern artists, but her arrangements for Fra Bartolommeo were marked by foresight. An atelier within a convent seemed as well suited for his work as for Fra Angelico's. When, after the lapse of four or five years, he yielded to the persuasion of the Prior and took up the pencil, it was evident that his power had not departed. The first picture that represents his new state of life is *The Vision of St. Bernard*, which was painted as an altar-piece, but is now in the Florentine Academy. M. Gruyer prefers the similar work by Filippino, and there is some hardness in parts, but there is novelty in the arrangement by which the principal figures are seen in profile. Vasari, who knew the picture before the restorers were allowed to operate on it, gives it high praise.

The necessity of definite conditions, clearly expressed in writing, was suggested in this case. No price was stipulated when the picture was ordered by a layman. The painter received forty ducats for materials and expenses; he wanted 160 ducats more. The patron said eighty ducats were enough for the picture. A reduction of forty ducats was in vain made by the painter. It was proposed to submit the case to the Guild of Apothecaries, but the monks had little confidence in the tribunal. Then a common friend of the parties offered to arbitrate, and he valued the work at one hundred ducats, one-half the original price. A dispute also arose over another picture at a later date, the altar-piece of St. Romano, at Lucca, which is one of the artist's noblest works. In the upper part is God the Father, seated, surrounded by angels, and below are St. Mary Magdalene and St. Catherine. From its beauty Rio supposes that it must have been designed by Raphael. It was painted for the Dominicans of Murano, and the price was to be from seventy to one hundred ducats. A sum of twenty-eight ducats was paid on account. After the picture was finished two monks came to Florence to settle the balance. The painter asked fifty ducats, which they declined to give. They returned to Murano. After three years the Florentine monks sent a formal notice, which might have been written yesterday, to their brother Dominicans, stating that if the money was not paid within ten days the picture must be sold and the instalment forfeited. The painting was afterwards presented to Fra Pagnini by the artist, who in turn gave it to Lucca. That city also possessed in San Romano the *Mater Misericordia*, which Canova classed, with Titian's *Assumption*, as the two greatest Italian works. In the cathedral is the *Virgin of the Sanctuary*, with the wonderful singing angel seated on the step. It now has its pristine brilliancy, but when Richardson saw it he says it had turned black and was spoiled. The transaction with the monks of Murano suggests that convents of the same Order were in such matters as picture dealing independent of each other. Fra Bartolommeo seems to have found no trouble in dealing with patrons for the remaining pictures he produced.

An element of risk that might have ended in litigation was, however, introduced when a partnership was sanctioned between the friar and his former associate, Albertinelli. There was a precedent for it in the case of Fra Angelico and Benozzo Gozzoli. But Benozzo was a man who was happiest when among monks, while Albertinelli had an aversion to all of them, with the sole exception of his friend. The partnership lasted three years. On its dissolution there was a division of the contents of the studio. Pictures of the value of forty-eight ducats were retained in the convent, while Albertinelli's share amounted to forty-seven ducats. The model in wood of life-size, a second that was hinged, and a third of a child in plaster, together with a pair of iron compasses, were to continue with Fra Bartolommeo for his life, and on his death were to become the property of Albertinelli and his heirs.

There was a striking change in the quality of Fra Bartolommeo's works after he became a monk. Two causes have been assigned to explain his progression. The first is the presence of Da Vinci in Florence. He had fled from Milan. Vasari is silent about a meeting between the artists, but Padre Marchese seems to us to be justified in supposing that Fra Bartolommeo would seek to form a friendship with the leading master of the age, and gladly obey his precepts about chiaro-oscuro and colouring. The small fresco lunette over an entrance to the refectory in San Marco, representing the meeting at Emmaus, is said by some critics to be in the style of Da Vinci. But the strange witchery of that master's faces was never attempted by the Frate.

Another potent influence was found in the friendship of Raphael. After Da Vinci and Michel Angelo, the greatest artist living in Florence at the time of Raphael's visit to that city was Fra Bartolommeo. Now we know that Raphael was one of those men who always try to extract knowledge from everybody who is wiser than themselves. His brain might not be the largest, but it never was surpassed in assimilating power. There was a geniality and warmth about the pictures of Fra Bartolommeo in which his own imitations of Perugino were at that time deficient, and so he held on by the Dominican until he acquired a better style of colouring and modelling, and was able to recognise the beauty of figures of a less conventional type. In return, he was probably unable to teach Fra Bartolommeo anything new, but the conversations with Raphael could hardly fail to excite thoughts which had been forgotten from the time the monk had abandoned the world, and the innate grace of the Umbrian painter's slightest sketch must have been a new revelation to him. It is evident the friar was fascinated by Raphael, and afterwards he went to Rome in order to behold his great works in the Vatican. He was probably amazed at the unanticipated progress of an artist whom he could claim

as a pupil. For the bound which RAPHAEL made in painting was a puzzle to all. The younger RICHARDSON, who wrote early in the last century and embalmed many old traditions in his book, says that in style FRA BARTOLOMMEO was as great as RAPHAEL, while his painting was more vigorous and mellow. "He seems to have been the greater man," continues RICHARDSON, "and might have been the RAPHAEL had not fortune been determined in favour of the other."

FRA BARTOLOMMEO is said to have left Rome because he felt overpowered by the works which he saw in progress. Apparently he was not puffed up by an exaggerated estimate of his own powers. But, monk as he was, his humility was not proof against the allegation that he could only attempt draped figures. He therefore painted a *St. Sebastian* to give evidence of his capacity. VASARI, who saw the picture, says the flesh was like life, the form was beautiful, and the countenance captivating. But, while admired by artists, it was supposed to be dangerous to one class of spectators, and accordingly it was removed from the church to a chapter-house. Afterwards it was sold to the French king. The picture was long lost to sight. At one time it was supposed to be in the possession of M. THIERS. But it had found its way to Toulouse after the first Revolution, where it was sold to a M. ALAFFRE for 48 frs. His son gave an account of it in 1844 in the *Journal de Toulouse*. According to M. GRUYER, it is now possessed by M. CHARLES ALAFFRE, of Pézenas.

The figure is draped as modesty requires, and it cannot be worse than numerous representations of the same subject. But there seems to be a tradition in San Marco that the painter suffered remorse on account of it, and it was the last of his nude figures. Otherwise his life in the convent ran peacefully. The state of his mind may be inferred from a few lines he inscribed on the back of one of his drawings, and which are to the following effect :—

Supreme, eternal source of sweetness, welling
Life, light, and solace o'er this heart of mine ;
Full well I feel, when close beside Thee dwelling,
How joy itself, if Thou were not, must pine ;
How heavenly hymns must sink to fiendish yelling ;
How life must never live, but still decline.

Padre MARCHESE says the lines are by FRA BARTOLOMMEO, and are as valuable as one of his pictures. M. GRUYER says they were written by SAVONAROLA. At any rate, from his having copied them, they are suggestive of the feelings of the painter.

Yet it is evident he did not enjoy vigorous health. His visits to many convents were evidently journeys in search of strength. He was struck with paralysis while working in the Council Hall of Florence, where he took up a commission which had been intended for MICHEL ANGELO and DA VINCI. A fever followed, to which he succumbed in his forty-eighth year. The eulogy which one of his friends proposed to be placed under his portrait reveals what was thought of FRA BARTOLOMMEO by his contemporaries:—

In colouring, Apelles ; in design
I rivalled Buonarotti ; nay, surpassed
Even nature ; into all my forms I cast
Such strength, life, motion, flesh, bone, outward-shine.

FRA BARTOLOMMEO is one of the Italians who are not well represented by paintings in England, although Dr. WAAGEN considered the *Riposo* at Panshanger to be among the painter's chief works. In his drawings we are richer, if we count the collections of Mr. HESELTINE and Mr. MALCOLM, of Portalloch. They are, however, closed to the public. Under the circumstances, the proprietors of the Librairie de l'Art have conferred an additional favour on art students by introducing so many sketches of the painter's works in the careful and sympathetic memoir by M. GRUYER.

THE ACROPOLIS OF ATHENS.

IN the excavations now going on at the Acropolis of Athens the refuse stones and soil are thrown over the walls, and form long sloping lines of earth hiding the almost perpendicular rock. This is especially the case on the north and east sides. One great characteristic of the site of ancient Athens is that, owing to its rocky nature, it probably presents the same appearance now that it did thousands of years ago. We see at once why the isolated and precipitous rock would from the earliest times be selected as a city or citadel. It is a great pity that in the course of the useful and interesting excavations now carried on anything should be done to alter the natural features of the hill. Either in baskets or down an inclined plane the refuse soil might be conveyed to the foot of the Acropolis, and might then be used in forming a better road of approach.

THE ROYAL ACADEMY AND ARCHITECTURE.

IN a second letter to the *Times*, Mr. W. H. White writes :—I have refrained, in the expectation that "R.A." would challenge some of the statements contained in my letter which appeared on the 30th ult., from replying to Mr. Aitchison, A.R.A., whose communication, published in the *Times* on the 2nd inst., charges me with having omitted to explain that the Academicians delegate some of their duties in the matter of lectures to others, and with having been ambiguous in my remarks on the absence of all study of architectural composition and planning at the Royal Academy.

Now, there are doubtless outsiders who could deliver better lectures on architecture than any of the Academicians, except, perhaps, their illustrious President ; but does an Academic chair, which is allowed to remain vacant for five years, mean nothing more than a question of lectures? Surely a professor of architecture at the Royal Academy is a high officer of education, the chairman of his committee of "Visitors," the chief of the architectural school. There are, indisputably, landlords who confer a signal benefit on their country by living out of it, and many an incumbent has preached better sermons than the holder of the fat living who employed him, but such are exceptions. Where they have become the rule, the annals both of Church and State show that the community has suffered.

It is perfectly true, as Mr. Aitchison informs you, that members of the Academy serve in turn as "Visitors" in the architectural class, and that plans, elevations, and sections are there drawn by the students, the best of whom receive prizes. It is also true that the master of the class is an accomplished architect who has studied in Paris, and it is this gentleman who is my authority for a part of the statement the ambiguity of which has struck Mr. Aitchison. The master of the architectural class called attention two years ago to "the entire absence in England of any study of architectural composition." He said ("Transactions," R.I.B.A., 1883–84, p. 117) :—"The English student makes no sketch-design ; he begins at once with his 2-foot rule to put the exact size of every feature in the building without going one single step further in the study of design. He does not consider proportion or anything." Again, at page 131 of the same volume, this same gentleman declares that "in France they lay great stress on the study of plans, but when this study was attempted at the Royal Academy, Mr. Street found out that it was difficult to teach the pupils to draw large plans, and so he confined them to elevations." I implied in my letter that such indispensable studies had been neglected for many years, but it would be more exact to say that, since the foundation of the Royal Academy in 1769, they have never been really taught there. Until 1860 the Academy had no architectural class at all, and it was only in 1876 that the architect members, on the recommendation of the late Mr. Street, began to take duty as "Visitors" in the class. But have these experts time enough to discourse to the students on mathematics, descriptive geometry, stereotomy, physics, construction, building legislation, &c., all of which subjects are separately taught by different professors at the Ecole des Beaux-Arts, over and above the more agreeable themes of ornament, decorative composition, history and theory of architecture, æsthetics, &c., which are also taught in the Paris school?

Sir, the haphazard character of architectural education in this country is a great and widespread evil. It is impossible for me, holding the office of Secretary of the Royal Institute of British Architects, to say all that ought to be said on the subject, and it is only right to add, if you will so permit, that I am solely and individually responsible for the statements made both in this letter and in that which you were good enough to print on the 30th ult. The grounds on which I have ventured to address you are that, in 1884, I published, at some personal cost, the results of an inquiry into, among other things, the current methods of artistic control of public buildings in Paris and London. I then tried to show that in France the school, the academy, and the State work together for the national good. The academy is recruited from the school, and school and academy provide the State with men fit to design and erect the public monuments of the country. But here in England a very different condition of things exists. In no part of the Queen's dominions is there any institution, either public or private, which can be properly termed a school of architecture, and a wide gulf separates the State from the Royal Academy. The Chief Commissioner of Her Majesty's Works,

who is the largest practitioner of architecture in Europe, and who is now planting all over England, Wales, and Scotland public buildings designed in his offices, does not officially recruit his staff of surveyors and draughtsmen from among the premiated students of the Royal Academy, nor does the typical English gentleman in search of an architect intentionally select from among those who have taken honours there. But would it savour of protection, would it militate against the glorious principles of free trade, if they were encouraged to do so?

THE ROMAN WALL AND ITS BRIDGES.

A COMMITTEE of the Cumberland and Westmoreland Archæological Society, consisting of Mr. J. A. Cory, architect, Mr. Cartmell, Mr. R. S. Ferguson, and the Rev. T. Lees, was lately appointed to make excavations on the line of the Roman wall. The report was presented at the annual meeting which was held last week. After stating the preparations made in the way of marking out the line of the wall and vallums, and the roads and camps in Cumberland, and offering thanks to various gentlemen for their assistance in this respect, the report went on to add that with regard to likely places for excavation the committee considered it would be desirable to ascertain how the wall crossed the various rivers in Cumberland, and, if possible, to find the piers of the bridges. The Poltross Burn at the entrance into Cumberland; the Irthing, at Willowford; and the Eden, at Carlisle, seemed likely places to yield results. They thought also of tackling the great question of whether the Roman wall went round or over Burgh Marsh. They, however, found that their hands were full, and the problem still awaited solution. Permission was readily given by Mr. Howard to excavate at the Poltross Burn and at Willowford, but on viewing the latter place it was seen that the damage to grass crops would be too great, and the intention to excavate there was abandoned until a more convenient season. In the excavations at Poltross Burn, in the ravine through which it runs near to Gilsland station was discovered on the western bank a regular faced wall of about three courses of ashlar work, and a short distance from it was about five courses of a similar wall. On the eastern bank corresponding fragments of wall were found, thus showing that the Roman road, known afterwards as the Stane or Carel Gate, had crossed the Poltross by a deep cutting. On the east side this cutting ended on a platform of rock, which was higher than the corresponding one on the western side, so that the bridge itself (a wooden one) must have been on a steep slope. Such a bridge would require supports other than merely at its two ends, and in the bed of the stream close to the west side was a large stone, not of native rock, oval and much water-worn, which might have been the foundation of a pier; and on the east side was what appeared to be a pier artificially built. After giving a few facts about the wall at the Willowford, the report went on to give the results of the excavations at Carlisle, and proceeded to state, from the oldest maps the committee could find, it would appear that the channel of the river Eden had not changed much near to Hyssop Holme Well since the time of Queen Elizabeth. It was about this place where the Roman wall descended and ascended again to the high ground over the flats at Parham Beck, and in tracing the course of the wall over the alluvial flats of the Eden two trenches were cut in the Sauceries, in the angle between the Eden and the Caldew. The trenches were cut in échelon, each about 30 feet long, and at a depth of about 6 feet 6 inches the water came in. A depth of about 2 feet more was searched by iron bars, but there was no sign of foundations; not a chip of stone was to be found, though the gravel below the alluvial deposit was searched. The next point selected was a clay pit in the angle between the Caledonian and North British Railways, where tradition asserted the wall to have been found when the latter railway was made. They found the foundations of the wall at a depth of about 8 feet from the surface of the ground, resting upon the gravel below the alluvial soil. The stones of the wall had been taken away down to the very foundation, but one or two bits of ashlar still in position enabled them to get the width of the wall as 7 feet 9 inches. Their next trial was on the west of the Caledonian Railway, where they found the wall. Turning to the Stanwix side of the river, they dug a trench in the footpath on the top of the bank, and the forced earth in it gave them a section of the north ditch. They next started to dig in the small alluvial area close to Hyssop Holme Well, and dug three trenches of great depth (11 feet in one place) and length, but found no trace of the wall. A halfpenny of George II. and a few bits of broken stones were all they found. Nothing like foundations could be found in the gravel bed in the weir opposite Hyssop Holme Well, though some twenty squared stones were found, of undoubted Roman work. They were strewn about the bed of the weir, and might have rolled down from the cliff. They were of the ordinary size of the ashlar work of the Roman wall, but too small they imagined to have been used as foundations for the piers of the bridges. One more trench was dug on the top of Hyssop Holme Bank, near the verge of the cliff across the line of wall itself. The wall had here been so thoroughly despoiled of its stones as to have been turned into a sort of ditch, and then to have been filled up by made soil. This was curious, because at the back of the row of villas on the top of Hyssop Holme Bank it was found at the depth of 8 or 10 feet, and large pieces of concrete were taken up and conveyed to neighbouring gardens and rockeries. It passed diagonally across the gardens of two of these villas, and was there recognisable by richer soil. It was quite evident that where the wall existed in the alluvial flats of the river Eden it had been utilised as a quarry and plundered to its very foundations. They were rather inclined to think that the actual bridge across the Eden itself might have extended from a point west of the Caledonian Railway, where they lost sight of the foundations, to the foot of Hyssop Holme Bank, about one-third of a mile, giving a bridge of some fifty openings, if they took the opening of the bridge over the North Tyne as a scale. There was nothing improbable in this. The vast floods that frequently covered the alluvial flats of the Eden would sweep away any solid wall across the flats. The Romans must either have embanked the river in a narrow and deep channel by heavy earthworks, of which there was no evidence to be seen, or they must have had a bridge of some fifty openings. It had often been commented upon as curious that no mural camp existed between Castlesteads and Stanwix, a distance of eight miles. The reason, although never yet printed, was not difficult to give. The country north of the wall between these two points was in Roman times an impenetrable morass, part of which now survived and was well known as Scaleby Moss. At Hallstanes Bridge, just before entering Burgh-by-Sands, Mr. Mulcaster uncovered a pavement for their inspection, but it was not Roman. Mr. Mulcaster informed them that in the marshy ground near Burgh the foundations of the wall lay upon great beams of black oak, a fact which he had ascertained in some very deep draining.

THE FADING OF WATER-COLOURS.

THE controversy on the permanence of water-colour drawings has been mainly wanting in precision. Mr. William Simpson is the first artist who is able to describe an experimental test. Fifteen years ago he painted two sets of cards with washes of the pigments in general use—one set was exposed to light for that length of time. His conclusions are as follows:—

The experiment here reported certainly proves that water-colours are liable to fade—some colours more than others; but this is nothing new. The fugitive character of crimson lake was known, and no artist nowadays would paint the carnations of a lady's face with that colour, or the rose tints of a sunset; but I confess that I was not prepared for the colour vanishing entirely from the paper, as has been the case. Neither did I expect that indigo would fade to the shadow it has become, but then it has to be remembered that my test has been of the most trying kind.

Here is the list of colours, and it speaks for itself:—Yellow ochre—unchanged. Indian yellow—has faded considerably. Lemon yellow—is not perceptibly affected. Gamboge—has faded. Newman's permanent yellow—unchanged. Cadmium yellow—this has not faded, but has seemingly become of a browner tinge. Chrome yellow—faded considerably; the slip not exposed seems to have become more orange, but, unfortunately, I had not noted at the time which chrome had been used. Brown pink—has faded, but it has stood better than might have been expected from its reputation. Emerald green—scarcely changed. Burnt sienna—unchanged. Vandyke brown—unchanged. Sepia—this shows a very slight tendency to fade. Roman sepia—this may have faded also, but, like the common sepia, the change is not very perceptible. Burnt umber — unchanged. Bistre — unchanged. Brown madder—this colour has lost a little of its redness. Light red—unchanged. Vermilion—shows no change. Indian red—unchanged. Crimson lake—this colour has all but disappeared from the paper; at one side where the colour was laid on deeper a brown streak still remains. Carmine—this, like the lake, has entirely gone, but where the carmine was laid on deeper a faint brown streak is still left. Madder lake—this colour has stood well, but it is now a little less red, and more of a purple. Purple madder—like the other madders this has stood, but seems to be changed very slightly in tone. Cyanine blue — seemingly unchanged. Prussian blue — unchanged. French blue—very slightly faded. Cobalt—I can detect no change in this valuable pigment. Ultramarine—is, of course, unchanged. Newman's azure—is unchanged. Indigo—where there was a rather deep wash of this colour the exposed slip shows now an exceedingly light tint of gre in fact, it has

nearly left the paper white, but has not vanished so completely as the crimson lake and the carmine. Lamp black—unchanged.

I may remark that the back of the frame was not pasted up to keep out the air, which in one way has added to the force of the test; but fifteen years' smoke and dust have accumulated on the whole surface, and laid a brown tint over all. This now affects the comparison between the exposed and unexposed slips.

I have promised to hand over all these slips to Sir James Linton to submit to the committee when it begins its labours.

TESSERÆ.

Costume in Painting.

J. R. PLANCHÉ.

SIR DAVID WILKIE did the writer of these lines the honour of consulting him respecting the elaborate picture of *John Knox Preaching the Reformation*. He was desirous, he said, of being very correct in the costume he had introduced, and requested a candid opinion upon it, the picture being then finished, and ready for removal to the Royal Academy for the purpose of exhibition. On its being pointed out to him that he had introduced in the gallery of the church military personages wearing the barred helmets of the time of Charles I. in the reign of Mary Stuart, he replied that his reason for so doing was that these persons were to be supposed to have visited the church with a desire to be unknown; and yet he had actually selected—more in the spirit of an Irishman than of a Scotchman—the open headpiece of the seventeenth century, through the bars of which the face was distinctly visible, in preference to the helmet of the sixteenth, the closed vizor of which would have defied scrutiny! The glaring absurdity of this anachronism was, notwithstanding, allowed by the great painter to remain, and to be disseminated by the burin of the engraver, although it might have been remedied in half an hour with as much advantage to the effect of the picture as to its historical accuracy. This anecdote "reminds us," as an inveterate story-teller would say, of one more creditable to the taste and intelligence of another Royal Academician. While Mr. A. Cooper was at work on the *Battle of Bosworth*, the painter consulted Sir Samuel Meyrick as to how King Richard III.'s horse should be caparisoned. "In silk housings, embroidered with the royal arms," was the answer, "covering the steed from his ears to his hoofs." "Oh!" exclaimed the mortified artist, "that will never do for me; my principal object is to paint White Surrey, and if I cover him from head to foot as you describe, I may as well not paint him at all." "But," rejoined the antiquary, "you tell me the moment you have chosen is that in which Richard made his last desperate charge and slew Sir John Cheney, Richmond's standard bearer. Now as this was at the close of the battle, the caparisons of the horse would probably by that time be cut and torn to shreds, and the colour and anatomy of the horse in that case might be rendered sufficiently visible for your purpose." The true artist jumped at the suggestion: the silken housings rent to ribbons streaming in the wind add action to the horse, tell a terrible tale of the fury of the fight, and completely satisfy the archæologist, while they display the peculiar genius of the painter, and give additional effect to the picture.

The Christian Basilica.

R. BURGESS, D.D.

The Christian basilicas, in their primitive form, were generally quadrangular. The branches forming the cross were introduced at a later period. It was a general rule to place them east and west, and this is the case with St. Clemente; but there were many exceptions when the nature of the locality required. The Basilicas Sessoriana, at the Sante Croce in Gerusalemme and Eudoxiana, were varied as to their cardinal points. Many of the churches in Rome at this day are out of this magnetic oriental line; and as to Ireland, St. Patrick seems to have given them all a twist towards the west, prophetically pointing the way across the Atlantic in the great exodus of the nineteenth century. But looking at an early legitimate Christian basilica, we may divide its parts into outward and inward. To the former belong the vestibulum and the atrium, to the latter the naves, the choir, and the sanctuary or bema. Beginning with the exterior parts, we may observe that the vestibulum of a private house was an intermediate space or area between the house and the public street; it was fenced by a wall, and often furnished with exedræ and recesses for the accommodation of persons who came to the levée of the patron at a somewhat earlier hour than the levées of modern times. That which the Latins called vestibulum, the Greeks called *πρόθυρον*, or *προπύλαιον*. We find an example of this vestibulum in the area which stands before the church of St. Clemente. The small portico of four columns, however, now standing must not be confounded with the ancient vestibulum; it is a work of the ninth century, and covers the original vestibulum. Similar specimens of this kind of access are still existing in the churches of St. Prassede, St. Maria in Cosmedin, St. Cosimato, and others; these may all be considered as works of the ninth century, when the forms of churches began to vary from the primitive style; they were, in fact, substituted to the ancient vestibule, to meet the changes in ecclesiastical discipline to which I have already alluded, and to which I shall again refer. From the vestibule, people entered by a door into the atrium. This consisted of a square court, surrounded by columns, and formed into a cloister. In St. Clemente, the atrium is admirably preserved; three sides are supported by columns; the fourth, which gives entrance, is supported by three brick arches. It is important to distinguish between the vestibulum and the atrium, because they are sometimes confounded both in word and in matter. The Greek word corresponding to atrium is *αἴθριος*, sometimes *αὐλή*, words expressive of an uncovered court. The open area of this atrium was sometimes planted with trees and shrubs; the mystic plants were preferred, as the cedar, the cypress, the vine, the rose, and such like, and hence the area so ornamented was sometimes called by a Latinised Greek word Paradisus—a name which the atrium of the Vatican Basilica retained long after the trees and mystic plants were replaced by marble pavement. In the middle of the atrium was one or more fountains, and if not fountains, a well or a cistern; in this it was the custom of the faithful to wash their hands before entering the church, a usage that is traced as far back as the time of Tertullian. Under the shade of the surrounding portico pilgrims were sometimes lodged; they served also for the habitations of the inferior ministers employed about the service.

Church Roofs.

WILLIAM BURGES.

Up to the fourteenth century I very much question whether that desideratum of ecclesiologists, an open roof, ever obtained in churches. Look at ancient twelfth and thirteenth century buildings that have not been restored, and you will find an hexagonal ceiling, the said ceiling in many places replacing the old boarding; but in some poor places, as in the little Sussex churches, it may just as likely have been original. In many instances the ceiling was even flat, or very slightly canted, as at Peterborough, Jesus College, Cambridge, and, I believe, Adel Church. Now, this boarding was useful in two ways: it afforded a surface for decoration, and it kept the church cool in summer and warm in winter. There was also a small window high up in the gable, to ventilate the air between the ceiling and roof. In our modern open roofs we have just the reverse; they are frightfully hot in summer, and cold in winter. Go into a church after a Sunday afternoon service, and observe how close it smells. Our modern architects put the little window in the gable because they find it there in the old examples; but with them it is of no earthly use but to afford light where light is not wanted, and to show the thin scantling of their timbers.

George IV. as a Patron of Architecture.

JAMES ELMES.

As it has been customary to give additions to the names of eminent princes, such as Louis the Great, Charles the Bald, Richard the Lion-hearted, so a biographer of the Brunswick family proposed to call the successor of George III. "George the Magnificent." As regent and sovereign of these kingdoms, he exhibited a love for architectural splendour more capricious than tasteful. Gaudiness was more esteemed than elegance, and George the Magnificent delighted more in the costly extravagance of the Diocletian school than in the tasteful grandeur of Pericles and Phidias. John Nash was exactly the architect to the regent's mind, and gilded profusion usurped the place and overlaid the purer taste that had been introduced by Chambers, Wyatt, Stuart, Dance, and Holland. Hence George IV. preferred the gorgeous profusion of the Roman school in its decline, to the sublimer truths of the Athenian in its greatest purity; hence he preferred the pretty beauties of the Dutch and Flemish masters to the sober and less apparent magnificence of the Roman school; hence he preferred cabinets and *bijouterie* to work of sterling merit; hence he preferred Canova to Phidias and hence, all the bad taste that emanated from the patronage of George IV. He decorated all the lower apartments of Carlton House, low in height as well as in situation, with Corinthian columns, redolent with burnished gold from abacus to plinth—so bright, indeed, that their proportions could not be scanned, and their only excellence were their extreme cost. This suite of apartments, which were level with the gardens next St. James's Park, and beneath the splendid suite of State apartments designed by Holland for levées and other regal purposes, were furnished by the architect, the cabinet-maker, the carver and gilder, the upholsterer and carpet-maker with almost Tiberian luxury, for the personal use

and comfort of the regent and his favourites, who could make their exits and entrances by the back way in the park, without ever going up to the public and royal part of the regent's palace. This costly and, as Holland left it, tasteful edifice, he swept away, and pulled down Buckingham House, the favourite residence of his father, to make way for the present Buckingham Palace, which all the patchings of Blore have not been able to lick into decent shape; neither has it a tasteful exterior nor a comfortable interior, as the complaints made to Parliament of the want of domestic accommodation fully prove. He removed the pretty Pavilion at Brighton for the capricious nondescript which now so expensively occupies its place. Before the removal of Carlton House, when George IV. entertained the greatest assemblage of princes and warriors that perhaps ever met together at the English Court after the great and terrible triumph of Waterloo, the entertainments were both extravagant and childish. A canal, filled with real water and living fish, meandered along the tureens and plateaux of the dinner-table till the unfortunate sufferers were killed and nearly cooked by the heat of the soups, the viands, and the *entrées*. There was also erected in the gardens a circular revolving temple or tent, moved by invisible machinery, designed by the chief architect whom the prince deigned to honour, for the admiration of the imperial, royal, and gallant visitors to the Regent of England. There was also a fragile Chinese bridge thrown over the canal in St. James's Park, which, had it been consumed by the illuminating lamps that showed its barbaric proportions to the gazing multitude, as it was threatened, it would have been spared the disgrace of a sarcasm and an early destruction from premature decay. When Canova shortly afterwards visited this country, partly to view our metropolis, and principally to feast his eyes upon the unequalled beauties of the Elgin marbles, he was accompanied in most of his perambulations by an amiable and eminent architect, whose name I may not mention without permission. He was so delighted with the simplicity and durable construction of Waterloo Bridge that he demanded of his guide if it were not built at the public expense? He was informed that it was erected by private untitled individuals; but, if he would accompany him a short distance, he would show him one built by royal command at the public expense, "from the designs and under the superintendence"—to borrow a favourite expression of our craft—of the chief architect to the Crown. He took his friend Canova to St. James's Park; he pointed with supreme derision to the pagoda bridge, and exclaimed, "Behold the work!"

Latent Heat in Timber.

W. HOSKING.

Mr. Braidwood, the able and intelligent superintendent of the London Fire-engine Establishment, stated in evidence, before a Committee of the House of Lords, his belief, from observation of many instances, that by long exposure to heat not much exceeding that of boiling water, timber is brought into such a condition that something like spontaneous combustion takes place; that the time might be eight or ten years; that is to say, it may have taken so long for the heat from pipes charged with or used to convey steam, hot water, or heated air, laid among the joists of a floor, or in the heart of a partition, or elsewhere in a building, encased in timber, to induce the condition necessary to the actual ignition of the timber.

Atmospheric Action on Stone.

MESSRS. HOFFMANN, FRANKLAND & ABEL.

The changes to which building stones generally are subject under atmospheric influences and under normal conditions must be ascribed to the action of the oxygen, carbonic acid, nitric acid, and water in the atmosphere. In the air of towns, however, there are certain other constituents, such as several acids of sulphur, and occasionally hydrochloric acid, which cannot fail to exert an additional disintegrating influence upon building stones. The action of oxygen must be of comparatively a subordinate character; its effects being confined to constituents which occur but rarely, and generally in limited proportions, in building stones; such as the sulphides of iron, and the protoxides of iron and manganese; these compounds, being very prone to oxidation, would tend to disintegrate the stones by the absorption of oxygen. Of far greater importance are the effects of carbonic acid and water. Carbonic acid in the presence of water is a powerful solvent, it not only corrodes the calcareous and magnesian carbonates (more or less powerfully according to their state of aggregation), whether they form the principal constituent of the stone, or are only present as cementing materials, but is capable even of attacking and gradually decomposing the hardest and most indestructible rocks. In the case of the calcareous and magnesian constituents of stones, carbonic acid acts by transforming the insoluble earthy carbonates into soluble bi-carbonates, which are thus removed from the substance of the stone; whilst its influence on silicious rocks consists in the elimination of the alkaline bases in the form of carbonates, and the separation of the silica in a more or less friable condition. The weathering of granites, and their gradual transformation into the several varieties of porcelain clay, afford an interesting illustration of the latter kind of action. In the changes just mentioned the carbonic acid and water are equally concerned, the water serving not only as a vehicle for the introduction of the carbonic acid into the pores of the stone, but also as a solvent for the products of its action. There are changes, however, to which building stones are subject in which water is the sole agent, and which are more of a mechanical than a chemical character. The expansion which water undergoes in freezing, and the irresistible force which it then exerts, are well known; it is obvious that water freezing within the pores of a stone must exercise a disintegrating action not less powerful than those above referred to. Recent researches have demonstrated that nitric acid is a frequent, and perhaps even a normal, constituent of the atmosphere, and, as such, must undoubtedly assist in the destruction of magnesian and calcareous stones; but the proportions in which this acid has been found are so minute that it need not be dwelt upon as an important destructive agent. This remark, however, does not apply to the acids referred to above as existing in the atmosphere of towns. The quantity of sulphur acids in the air of towns where a considerable amount of coal is consumed is quite appreciable. According to the determinations of Dr. Angus Smith, the air of Manchester contains an average proportion corresponding to 1 part of sulphuric acid in every 100,000 parts of air, which in the centre of the town rises to 25 parts in 100,000. No numerical data exist with regard to the proportion of sulphur acids in the London atmosphere; but it can scarcely be doubted that in the neighbourhood of the new Houses of Parliament they are present to an extent equal to the average amount found in the Manchester air; they must, therefore, be regarded as among the more important agents destructive to stone which are present in the London atmosphere.

Early Frescoes.

SIR G. G. SCOTT.

Wherever old frescoes are found, the clergy set themselves especially against them. In a church I was myself engaged upon in Cheshire, the whole walls were found covered with large figures and other decorations of a most interesting character. Their destruction was decreed. I interfered, and threatened the builder's foreman with dismissal if he carried out the sentence; but they cleverly allowed the question to go by default, and let them be destroyed by exposure to rain, while the roof was uncovered. In another place, the gentleman who paid for the restoration set himself earnestly to preserve a most remarkable fresco; but, while his back was turned, a workman, supposed to be bribed by another parishioner, chiselled it off. Even at Eton College, where the walls above the stalls were found to be covered with two ranges of oil paintings, in the manner of the Flemish school of the fifteenth century, the Fellows of the College had one whole range chiselled off from each side of the chapel, and the other range concealed by canopies which had never existed on the old stalls. This act of vandalism I saw myself being perpetrated. And so it is all through the country; the most interesting features of our old churches are being weeded out through the carelessness, the prejudices, or the deliberate barbarism of those who have to do with them. Nor can the architect in all instances prevent this.

Improvements in Building.

S. SMIRKE, R.A.

No mechanical art has within late years experienced improvements more numerous and important than that of building. An old house in London is rarely pulled down without revealing a construction faulty in principle, and careless in execution. Common sense is shocked by finding a thick wall of brickwork, carrying, probably, three or four floors besides the roof, built over a void space upon a piece of timber, the ends of which are, of course, liable to become rotten in a few years; and the whole of which may be, and often is, reduced to ashes in a few minutes: yet this mode of construction was universal until lately in our shops. The substitution of iron for timber is an improvement in the art of building that can hardly be overrated: it has banished at once the unwieldy girders which our ancestors were wont to truss, until they could hardly support their own weight; it has given us pillars that neither fire nor water can affect; and may almost be said to have afforded us the means of erecting an indestructible house. The very expensive, and often unsuccessful, process of piling for foundations has of late years yielded to the use of the artificial concrete substratum, the surprising strength and imperishable nature of which give it a value that cannot be too highly estimated by the architectural practitioner. The mode of baking bricks in clamps, instead of kilns, is a practice unknown until recent times, by which their hardness and durability are greatly increased.

NOTES AND COMMENTS.

A SUPPLEMENTAL set of conditions of the competition for the municipal buildings has been issued by the Edinburgh Town Council. It states that the Council do not bind themselves to carry out any of the designs submitted, but in the execution of any plan they may resolve to carry out, it is their intention that the designer of it shall be employed as architect; but the Council reserve this in their own hands. The Town Council prefer to leave the question of cost to the judgment of the respective competitors. Local architects have no advantage whatever in this respect, no definite or even approximate cost having been agreed on. The schedule also supplies competitors with detailed information on numerous minor points. Apparently a large number of architects will take part in the competition, and it may be accepted that as much fair-play will be exhibited in Edinburgh as in Glasgow. In the latter case the architects of the city were not successful in the first or the second competition, and it may be assumed that the Edinburgh architects will try to keep the prize among them.

THE difference between Scottish and English law was again shown in the arguments in the Edinburgh Court of Session respecting the removal of the statue of Sir PULTENEY MALCOLM from the Market Place at Langholm. The Road Trustees of the district were of opinion that it interfered with the approach of carriages to the Town-hall, and resolved to place it in the garden of a library. Several of the townspeople objected to the displacement of a memorial which had been standing in the most central part of the burgh since 1842. Admiral MALCOLM was, moreover, a man of some note, who at one time had charge of NAPOLEON. The objectors sought the interference of the court. The trustees claimed to have the property of the road and the buildings thereon, and a statue would be comprised in the latter term. Lord FRASER, who heard the claim, said his difficulty was in discovering any title of claim possessed by the objectors. The English doctrine about the dedication of ground for public purposes had not been accepted in Scotland, and his lordship was unable to discover any authority with a right to raise the objection. It appears the burgh has police commissioners and a magistrate, but they exercise no right over the statue, which apparently must be considered as if it were a stratum of metalling which can be taken up and shifted at the discretion of the overseers of the roads. With this example before them, the raisers of memorials in northern towns will henceforth have to think of the safety of the statues.

THE Birmingham Municipal School of Art began its session on Monday last. There is a central school in Margaret Street, with branches in the Cowper Street, Dudley Road, Hope Street, Jenkins Street, and Loxton Street Board Schools, all being under the direction of Mr. E. R. TAYLOR. The classes for elementary and advanced building construction and practical plane and solid geometry meet on four evenings of the week, instead of two as in last session, and the fee is only *7s. 6d.* a term—that is, until the end of January next. In addition, there is an architectural class meeting twice a week, and open to all students in the advanced evening classes. Mr. J. A. COSSINS, architect, has agreed to give a special course on architecture, to which free admission will be granted to as many as possible of the advanced students. Professor WINDLE will also lecture on anatomy to the students of painting. Although the fee for the classes is extremely low, the school is also able to offer twenty-seven free admissions to the schools, besides scholarships. The branch schools will be adapted to the requirements of local trades. The Birmingham Art School has had many successes, and it is evidently the aim of the committee, over which Alderman KENRICK, M.P., presides, to make the school have a real influence on the manufactures of the town.

THE Germans are not only carrying off English trade, but should necessity arise for a work of architecture in a foreign country, they are enabled to utilise it. A meeting was lately held in Berlin by the archæological and architectural societies of Germany, in order to welcome Herr BAURATH BÖECKMANN, who has come back from Japan, where he has been designing a new palace for the Mikado, and offices for the Government. It is evident from this that Germany is well served by its representatives abroad, who never allow an opportunity to escape of serving the interests of their countrymen. British officials are of so high a caste that it would be an insult to them to suggest how their diplomacy might be turned to account in securing a commission for an English architect.

THE accidental death of Mr. CHARLES PERKINS has been a loss to American connoisseurship. He was a leader in that band of students who have shown their native energy in grappling with the difficulties of the history of art. Boston and Harvard might well be proud of so distinguished a son. He studied art in most of its forms, but he is likely to be remembered by his volumes on Tuscan sculptors and Italian sculptors, with their beautiful etchings. At a later date he wrote a handbook of Italian sculpture, and his volume on GHIBERTI, the sculptor, forms a part of the Bibliothèque Internationale de l'Art. He was as enthusiastic about music as about sculpture. Of late years Mr. PERKINS directed the art museum in Boston. The cause of his death was the overturning of a carriage in which he was riding.

SUBSCRIPTIONS to the guarantee fund of the Paris Exhibition of 1889 can now be paid. The great commercial establishments, "the monster houses" of Paris, display their rivalry in the lists. The "Bon Marché" on the left bank is entered for 500,000 frs. The "Louvre" comes second with 400,000 frs., and the "Printemps" (that is the shop near the San Lazare Station designed by M. SÉDILLE, and the most original of its class in the city) is third with 250,000 frs. The two rival bronzists, CHRISTOPHLE and BARBEDIENNE, are put down for 50,000 frs. each. M. GEORGES BERGER, the Professor of Art History, who holds one of the highest posts in the administration of the exhibition, shows his confidence in its success by offering 1,000*l.* The banks and financial societies are expected to contribute generously. The Banque d'Escompte offers 600,000 frs., the Banque de Paris 300,000 frs., and the Banque Parisienne 300,000 frs. It must be owned that, as yet, the reponse to the appeal has not been answered with the readiness that was anticipated. The cause must be put down to the unsettled state of the political world at the present time. Let more confidence be established, and it will be found that the country will be liberal, for there are encouraging signs of a return of prosperity.

THE eighteenth arrondissement of Paris contains the northern heights of Montmartre, Clignancourt, and La Chapelle. It is all historic ground. The word "Montmartre" is said to be derived from "Mons Mercurii," the hill of Mercury, or from "Mons Mars," the hill of Mars—either being suggestive of the Roman occupation. The most popular etymology, "Mons Martyrum," the hill of the martyrs, is no less interesting. According to the legend, it was there St. DENIS was beheaded. A church dedicated to the martyr existed in the ninth century. The abbey of Montmartre was famous until 1790, when it was suppressed. The last abbess was the Duchess of MONTMORENCY. She was not only of advanced age, but was blind and deaf. When accused before FOUQUIER-TINVILLE of conspiracy against the Republic, the duchess was condemned and executed. From the position of the hill, which commands the city, it has been occupied by all the forces who attacked Paris, beginning with the Normans in the ninth century. The history of La Chapelle does not appear to extend beyond the fourteenth century. Clignancourt can hardly be said to have a history, as until lately it was open country. A district like Montmartre affords a profitable subject for archæological investigation, and a society has been formed with the title of "Old Montmartre," for the purpose of identifying and preserving any ancient monuments or other relics which may be traced. The work of the society is interesting, and it is surprising an attempt of the kind has not been made earlier. From the number of artists who reside in or near the district, there will be no lack of support.





Th. Chauvel, sc

VIEW IN ENVIRONS OF NORWICH



KNIGHTON SPIN

THE RESIDENCE OF J

MESSRS GODDA

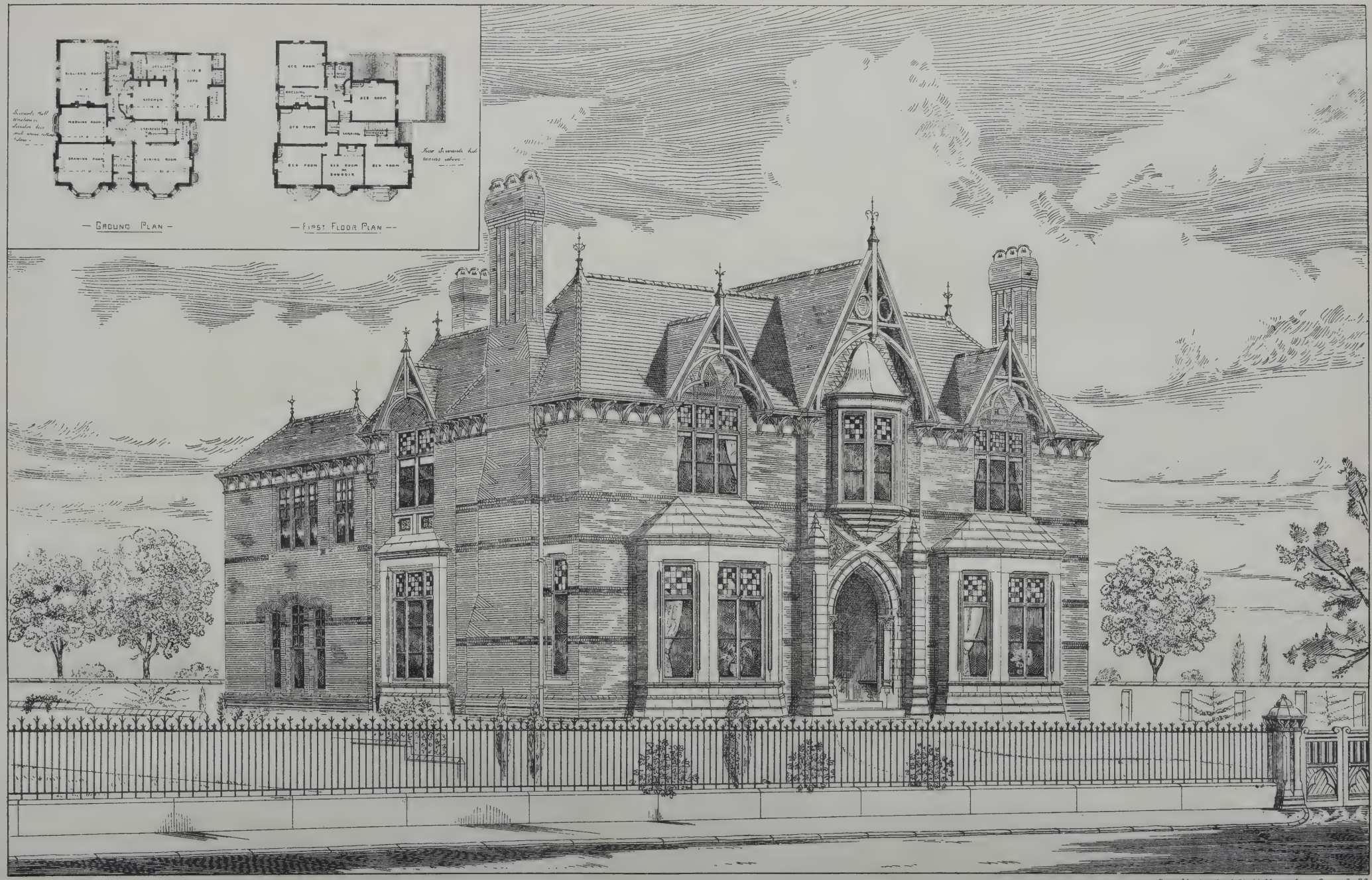
pt.17th 1886.



YS. LEICESTER.

GODDARD, ESQ. F.R.I.B.A.

'AGET, Architects



The Architect, Sept.17th 1886.

Printed by Spalding & Co. 22, Martins Lane Cannon St EC

House · Sefton · Park · Liverpool.

J. N. Crofts. Architect. Liverpool.



OFFICES. 22,23 & 24. BUCKLERSBURY. E.C.

ROBERT J. WORLEY, Architect.

ILLUSTRATIONS.

SCENE IN THE ENVIRONS OF NORWICH.

THIS etching, after the picture by CROME, is another example of the English subjects found in *L'Art*, which is practically the only publication on the Continent that does justice to the work of English painters.

ARCHITECTURAL ILLUSTRATION SOCIETY.*

NO. 23. KNIGHTON SPINNYS, LEICESTER.

OFFICES, BLOOMSBURY.

THIS block of buildings was lately erected from the design of Mr. R. J. WORLEY, 48 Cannon Street.

HOUSE, SEFTON PARK, LIVERPOOL.

THIS house was erected not long since for Mr. JOHN TURNER, and is situate on the west side of the park, with good views towards Mossley Hill and Woolton. It is built of common brick with pressed brick and Stuarton stone dressings. The cost was about 3,000*l.* Mr. THOMAS URMSON was builder, and Mr. JAMES N. CROFTS, of Liverpool, architect. The drawing is by Mr. G. E. CARROLL.

THE REFORM OF THE ROYAL ACADEMY.

IN a letter published this week, Mr. Holman Hunt offers some further remarks on the organisation of the Royal Academy. He writes :—

"R.A.," in a past letter, makes ingenious calculations, showing how few in numbers are the works actually contributed by members. This would have more weight were it not stamped in the memory of all exhibition-goers that every season important places are filled with pictures by Academicians which it would be better for all concerned to have hidden in depths of darkness. Mr. Armitage represents the minority in the Academy who are comparatively liberal, and I am sure he would do all that might be possible to gain the concession of more space to outsiders, but the petitioners—with whom, let me repeat, I had no connection—on the rejection of their modest memorial, all became convinced, as I had been many years before, that the Academy as now constituted would do nothing for English art which clashed with the commercial interest of its members, and that it was therefore necessary to found a national institution to represent art interests. I thoroughly agreed in the declaration drawn up, and signed it, but thinking that public opinion might have taught the body wisdom, I afterwards through your columns made an appeal to the Academy for a radical reform of its abuses, with an alternative request to the higher powers to interfere, and put the institution into a sound condition, suited for the circumstances of the day. Mr. Armitage wishes now to confine the discussion to the original question, but the tide has gone past for thus satisfying the demand for reform. The granting of the boon asked would have staved off discontent only a little while. No one outside the Academy thinks of it now. It is becoming a fixed conviction that the body are too prosperous to be teachable. Their champions finesse with the real question, striving to discredit all as bitter enemies who are acting as their only true friends. To say that as it stands the institution is an anachronism is only expressing the opinion of the whole world giving any attention to art, or even to social questions. If the members would be convinced, the Academy might yet take a true position. If they will not listen, it is only necessary for the younger artists to be staunch in all their high aims to induce Government to interfere with a strong, and it may then be a violent hand. The Royal Academy must be made somehow to fulfil the laudable intention of its founder, George III., not in word only but in the very spirit of our day. Our case is proved. Architects, sculptors, painters, decorative designers, masters, and students, all have borne witness independently of me—for I do not know one of your other correspondents—to the make-believe character of the institution, and we have only to find a member of Parliament to take up our cause and demand a new Royal Commission, which shall at least have its recommendations effectually endorsed by Government.

At the last Commission, believing there would be other forces brought to bear to effect a radical change in the nature of the body, doubtless many as well as myself avoided to make complaint which could not be uttered without injury to the feelings, and even the solid fortunes, of many amiable gentlemen with whom we were more or less intimate, and whom we respected privately. It is a difficulty in our case that every question touches some personal interest, but it is the consequence of the traditions of the institution that within its walls men who have no due qualifications for the duties on which the well-being of the school depends have been provided for, to the destruction of all the great opportunities for the future. We must prove with the actual facts at hand that the institution thoroughly fails in its object; that, being founded for the encouragement of the art of design, the effect of its activity and of its inactivity is the discouragement of this; that its schools are less effective than those attended by the first English artists in London which it displaced; that its supervision of the material interests of art is worse than *nil*, for it has lost the secrets of tradition and done nothing in substitution; that every generation has, together with the great names on the roll, a majority of nonentities who outvote the wise members and resist all healthy action, whose interest is to elect men of their own calibre and sentiments to power, and who, except under stress of self-preservation, never give up their opposition to an artist of independent genius, so that all such have to struggle for the best years of life against impediments netting them round in all directions; that when at last these better artists are elected, after some ineffectual attempts to improve matters, they are driven to attend only to their own affairs and opportunities, and passively then give a character to the body which it does not merit. If it be necessary to designate individuals as unworthy professors, the sense of responsibility to the country must outweigh the impulses of personal regard.

For my part singly, I will avow that there is not a member of the body known to me for whom I do not have esteem at the least. It is the system which is at fault. It is wrong in its inception. Many men would have made the influence exercised even more unbearable than it is at present. Services to the country in other pursuits can be estimated better at the time than afterwards. The service of arms, of diplomacy, of government, of geographical research, of science, and even of literature in some of its branches can be duly weighed. Let them be rewarded with special distinction to the full. Let Court artists of all branches also have their honours; but to pretend to select the greatest artists of the day—the relative value of artistic creations only being measurable at a distance of years—will always result in the ennobling of men like Howard, Hollins, Creswick, Lee, Rippingale, Calder Marshall, &c. (I feel pain at the trial to write the full list), and giving them a patent to ruin rivals like Haydon, Muller, Linnell, Rossetti, whose list would be a larger and grander one had not so many been effectually worsted in the struggle which they had to engage in. All that is needed for recognition is what is precious for protecting and fostering the study of art—the appointment of artists who have become masters to a position of control, to be continued for a few years, with the mark of this dignity in retirement. An artist's nobility, then, would depend simply upon the excellence of the work he had done and the aid he had given to his brethren, which, as years grew, would be ever more truly appreciated.

ST. ALBANS ABBEY.

THE letter of Lord Grimthorpe, published last week, has drawn the following reply from Canon Venables :—

Lord Grimthorpe—still better known by his former name of Sir Edmund Beckett—begins his letter by expressing his approval of much that was said by me in the letter of August 28 by which his was called forth.

May I follow so high an example and begin my reply with expressing my approval of much that has been done by Lord Grimthorpe, or under his direction, and I believe entirely at his expense, in preserving the abbey church of St. Albans from the ruin which threatened it, and maintaining it, to adopt his own term, "as a grand living cathedral?" I believe that the structural repair has been conducted with admirable skill, as it certainly has been conducted with unstinting liberality, and that the nave, which a few years back was in a "failing" or "falling" state—we will not quarrel about terms—has been placed in a condition of perfect stability. For this his lordship deserves the hearty thanks of all lovers of our national historical and architectural monuments.

But I must follow Lord Grimthorpe a little further, and ask of him as he asks of me, "why he spoils a good case by chaining it to a bad one?" Granted that great structural repairs, amounting to a large extent to actual rebuilding, were necessary to convert the vast decaying nave of St. Albans into "a live church for the use of live souls," does that afford a satisfactory reason for furnishing it with a west front, entirely new in the upper and larger portion, and for the destruction of the old one? It is true that the west front, as the builders of the fifteenth century left it, could never have been a very beautiful thing, and it had suffered so severely from later churchwarden

* No. 22 (published last week) should have been described on plate as "Stowel Park, Gloucester. Mr. John Belcher, Architect."

hands as to have lost almost all the beauty it ever had. But it was an historical feature. It was an actual fragment of St. Albans while it was still a living church, the work of one of the long series of mitred abbots. Not a mere botch or makeshift, but, however little some may have found to admire in it, an actual expression of the taste of the age while architecture was still a living art. As such I maintain it ought to have been preserved. It needed "mending," as Mr. Freeman would say. Very likely the whole of Abbot Wheathampstead's immense west window would have had to be taken down and rebuilt. And after all it might have seemed hardly worth the pains. But, to adopt Mr. Freeman's words again in the amusing and interesting letter in the *Times* of to-day—in which (I hail the omen) my old friend seeks to heal any differences between Lord Grimthorpe and myself by setting us to work side by side for the preservation of Aldhelm's "ecclesiola" at Bradford-on-Avon, one of the most priceless architectural monuments of our country—if the course which I consider the only right one had been taken we should have had Abbot Wheathampstead's own west front (I speak, of course, only of the upper portion, not of John de Cella's Early English porches), "made decent and in order, not something else out of" Lord Grimthorpe's "own head put instead of that west front."

The term "Brummagem," as applied to his work, gives offence, and very natural offence, to Lord Grimthorpe. Let me justify its application. "Brummagem," as ordinarily used, does not mean "bad," but something showy and attractive which pretends to be what it is not. I trust I shall not increase Lord Grimthorpe's anger if I venture to assert that this exactly characterises the new west front he has at immense cost put up at St. Albans. It is showy and attractive, and by its style and details professes to be a work of the thirteenth century, when it is actually a work of the nineteenth. It is not "bad"; but it is untrue, and this untruth has been perpetrated by what I termed in my former letter "the wholesale destruction of old work," which was "worn, homely, and failing." When I spoke of "destruction of old work," I had also in my mind the demolition of the south-west turret of the south transept and the recent pulling down of the vaulted stype under its gable wall, and the removal—I trust only the temporary removal—of the very curious Norman arcade which ornamented its north wall. With regard to the turret, I have no desire to meddle with the controversy carried on between his lordship and Mr. James Neale last year, except so far as to say that it is strange how any one with any knowledge of architecture could for an instant doubt that, however much it may have been patched and repaired, and however ruinous its state—a point on which there are always two opinions—this turret, like that of the opposite transept, was, with the exception of its battlements, a genuine Norman work, almost certainly belonging to the original church of Abbot Paul. The turret and the whole south face of the transept, including the large perpendicular window, have been removed—Lord Grimthorpe will probably say to prevent their removing themselves by falling down—and the whole architectural public is still anxiously waiting to see how they are to be rebuilt.

I am not, happily for myself, in the witness-box of a court of law subjected to Lord Grimthorpe's cross-examination, and whatever he may "know that it means," he must pardon my giving "distinct answers" to each of his series of questions. The first and most important I have already answered. I would only inform his lordship that the way in which "the Lincoln restorations are done" is that on which he passes so strong a condemnation, adopted by Sir Gilbert Scott and Mr. Oldrid Scott at St. Albans, viz. that of taking out any dangerously decayed stones, archmolds, or shafts, and replacing them with new, and that we do not find such portions "the shabbiest parts" of our minster and "yearly getting worse." Happily, we have good quarries at hand, and masons with practised eyes to select durable stone. The system Lord Grimthorpe recommends was strongly urged upon us some years since by an architect sent down by the Ecclesiastical Commissioners—not Mr. Ewan Christian—who recommended us to take down and entirely rebuild the whole Early English north clerestory of the nave. I am happy to say we did not follow his advice—indeed, we never entertained it for a moment—but continued the system we had followed for many years of gradual restoration where absolutely needed, a system which is that adopted by our present architectural counsellor, Mr. J. L. Pearson. This, I venture to assert, is the only right system to follow in the restoration of ancient buildings. I would conclude my letter with confessing myself, with Mr. Freeman, in the letter already referred to, as "neither a ruinationist" nor yet a "substitutor of new work for old." The re-erection of the high-pitched roof at St. Albans, which "in a lucid interval" some years back I advocated in your columns, does not come under the latter category, as, though the roof was new, it was simply the repr duction of an important feature, the loss of which was due to an economical repair, not to a desire for architectural improvement, however possibly mistaken.

Mr. William White also writes :—

Allow me to correct a slight mistake into which Baron Grimthorpe appears to have fallen, and which has probably influenced some of his remarks. Most of the antiquaries and members of the Institute who objected to the removal of the low roof over the nave of St. Albans certainly did not contend that it was the original roof. They could see that under the altered conditions of walls and parapets not one of the high-pitched roofs which had successively existed previously to the erection of the low one could be restored as it originally stood, and they grudged the loss of this Mediæval relic. The lines of the lowest of the high-pitched roofs of Norman date coincided exactly with the old Norman corbel table which still remained over the three easternmost bays of the nave on the south side, and which was, most unhappily, removed in order to continue the more handsome corbel table of Mediæval design. It is not for me to raise any question as to Sir Gilbert Scott's grounds whether for insisting upon, or acquiescing in, this alteration or otherwise. But to me personally it was most unfortunate thus to break an interesting link in the architectural history of the abbey, and, so far as could be seen, without any sufficient reason.

SIR SAVILE LUMLEY'S GIFTS TO NOTTINGHAM.

THE following are the letters in which the English Ambassador at Rome offered his collection to the Nottingham Museum :—

Rome, July 2, 1886.

Sir,—Having heard that the Museum at the Castle of Nottingham is somewhat deficient in specimens of classical antiquity, it has occurred to me that a collection I have lately made of objects found on the site of the Temple of Diana Nemorensis, the Artemisium of Strabo, which I have discovered and excavated on the shore of Lake Nemi, might be acceptable to the Museum of which you are the director.

The collection comprises 470 pieces of terra-cotta, consisting of votive offerings, mostly of an archaic character, portions of friezes, and fragments of figures of a later and finer period of art, lamps, lachrymatories, and ointment bottles; likewise sixteen bronze statuettes, representing nymphs and priestesses of Diana, and thirty other objects and fragments in bronze; 740 specimens of money of the Roman Republic, dating from the very earliest period of the "aes-rude" and cast "aes-grave" down to coins immediately preceding the empire, as well as some imperial coins, and several interesting inscriptions and other fragments in marble.

Some account of the discovery of the "Artemisium" is given in a summary of a paper read by me at the British and American Archæological Society of Rome, and which appears in several numbers of the journal of the proceedings of that society, the first and second numbers of which I take the liberty of forwarding herewith.

I also propose offering to your museum a portfolio of photographs of the remains of the temple, and of the objects found on its site, which I have taken on the spot, which will give some idea of the nature of the collection I am desirous of presenting to the Nottingham Museum.

Should the committee of the Town Council decide on accepting my offer, I venture to suggest that the collection should be kept together, as these objects were all found on the same site. Their high antiquity, perfect authenticity, and good state of preservation will, I trust, prove instructive as illustrating a phase of Pagan worship of the earliest period of Roman history, in a temple all trace of which has been lost for more than fifteen centuries.

I should add that as, in accordance with my contract with the landowner, one-half of everything I discovered fell to Prince Orsini, many of the objects shown in the photographs are not to be found in my collection, but I have had a copy made in plaster of Paris of a remarkable double-headed bust, which fell to his share, representing two aquatic divinities, supposed to be the genii of the Lakes Nemi and Albano, which will also be found in the collection I propose sending to Nottingham.

Unfortunately Prince Orsini has insisted on my filling up the excavations I have made, so that the only record that will remain of the existence of the "Artemisium" on Lake Nemi will be my collection and that in the possession of Prince Orsini, and the photographs I have made on the spot.—I have the honour to be, sir, your obedient servant,

J. SAVILE LUMLEY.

Rome, August 8, 1886.

Sir,—I propose sending you to-morrow a portfolio of thirty photographs, taken on the spot, of the site of the Temple of Diana Nemorensis, the Artemisium of Strabo, as well as of the principal objects found there during the eight months in which I was engaged in excavating that temple. These specimens of

the different classes of objects found there will give you some idea of the nature of the collection.

The terra-cotta votive offerings and fragments of statuettes will occupy seven cases, the objects in marble, inscriptions, &c., will fill two more, and two stelæ and a basalt base with inscriptions will be packed in separate bales; the coins, bronzes, and finer specimens in glass and terra-cotta will be packed in separate cases contained in one large case.

A list of the photographs will be found in the portfolio. The portrait bust and stelæ represented in No. 21 will not be found with the collection, as it forms at present part of the ornamentation of the vestibule of this embassy, but I shall have the pleasure of presenting it to the museum when my mission to Rome ceases.

It has not been possible for me to classify or even make a correct list of the objects in terra-cotta, of which there are about 500, without counting the fragments of two friezes. The coins, which are all of the Roman Republic, are about 750 in number, and these I have classified, taking for my guide the great work of Garucci, the best authority on the early Roman money.

The portfolio contains also an extra photograph of objects which I had intended for my private cabinet, but which I also send to Nottingham, in order that the collection may be as complete as possible. It includes two small coloured glass vases of Greek work, three terra-cotta heads, as fine as any found at Tanagra, and a curious mask in coloured glass, probably Etruscan; the bronze sole of a sandal, considered to be unique, and a bronze sacrificial ladle with the name Diana in archaic characters engraved upon the stone.

I propose sending the portfolio by express on Monday.

The cases with the collection itself will be forwarded by steamer for Leghorn, and I should be glad to know whether you would prefer these being sent to London or to Hull in the event of a steamer starting for that port from Leghorn.

I shall be glad to hear of the arrival of the photographs.

Believe me, yours truly,

J. SAVILE LUMLEY.

GLASGOW ARCHITECTURAL ASSOCIATION.

AT last week's meeting of this Association, the vice-president (Mr. Wm. J. Boston) being chairman, a paper on Stirling was read by Mr. Henry Baldie. An interesting account was given of the vicissitudes experienced by the old church of the Greyfriars, the castle, and other principal buildings, and the more characteristic features of each pointed out. The castle in particular is now shorn of much of its former glory, only the basement storey remaining of what was once an imposing gate-house. These were all illustrated by a series of large charcoal drawings and numerous sketches prepared by Mr. Baldie, who was awarded a hearty vote of thanks at the close of the discussion which followed.

THE CATHEDRAL OF SIENA.

MR. W. D. HOWELLS, in one of his recent publications, has classed this exquisite building along with such objects as the Pyramids of Egypt, St. Mark's at Venice, the sweep of the Arno at Pisa, and the Falls of Niagara, characterising them as things to be seen but not described. It may seem rash to venture upon a task forbidden by so high an authority, especially in matters Italian, says a correspondent of the *Glasgow Herald*, but for the benefit of many who have never seen Siena, and with the object of inducing visitors to Italy to include that most interesting old town in their programme, this article may not be altogether amiss. For it is to be feared that comparatively few out of the great stream of tourists find their way there, especially since the opening of the railway from Terontola to Chiusi, which is the route now taken by the express trains between Florence and Rome. Moreover, the attractions of other cities are so numerous and so powerful that naturally those whose time is limited pass over all save the five or six chief towns of the Peninsula. Siena, however, has a charm all its own, and a visit to it, however short, amply repays the time so spent. Its situation among the hills at an altitude of over 1,300 feet from sea level gives it an atmosphere healthy and clear, and a temperature which in warm weather may be called cool when compared with the stifling airlessness of Rome, or the broiling heat of Florence.

The buildings of the town are disposed somewhat in the form of the three-legged emblem of the Isle of Man, a configuration due to the meeting of three spurs of hills upon which the place is built. The streets are all of them winding and narrow, while some of them are so steep as to be partly formed of steps, upon which vehicles without wheels are slowly dragged by oxen. Some of these narrow passages are built over in a way which, together with their steepness, recalls the closes of the old town of Edinburgh, only that they are much cleaner than those purlieus of the High Street of the Scottish capital. The principal street is the Via Cavour, which is approached from the railway station by the Via Garibaldi, and leads to the Piazza Vittorio Emanuele, a combination of honoured names to be met with in every large town of "Italia Redenta." This Piazza, formerly called the Piazza del Campo, and mentioned by Dante in the eleventh canto of the "Purgatorio," is the centre of what life and stir are to be found in the city. It contains the Palazzo Pubblico, a large brick pile of the thirteenth century, with a tall and graceful tower.

While the chief activity of Siena is found in the Piazza Vittorio Emanuele, its beauty and repose centre in the beautiful church in the Piazza del Duomo, on the highest part of the city. Victor Hugo has described Nôtre Dame at Paris as "une vaste symphonie en pierre," and as there are unfinished symphonies in music, notably that of Schubert, so there may also be unfinished symphonies in architecture, for the intention of the people of Siena was to erect an enormous cathedral, of which the present building would only have formed the transept, had not the evils of war and pestilence so severely crippled the resources of the Republic that the ambitious plan had to be abandoned. The structure as it exists is thus a monument of what the piety of the Sienese enabled them to achieve, and of what their misfortunes prevented them from accomplishing. It is not of the colossal dimensions of many other celebrated cathedrals, being not more than 290 feet in length and 78 feet in width; but it possesses the usual component parts of a cathedral, viz., nave with aisles, choir, and transepts so proportioned as to produce a harmonious whole. The style of the work is Gothic, and the material used is marble, while its construction occupied about a century and a half, being completed in the year 1380. The side walls are comparatively plain, being built of white marble, with occasional bands of black marble, and they are pierced by the usual pointed windows, plain in the ground storey and traceried in the clerestory, while statues are disposed along the top of the walls. The campanile, of alternate stripes of black and white, is placed beside the north transept, and rises to a height of six storeys above the main building, terminating in five pinnacles. The façade is a singularly rich piece of work in white marble, relieved by panellings of red and black. It is a mass of beautiful sculptures of angels, prophets, animals, and other devices—a perfect romance in marble. The designer was Giovanni Pisano, and it is more than probable that this distinguished artist was the superintendent if not the actual sculptor of some part of its lovely carvings.

The doorways of beautiful clustered pillars give access to the interior of the building, where the arrangement of alternate bands of black and white marble is a very striking feature. The elaborately-carved arches of the nave are borne by handsome pillars, from the lower parts of which there spring with great freedom and boldness consoles, upon which are placed statues representing the founders of the various orders in the Catholic Church, while the cornice above the arches consists of long rows of busts of Popes in terra-cotta. The intersection of the nave and transepts is covered by a dome, which by some caprice of the architect takes the form of an irregular hexagon. The aisles and transepts are divided into numerous chapels, for the most part gorgeously decorated in the sumptuous Roman style with lapis lazuli and variegated marbles, and still further enriched with many treasures in sculpture by such mighty artists as Michel Angelo, Donatello, Nicolo Pisano, Giovanni Pisano, and Jacopo della Quercia. A soft yet bright light pervades the whole and blends into pleasing and satisfying harmony the boldness of the nave and the more exquisite portions of the building.

A unique feature of this beautiful sanctuary is the engraving upon the pavement, which is quite covered with *graffiti* representations of scenes and figures, chiefly from Old Testament history. These are protected by coverings of boards and floorcloth; many of the figures are simply outlined and filled in with black, while others are filled with materials of various colours, giving them more a pictorial than a sculptured effect. Under the dome are preserved the two flagstaffs which carried the ensigns of Siena on the *carroccio* or standard waggon of the period, in the great victory gained by the Ghibellines over the Guelphs in the year 1260 at Montaperto, a few miles distant from the city. Similarly are preserved in the Campo Santo of Pisa the great iron chains which closed the passage of the Arno during a war with Florence; and in like manner there is preserved, on the field of Bannockburn, the "Borestone," upon which King Robert Bruce is said to have planted the lion rampant on the day of Scotland's great national victory.

About the middle of the fourteenth century misfortunes overtook the vigorous little republic "on Tuscan hills," for a time the rival of Pisa and Florence, but the piety, the patriotism, and the love of art which then distinguished its citizens are

commemorated to succeeding ages by the exquisite temple which sits upon the brow of their city like a crown of glory, a crown of many gems.

PRESERVATION OF MANORIAL RECORDS.

AT the annual meeting of the Cumberland and Westmoreland Archæological Society it was announced that among the communications received from the Society of Antiquaries of London was a circular letter, which was accompanied by a memorandum on the subject of manorial records, adopted at a meeting of the Special Committee of that Society on February 4. The memorandum, in pointing out the great historical interest and importance of the ancient Court Rolls in throwing light on the habits and civilisation and the legal and social condition of the inhabitants, stated that the tendency now was more and more in favour of freehold tenure of land, so that within a comparatively short period it was probable that manors, with their attendant formalities, would become things of the past. The documents relating to them would become practically valueless for legal purposes, but the Society were anxious that steps should be taken for the preservation of Court Rolls and other manorial records. In the Bill for the compulsory enfranchisement of copyholds was a clause providing that in certain events the Court Rolls and other manorial documents might be deposited with the Master of the Rolls for safe custody, with right of access. Their deposit with other institutions might, if thought desirable, be accepted by certain stipulations as to powers of resumption. The principal difficulty in dealing with the matter was that of bringing home to the minds of the lords of the manors and their stewards the value of the documents; but to do this nothing more seemed necessary than to call their attention to the subject, and the Society suggested that if copies of this memorandum were sent to those who might probably have ancient Court Rolls and records in their custody in the different districts by the various Archæological and Antiquarian Societies and Associations, the desired result would follow.

GLASGOW ARCHÆOLOGICAL SOCIETY.

THE Glasgow Archæological Society, following its custom now of many years' standing, made its annual excursion on Thursday in last week. Leaving Buchanan Street Station at 9.20, the party, which numbered about thirty, arrived at Larbert, and thence drove to the Torwood. Among those present were Professor Young, M.D., ex-president; Preceptor Wilson, ex-Preceptor Mathieson; Messrs. John Honeyman, C. D. Donald, jun.; J. O. Mitchell, and J. Dalrymple Duncan and William George Black, hon. secretaries. At the foot of the road leading to the Broch of Tapock, Mr. J. C. Bolton, M.P., on whose property it is situated, welcomed the visitors to the locality. The weather, happily, continued dry while the hill was ascended, and a very fine view was obtained of the surrounding country from the grass-grown summit of the Broch. Mr. Dalrymple Duncan, F.S.A. Scot., read an instructive paper relative to this peculiar form of prehistoric architecture. A broch may be defined as a hollow circular tower of dry-built masonry, from 40 to 70 feet in total diameter, having within the thickness of its walls a series of chambers and galleries lighted by windows, all looking into the central area, or well, not outwards to the surrounding country. The only opening to the outside is a doorway through a tunnel-like square-headed passage, with slightly inclined sides 5 to 6 feet high and about 3 feet wide, constructed in the thickness of the wall. The latter, which is from 9 to 20 feet thick, is solid for about 10 feet from the ground, except where it is pierced by the entrance, or partially hollowed out by the construction of oblong chambers with rudely vaulted roofs. Above this the wall is carried up with a clear space of about 3 feet wide between the exterior and interior portions. Into this hollow horizontal ranges of slabs are inserted at intervals of five or six feet, thus forming galleries about 6 feet high and 3 feet wide, which run completely round the tower. These galleries are connected by a stair which runs up to the top of the tower, and are lighted by windows in the inner wall of a peculiar construction, placed vertically over each other. The central area is from 20 to 45 feet in diameter. The Tapock Broch, however, does not present all the above features. The upper hollow storeys of the tower are wanting, but the lowest floor, the entrance, and the staircase are all in a state of perfect preservation, and present numerous features of great interest. Brochs are peculiar to Scotland, and their purpose was probably to provide a place of temporary shelter during a hostile incursion, but to what race they owe their design it is impossible to say. They are assigned, roughly and indefinitely enough, to the Iron Age, and are believed to be Celtic. Their resemblance to the round towers of Ireland is merely superficial, but the distinction between the two types of tower scarcely permits of adequate discussion here. The Tapock Broch was discovered by Colonel Joseph Dundas, of Carronhall, in 1864. At the time of Colonel Dundas's excavations the mound was covered with heather and brackens, and surrounded by clumps of large fir-trees. Operations were first commenced on the south side, and resulted in the discovery of the staircase, the doorway of which was completely blocked with rubble. After the removal of about 200 tons of stones and earth the broch was found, with its circular wall 15 feet thick enclosing a central area 35 feet in diameter.

After a careful inspection of the broch, the party proceeded to Torwood Castle, some time the residence of General Baillie, the opponent of Montrose. It is probably not of earlier date than the middle of the sixteenth century, and is a mere juvenile compared to the broch half a mile off. Mr. Bolton afterwards entertained the society to cake and wine at Carbrook House.

On leaving Carbrook the visitors drove past the field of Bannockburn to the Royal Hotel, Stirling, where they were met by Provost Yellowlees and Mr. W. B. Cook, who accompanied them to the historic and architectural sights of the royal burgh. After inspecting several of the old Stirling houses, the East and West Churches were visited, and their historical points of interest described by Mr. Cook. Mr. Honeyman briefly pointed out the features of architectural interest. Crossing the way to Cowan's Hospital, the various curiosities preserved in the Guildry Hall were exhibited. On reaching the Castle a thorough examination of the interesting fortress was made. By kind permission of Colonel Templeman, several portions of the building were thrown open. The party then proceeded to the inscribed Roman Stone on the Gowlin Hill, and the "Heading Hill"; the neighbouring Moat Hill was examined, and opinions not altogether favourable to Miss M'Lagan's contention that it was an ancient British fort were expressed. It is much to be hoped that the proposal to form a cemetery on the Gowlin Hills will not be carried out. The Smith Institute was also visited, and Mr. Sword, the curator, exhibited the many curious treasures admirably housed there.

The society dined in the Royal Hotel at 6.30. Professor Young occupied the chair, and Mr. Honeyman, vice-president, acted as croupier. The Chairman proposed the toast of "The Burgh of Stirling," to which Provost Yellowlees responded. The toast of "The Society" was proposed by the Provost, coupled with the name of Mr. Honeyman, vice-president. Preceptor Wilson, in proposing the health of Mr. Cook, referred to the great advantages enjoyed by the party in having as their cicerone one so thoroughly acquainted with the archæology and history of Stirling, and to the very enjoyable day which the society had spent. The party left Stirling at 8.25, after a very pleasant day's excursion.

MR. W. MORRIS ON EDUCATION IN ART.

ON Wednesday, Mr. William Morris delivered a lecture at the rooms of the Clerkenwell branch of the Socialist League, on "Education," in which the lecturer gave some account of his own training. He said he was intended for a parson, but his inclination led him to the study and practice of art. Ultimately, seeing the degradation into which the minor arts of life had fallen, he conceived the ambition of trying to set matters straight in this direction; of inducing people to notice how beautiful the ordinary arts of life became in the Middle Ages. When he began his enterprise he commenced to perceive, however, that in the present state of society it was impossible to carry out this kind of art. It was necessary that a man in his daily life should be a free man in order to turn out work that had any really artistic capacities in it. This fact stopped him in his enterprise to a certain extent at the outset, and had hindered him ever since, because, after all, the workman of the present day was not free, and hence could not turn out a free man's art. When he (Mr. Morris) started on his career of seeking to improve the decorative arts—the architectural arts—he was laughed at. He was, however, able in the result to establish a kind of a position which enabled him to live by the practice of his art and the sort of study which he liked best. He managed at last to be able to force people into paying him for his work. He could not, probably, have succeeded unless he had been at the beginning a rich man. He spent a great deal of money and time before he reached the position that rendered his work profitable. Three elements were essential in all education. The first was inclination, the second opportunity, and the third was help from the people who had gone before. The general idea of education for the working classes did not concern itself with the inclination of the workers. Abundant leisure was requisite to all education worthy of the name. Real technical education meant that a man should be instructed in the use of his hands and in the nature of material, so that he would be able to follow the form of useful industry which suited his individual peculiarities best. Nor could he see why his education in that light should stop short of learn-

ing one craft or art. His own personal experience showed him that it was possible to learn two or three different handicrafts or arts. Our present system of education was simply the education of one set of people to become the machines by means of which the other set could carry on their life to the injury of the community in general. Even at the Universities the ideal of education was a commercial one; it was wholly and solely directed to the achievement of success in a man's future commercial career. So long as the mass of the workers—the people upon whom everybody depended for their daily life—were kept in a state of degradation, so long would it be impossible for the class who lived by their labour to be otherwise than degraded. It simply implied that the latter were to be educated merely as slaveholders, while the former were educated as slaves, and not as men. Thus was a right education needed, not merely to enable people to rub through the world, but for the purpose of raising the entire standard of life for the whole population.

METHODS TO BE USED IN TAKING QUANTITIES AND MEASURING UP WORKS.

BY THE MANCHESTER SOCIETY OF ARCHITECTS.

(*Continued from page* 156.)

Mason.

1. Plain ashlar walling and parpoint walling to be measured super, net work, for "stuff and work," giving the kind of face, and average sizes, and bed of the stones; allowance to be made where square blocks have to be cut to suit shaped openings, ramps, &c., and defining the number and dimensions of the through stones. Reveals to be measured extra. Rubble walling up to 18 inches in thickness to be measured superficial and described. Above that thickness to be measured in the cube and described.

2. Other masonry to be measured as hereafter mentioned, keeping the stone and labour separate, or when conducing to the better understanding of the work, as in strings, &c., to be measured in lineal feet, "materials and labour," with sufficient particulars to enable the number of joints to be included. Count the fair ends, quoins, &c.

3. Work in chimneys, or cornices, &c., requiring special appliances for hoisting, or at considerable heights, or of extra dimensions, to be kept separate, so far as the material, hoisting, and setting are concerned. The labour, when done on the ground, may be thrown in with the rest.

4. Under the head "stone" must be included the labour in hoisting and setting, and state approximately the quantity to be set above 40 feet from the ground.

5. Special appliances for hoisting, such as travelling cranes, &c., to be specially mentioned.

6. In measuring the cubic feet of stone for other than the work previously mentioned, 1 inch each way beyond the net dimensions of each block, when worked, to be added.

7. In measuring the labour, the necessary operations of the workman to be followed. The beds and joints of each block to be measured and kept under that head; and it will conduce to more easy pricing of the work when these can be given in lineal feet, with the average width, particularly for strings, cornices, architraves, jambs, &c.

8. The work exposed to sight to be classified under its different heads, mentioning whether bosted, tooled, or polished, and giving plain work, sunk, moulded, sunk and moulded (this when the straightedge will not work the block from a mould applied at each end), weathered, sunk and weathered, and the various kinds of fancy surfaces, and clearly distinguishing from straight work that which is raking, circular, circular on circular, &c.

9. Raised or sunk panels will require that face of the block to be first measured for plain work (for setting out on), then the face work, and the lineal feet of margin of its particular kind.

10. The points from which to girth moulded work will be best ascertained by a consideration of the manual process followed in its execution; in some strings it will thus have to be girthed from wall above to wall below; in other instances, as cornices, where the top is measured for sunk and weathered work, the moulded work will girth from the nose only.

11. All mitres to be counted, with the girth of the mould, &c., they belong to, and state whether internal or external.

12. Throats to be clearly given, either separately in lineal feet, where the soffit has been measured as a "bed," or, in other instances, girthed in with the moulded work.

13. The back of masonry will not generally require any notice, except where it shows through a wall that is not plastered, and in some quoins that bed more than the thickness of the walls, where the sinking must be taken into account. Tooling or rubbing backs of architraves, mullions, &c., to bed frames against, to be measured lineal, and all checking out for the same purposes to be measured in the same way.

14. Holes for flues, timbers, &c., to be counted.

15. Rough sinking down as a preparation for the carver to be given superficially, girthing round the cap truss, &c., &c.

16. All carving to be clearly set forth with reference to the drawings or special marginal sketches, running ornaments to be given lineal with the girth, but caps, bosses, trusses, modillions, paterae, &c., numbered. State if carver is to find his own scaffolding.

17. Ordinary window sills to be numbered, with dimensions.

18. Others than these to be taken cube, and the labour taken out as before, and in addition the seats counted for jambs, mullions, &c.

19. As tracery will generally be of a description between the work of an ordinary mason and that of a carver, the most satisfactory way would appear to be to measure one face over all the work as plain work for setting out on, and then number each piece of tracery with its dimensions and reference to the drawings or special marginal sketch for the remainder of the labour, but measuring separately any groove or rebate for glazing.

20. Mullions and other work with little material, as compared with the labour, to be measured lineal, "stuff and work," with particulars or sketch, and give general indication of the lengths.

21. Columns to be girthed for circular work (with or without entasis, as the case may be), and flutes measured lineal with sketch, and number of stops counted; if in extra lengths, keep both materials and labour under a separate head.

22. Rustics and other channelled work to be measured lineal (after the surface and beds have been fully measured) with sketch.

23. Cramps and dowels to be counted, with average size, or weight, if metal, and letting in and running; and state whether mason is to find lead.

24. Copings, where worked out of flags or thin material, to be measured lineal, and net as fixed, with proper description of each face and mode of jointing. All knees, apex, and foot stones to be counted, with sketch or particulars of labour thereon. Any perforations for flues, &c., to be counted.

25. Flagging to be measured net, in square yards, with proper description of materials, average and minimum size of flags, method of jointing and laying; and whether mason to provide bed and mortar, and if so, describe same. All exposed nosings to be measured lineal; and any perforations or notchings out to fit special corners or other objects, to be counted or measured, and the portion so notched out of any flag included in the gross measurement.

26. Flags, if required to be above 12 feet super, to be kept under the head of "landings."

27. Any special mode of jointing flags or landings, as lap or joggle joint, to be measured once along the joint.

28. Hearths to be given in superficial feet, and if the fore and back hearth be in one piece, state "large sizes," and count the notchings for jambs.

29. Paving to be measured net, with description of sets and method of laying, and whether mason finds the bed or not.

30. Keep each kind of tiling to floors separate, and state whether and what kind of bed is to be provided.

31. Band and gudgeon stones, codge stones, beam and pillar stones to be counted, with dimensions and particulars of work thereon, and whether mason has to let in and run any ironwork therein, or to find lead therefor.

32. Steps, where practicable, are best counted, with dimensions and particulars; solid steps may be taken lineal, with average length, and count the number for pinning in, and also the worked ends. All letting in of balusters, newels, &c., to be clearly given, and joggle or notched joints measured.

33. Landings, half spaces, &c., to be either counted with description or taken super, with all joints, worked edges, and soffits measured.

34. Letting in of grids to drains, coal-places, areas, &c., to be counted, and state whether lead to be found, and, if the stone or kerb has to be rebated, state so.

35. Area and other kerbs to be taken lineal, and, if cramped, so stated, with average lengths of the stone.

36. Dubbing out with flags, for cornices, &c., for the plasterer, to be taken lineal, with width and thickness, and any special labour.

37. Slopstones, &c., to be either counted, with particulars, or measured super with the labour. The sinking to be girthed bottom and sides each way. Mention the hole for grid, and whether to be fixed by the mason.

38. Mason's work generally requires very minute subdivision in measuring, and a knowledge of the method of working stone is essential to the proper performance of that duty. Each necessary operation of the workman should be taken into account, although it may appear that the same surface (as in

panelled or enriched work, &c.) has to be measured more than once for different descriptions of work.

39. Clean down and leave all perfect at completion, as an item.

Carpenter and Joiner.

1. Unless a special provision be made that timber and joiner's work must finish net to the dimensions given (the waste being calculated then in the price), it must be understood that all work will follow the original marking or "pricking" for sawing. Thus each sawn face would reduce the scantling by nearly $\frac{1}{16}$ in., or half the width of sawcut, and each wrought face would entail a further reduction of about $\frac{1}{16}$ in. A 12 by 6 in. scantling would thus measure $11\frac{7}{8}$ by $5\frac{7}{8}$ in. full, and a 2 in. door would finish $1\frac{3}{4}$ in. full.

2. Labour-framing and nails to be measured super, in square yards, for floors, roofs, and ceiling joists, keeping the different descriptions, whether for single-joisted or framed, separate, and defining the mode of framing, and taking the dimensions over the extremities of the timbers, or the timber may be taken cube and to include the labour.

3. Labour-framing principals to be measured the length of span, with wallhold, and separating the different kinds. The same with framing trussed partitions.

4. Ordinary studded partitions, and filling in to the above, to be taken super, in yards, for "stuff and work," with scantlings and distances apart.

5. Labour-framing hips and valleys, in lineal feet.

6. Gutters lineal, or if wide, super, and state if with bearers; count cesspools, with dimensions.

7. The timber to be taken cube when sawn to scantling, keeping, as far as practicable, large scantlings, as beams, purlins, large joists, &c., separate from small, as spars, plates, &c. Beams are best given in lineal dimensions, and, when over 35 feet long, should be kept separate.

8. When conducing to the better understanding of the work, however, large timbers, or those with special labour, to be measured lineal and properly described.

9. Deals, planks, and battens used for joists, &c., to be taken superficial or cube.

10. Planing or other special labour to timbers, measured super or lineal in feet, and stops to beads or chamfers counted.

11. All timbers to be measured net lengths as fixed, and trimmings for hearths, wells, skylights, &c., counted.

12. Angle beads, staff beads, and tilting fillets, in lineal feet.

13. Bolts, dogs, straps, &c., of iron, to be counted, keeping joint bolts separate from others.

14. Nogs and templates to be counted, or kept separate under a cube or lineal dimension.

15. Snowboards, in lineal feet, with width and description.

16. Ridge and other rolls, and hip and valley boarding, in lineal feet, with width.

17. Centering, in square yards, except centres for doors and window openings, &c., which are to be counted, with span and width. In extensive fireproof works, a small quantity of centering will often suffice if "taking down and refixing" be given, together with the necessary staying.

18. Cornices and face boards in lineal feet, with description and particulars of bearers, &c., and count mitres to the former.

19. Ordinary flooring in square yards net; mitred margins to be counted.

20. Pugging to floors, measure across the timbers and state description, whether on slabs and fillets, or laths, and if filled in, describe.

21. Skirtings in lineal feet as fixed, with dimensions and description, and state whether to include grounds; where above 7 inch, count all mitres and ramps, and labour housing to architraves, chimneypieces, &c.; if tongued to floor boards, state so.

22. Door casings and frames in lineal feet (allowing length for tenons, &c.), and state whether framed, and number of rebates; count frames for dowelling.

23. Doors, gates, &c., net size in super feet, allowing for rebate in folding doors, keeping each description separate, and state if flush-beaded at meeting edges, or for double margins, &c.; hanging to be counted and described, locks and other fittings at a price each, and labour fixing; bolts to dimensions, and ditto.

24. Architraves in lineal feet net measure, and state if with grounds, and, except for single moulds up to 3 inch, count all mitres, or special adaptations; blocks to be counted in pairs, including all labour fitting architraves thereto.

25. Window-sashes and frames to be measured full size of frames; if not square-headed, state so, or else count the heads for extra price, with description; state if extra strength be required in any part of frame, or any particular way of working weatherings, sinkings, &c.

26. Casement sheets and frames to be measured separately and as above, with scantlings.

27. State if holdfasts or other particular mode of fixing frames be required.

28. Skylights to be measured full size. Any portion of a sheet made to open, to be measured again in addition; if it is a separate piece of framing, and any grooving, weather fillets, &c., accounted for.

29. Window backs and elbows, and soffits, and linings, worked one side only, to be kept separate from shutters, and state if to have grounds; if linings are under 9 inches wide, take lineal, with the width. Plinths and capping and flush beads to be measured lineal. Hanging sheets and casements to be counted, with particulars of pulleys, cords, weights, hinges, fastenings, &c. Hanging shutters and backlaps ditto. Window bottoms lineal, and count returned ends.

30. Bracketing for cornices in lineal feet, with girth or sketch of brackets, and distances apart.

31. Coves, super feet, for stuff and work.

32. Cradling round beams, super, for stuff and work.

33. Bridging for floors in lineal feet, and state whether slab or herring-bone bridging, also whether tie-rod or hoop-iron is to be used.

34. Wall boarding and dados in super feet, and give lineal feet of grounds, and also fitting to architraves, &c.

35. All casings to underside beams, gutters, cisterns, &c., in super feet, with description, or else lineal, with girth and number of beads.

36. Pipe casing, ditto, and state if to be fitted with screws for taking down at pleasure.

37. The different items of water-closets to be kept separate, and state if fitted with screws, &c., to take down; seat and bearers, fall and frame, riser, all super; skirting, super or lineal according to requirements; capping separate. Holes cutting, falls hanging, hinges, paper boxes, &c., and attendance on plumber, to be counted.

38. For bath framing take riser and skirting as for water-closets; bearers for curb lineal; curb lineal, with average width, or super.

39. French polishing to be where practicable measured separately in superficial feet.

40. Fixtures require careful measurement in detail; skeleton fronts for drawers and small cupboard fronts separate from the fronts themselves; bearers, false bottoms, drawers fitting with stops, hanging doors, knobs, and other fastenings, divisions, guides, &c., all to be taken into account; shelves with widths and bearers or brackets, also hook rails, all lineal.

41. Stairs in ordinary cases to be counted, with dimensions, and state whether returned nosings and cut string boards, notched boards, and number of carriages; measure hand-rail, and balusters, and newels separate; and casing and nosing, hand-rails and balusters along landings; count ramps, scrolls, curtail ends, and circular corners to wells; give spandrel framing separate from square framed work; state french polishing; landings to be taken super in feet, including bearers, and nosings, &c., at the edge, to be taken lineal.

42. All other items of ironmongery to be counted, with particulars, or price and labour fixing in addition.

43. All circular work throughout to be kept separate from straight work.

44. Enter up reserved amounts, provisions of materials or cash, &c., and clearly state if such are to include contractor's profit or to be deducted in full.

45. The carpenter generally undertakes the fixing of the ironwork, and in many instances it might be desirable to put the fixing and staying during erection in his quantities, giving the weight of cast and wrought-iron beams, &c., and counting the bolts, rods, &c.

46. Insurance, if to be provided for by the carpenter, to be entered.

(*To be continued.*)

Bygones.

"*Antiquity after a time has the grace of novelty.*"—HAZLITT.

HAYDON ON WILKIE.

IN the diaries of the unhappy painter Benjamin R. Haydon there is constant reference to Sir David Wilkie, and although Wilkie followed in the steps of the Dutchmen, and was successful while his comrade was unfortunate in seeking after the impossible, yet Haydon always writes in a friendly spirit. It is natural that he should suggest how Wilkie's art was below his own and was not difficult of attainment, but no one will grudge poor Haydon the enjoyment of a little self-conceit.

After Wilkie's death there was an exhibition of his works in the British Gallery. What the professional critics thought of the collection can be derived from the article which was reprinted as a "Bygone" in *The Architect* of November 27, 1885. Haydon was roused by the supercilious treatment of his dead friend, and he wrote the following piece of criticism when the

exhibition was about to close, in which naught is set down in malice, although nothing is extenuated :—

An exhibition of the best works of a great artist after he is dead, at our British Gallery, is the last tolling of his funeral bell—the last effort of those who respected his character and wish to put the seal upon his fame, before leaving both to the unbiassed and sifting decision of a future generation. How must the artist and the public have been indebted to the British Gallery! How much the public taste has been solidly advanced by its various exhibitions of fine works! What good has been done, what knowledge has been indirectly inculcated! How greatly the standard of excellence in the country has been raised since these May displays began! What a study it is to look forward to! Now we have the majestic cartoons, then the crimson splendour and golden tones of Titian; now the pearly glitter of Veronese, then the startling dash of Tintoretto; at one time the gorgeous glory of Rubens and mysterious depth of Rembrandt, at another the sunny loveliness of Claude and savage poetry of Salvator; sometimes we are enchanted by Correggio, or instructed by Poussin: and then came the modern school—Reynolds, who might fear comparison with none for grace, for character, for taste, for touch, for gemmy surface, in portrait; for the quivering sweetness of children, and who was equal to all, and often superior to all, in the splendid depth and keeping of a background.

Gainsborough, with his sketchy richness followed, Hogarth with his blunt touch and bitter satire, and this year we have had David Wilkie, with his sound sense, his perspicuous conception, his beautiful composition, his natural expression, and his unaffected drawing—the founder of our domestic school.

In musing on the whole of Wilkie's works, from the earliest to the latest, there is the same sterling sagacity and sense; the story, the expression, the composition, never vary in intelligence or power.

His incessant changes of practice had something approaching to a feeble hallucination of intellectual power. Why a man so consistent and persevering, so unalterable and honest in one mode of conduct, morally, which founded his domestic fortune, should be so vacillating and uncertain, so childish and changing, so furious in the morning at the discovery of the previous evening, and so disgusted the next day at what he thought such a philosopher's stone the day before, is not to be accounted for but from some inherent imbecility.

The gem of this collection, without prejudice to others, is the *Card Players*, and here his practice was perfect—this is a work, in point of vigour, depth, daylight, tone, strength, touch, expression, finish, completeness, and life. No picture of the Dutch school, by Teniers, ever surpassed it in execution, whilst in point of story and sense, no picture by Teniers ever approached it.

I can tell the artist why this work is so extraordinary in power.

1. It is the only picture he prepared for ultimate glazing. Glazing softens and flattens, and if a picture to be glazed be not painted sharper in touch than nature, it will be flatter than nature when glazed.

2. He never lost sight of his ground in his deepest shadows, and finished his darks under the table and elsewhere by repeated thin glazings over each other, the ground always showing through.

Thus, in very early life, he hit on the system of Teniers; he hit on the principle of the Venetian, Flemish, and Dutch schools, though scumbling is more applicable to the two latter as an ultimate resource, and nothing could be so self-evident as the superiority of the picture or vigour, in spite of his greatest work (the Duke's *Chelsea Pensioners*) and his Murray group in *Knox*—one of the finest groups for everything in art the world can show.

In his early work, he ruined all colour by a large intermixture of a heavy and hot yellow tint in every portion of his work, with the single exception of a little picture he painted in Edinburgh, belonging to Dr. Darling—the *Village Politicians*. At the repeated entreaty of the late Sir George Beaumont, of Jackson and myself, he tried flesh without it, and the right hand of the *Blind Fiddler* was his first attempt. Yet it must be acknowledged he had no eye for colour; if he had had, he would have known when he had produced a fine tint, which he certainly did not, for after producing a fine tone you are as likely to find it ruined the next day; not like Sir Joshua, because he was longing for something richer, but because Wilkie's eye was never satisfied till he got some other tone not so rich.

The nonsense which has been written about him this season is melancholy. One man says he had no imagination, because he painted his bottles and pans from nature! Another, he had no genius, because he took so much trouble and made so many drawings of one thing, hand or foot! A third, that he painted circumstance and not character! What has imagination to do with a brass pan? What is wanted in a brass pan or a bottle is the reality of a brass pan and a bottle. That painting those things from the realities, instead of trusting to his memory, argues no imagination, is rather refined. Again, as to his taking trouble, who took more trouble than Raphael? Had he no genius because he took trouble to be perfect in comprehending the objects to convey his thoughts? "Draw the naked figure first," said a connoisseur to a young artist, "as Raphael did." "Oh," said the young man, "that would be losing time." No, my young friend, it would be gaining time and not losing, and when fresco begins you will find it out.

The *Breakfast* is another of his best works, and perhaps the servant-girl pouring out the water is more like a woman than any other he ever painted of that beautiful sex.

Thus then for ever ends the exhibition of a collection of this extraordinary man's works. His genius first startled the school from its slavish imitation of Reynolds; and though a great era is commencing—that era which I have always foretold and laboured hard to produce—I can imagine no period of excellence that may hereafter arise wherein the works of David Wilkie may not be studied with benefit and instruction either for fresco or oil.

Poor Sir David! How many days we have passed in early life! After painting all day, we met at dinner, and hurried to the Academy from six to eight; then went home to each other's rooms to criticise and advise on our mutual labours, animating each other with fresh hopes, and parted for the night with ardent aspirations for fame and distinction. Lord Mulgrave was our employer and kind friend; at his table we used to meet the first men of the time. Lord Mulgrave was a noble character, and had great delight in the society of artists and connoisseurs; after the fatigues of office nothing pleased him so much. What reminiscences I could write! What a guide-book for students would our mutual lives be, our mutual hopes, our mutual anxieties, our mutual fears, our mutual victories, our mutual defeats. A frequent guest was George Colman, whose wit and fun were perpetual sources of sparkle. Lord Mulgrave's brother had attempted to discover the North Pole; a series of pictures relating to the attempt hung round the dining parlour. Before leaving the room long discussions used to take place on art, the whole party walking round. In Captain Phipp's hand was shown a boat hook; Sir George Beaumont said, "What has he got in his hand?" "Why," said Colman in his burly joking voice, "I take it to be the North Pole!" At another time, after dinner everybody at table seemed sullen and indigestible—we had been painting all day, and were exhausted. Lord Mulgrave was exhausted and said nothing, and there was silence so long, that all of a sudden the whole circle made a sort of spasmodic effort to say something. Sir George in a lazy sort of a way observed, "Theodore Hook is a delightful fellow." "Is he?" said Lord Mulgrave, with a look at us all, "I wish to God he was here now." This put everybody laughing, and the whole evening was delightful.

The going to the Academy every night we always considered a necessary winding up of a day's study, but the theatres Covent Garden and Drury Lane were sources of dispute. When Mrs. Siddons acted I used to appeal to Wilkie, and when it was "Mother Goose" he used to dwell on the bill, and insist he wanted to study the expressions in the pit. Sometimes he saved me from temptation, and sometimes I saved him. Once in going home through the Piazzas there was a show; a man in a thundering voice was explaining its wonders. As if by instinct we squeezed in, and, getting up in a dark corner, hoped not to be seen. At last in dropped, one after the other, sixteen students. Long before they were all in, recognition took place, so that a hearty shout welcomed every new face, to its utter dismay. Many of them are now living—the most distinguished artists of the day. The show was "The Baker and the Devil," and it is impossible for people who are never worn out by ten or twelve hours' painting to comprehend the relish of students for such absurdities.

To travel with Wilkie was entertaining. In 1814 we went to Paris, and saw the town in its glory. We were joined by a Lincolnshire gentleman, who added much to our pleasure, and the only time I ever saw Sir David yield to a true "abandon" was coming out of Rouen. Champagne had got to his heart, and opened its natural sources. We were in an open carriage, and I proposed we should sing "God save the King" as we left the city. Wilkie joined most heartily, and, on passing into the road, an elegant Frenchman and two graceful women stopped to look at us with pleasure and astonishment. As we concluded the last line he turned from us smiling, and said, "Ah! *trois milords.*"

But enough. When a dear old friend goes first in the maturity of life, one is apt to dwell too long on days which are passed for ever.

The Library Committee of the Corporation of London have ordered three pieces of tapestry, at a cost of 1,000*l.*, from the tapestry works at Windsor, to be hung in the Egyptian Hall at the Mansion House. The subjects represented will be commemorative of some prominent events in civic history.

Correspondence

A National Art Exhibition.

SIR,—Since the proposal for a National Art Exhibition was first made public much discussion has ensued. The action of the Royal Academy in the conduct of its exhibitions and in its relation to the arts generally has been almost unanimously condemned, and the need that art matters should be organised on a just basis has been practically admitted by all.

The Royal Academy is evidently not disposed to move in the matter; therefore the remedy must be sought outside that body. The justice and fairness of the proposals which we enclose are evident. That they are practical is shown by the amount of support already received from artists.

As this matter is neither private nor personal, but one which is admitted to be of public importance, we take the liberty of asking you, sir, to give publicity to this scheme. May we also ask those willing to forward the movement to communicate with Mr. J. H. Thomas, hon. sec. *pro. tem*, Wentworth Studios, Manresa Road, Chelsea.—We are, sir, your obedient servants,

GEORGE CLAUSEN.
WALTER CRANE.
W. HOLMAN HUNT.

September 13.

National Art Exhibition.—Programme.

First obtain guarantees for money top ay expenses before and during exhibition. In the event of the exhibition not being self-supporting, the deficit will be met by a *pro ratâ* call on the money guaranteed—*i.e.*, each guarantor will lose from the sum he guarantees the proportion that the deficit bears to the total amount guaranteed.

For example, if the total amount guaranteed is 500*l.*, and the deficit to be met is 100*l.*, each guarantor will lose one-fifth of the sum he guarantees.

If the exhibition pays expenses, the money advanced by the guarantors will be returned.

If there is a balance, it will be carried forward to next exhibition.

The functions of the managing committee (elected from and by the money guarantors) to be quite separate and distinct from those of the artistic committee, the latter to have the sole and only voice in selecting and hanging the works of art submitted to it.

When there are sufficient guarantors, a circular explaining the "movement" will be sent at once to the suffrage, and every effort made to advertise to voters and general public.

The suffrage to be as wide and as universal a suffrage of all ranks and conditions of artists as possible, without discrediting the suffragan voice.

Let us say every artist who in the last two years has exhibited a work of art in any of the principal exhibitions. Let us say for "principal exhibitions" the different widely-known existing art societies, and the exhibitions managed by the municipal corporations of the provinces.

The circular to be an explanatory programme, saying very distinctly that the voter to whom it is sent will have no pecuniary responsibility, and asking:—

(1) That the voter will submit two works to the selecting and hanging committee for exhibition.

(2) That the voter will send in his name as a candidate for the selecting and hanging committee.

(3) That the voter will vote the names of twenty for the selecting and hanging committee.

Then explain that these twenty will be chosen from a list of the names that are given in response to paragraph (2). That this list will be sent early next year.

Then early next year this list of names collected, as above, will be sent to the suffrage, and by its vote will be annually chosen the selecting and hanging committee of twenty.

REVIEWS.

TRUSSES OF WOOD AND IRON. By WILLIAM GRIFFITHS. Published by the Author at 9 Heathbank Road, Birkenhead.

It is often objected by students of construction that the information contained in books is too general for their purposes. The deficiency can be made up with the aid of a teacher, but in the majority of cases that aid is not forthcoming, for the students must be self-taught, if taught at all. The little book by Mr. Griffiths is on the opposite principle—of "a little but well." He takes four roofs of common types and works out the strains on all the members, the graphic system being adopted. Every step of the process is accompanied by explanations of the principle involved. Many students who are perplexed in applying the few formulas usually given will by the use of this book find the way made clear. For those who are preparing for the examinations of the Science and Art Department this method of going through the whole process of discovering strains must be of great use. The diagrams are on a size that is large enough to allow the strains to be taken off by a scale. From the manner of treating the subject, Mr. Griffiths's book is clear enough to enable a student to be his own teacher. It will be useful in the science school and in workshops.

PRACTICAL GUIDE TO PHOTOGRAPHY. By MARION & CO. New Edition.

Messrs. Marion & Co. hold the first place among manufacturers of photographic apparatus, and their business extends to most parts of the world. The guide which they publish is as full of practical advice as might be expected from authors with so wide an experience. It is their interest to diffuse information, and in consequence a beginner will often in the "guide" find hints on practice which are not to be found in all books. The directions are given in such plain language that any tyro can comprehend it, and from the explicit treatment of the pages we expect to see photography become more popular than ever. In the part relating to photography of buildings we find the following announcement:—"The use of photography by engineers, builders, &c., for keeping records of their work and so forth, is now so much on the increase that we have thought it advisable to set up a special set for their use. This we have called 'The Engineers and Builders' Photographic Set.' There is contained in it complete apparatus of a substantial and efficient nature for taking negatives of any size up to 12 inches by 10 inches."

GENERAL.

A National Exhibition of Fine Arts is to be opened in Venice next April. English artists residing in Italy can exhibit.

Two Stained-Glass Windows have been erected in Kirkaldy Church. They were executed at the Merton Abbey Works, from the designs of Mr. Burne Jones, A.R.A.

A Statue of "Britannia," by Mr. Rhind, of Edinburgh, has been inaugurated at the Perth Academy buildings. The cost of the statue and a clock amounts to 500*l.*

The Guildhall School of Music on the Victoria Embankment is to be opened at the end of the month.

A Small Hospital is to be erected at Johnstone, N.B., and the Hospital Board have resolved to advertise for plans.

The Church of the Holy Trinity, Avenue de l'Alma, Paris, erected from the designs of the late G. E. Street, R.A., under the direction of Mr. Arthur Street, M.A., and Mr. A. W. Blomfield, has been opened this week.

Mr. John Chalmers, architect, of Edinburgh, was on Monday elected Superintendent of Works for Perth, in place of the late Mr. George Wells. There were ninety-eight applications for the appointment.

The Education Department authorities have sanctioned a grant of 188*l.* 5*s.* for the purchase of casts for the Liverpool Corporation permanent collection.

A Meeting to oppose the building of a town-hall for Lambeth was held in Kennington on Tuesday.

An Anonymous Donor has given a sum of 1,500*l.* for the erection of science classrooms in connection with Paisley Grammar School.

The Spire of the parish church of Llangrove, near Monmouth, has been wrecked by lightning, and will need rebuilding.

Sir John Kelk, Bart., died at Tedworth on Sunday. He was well-known as a contractor in connection with Messrs. Lucas, and the Exhibition buildings of 1862 were among the public works carried out by the firm.

The Albert Bridge over the Lagan, Belfast, which was erected in 1831, collapsed on Wednesday evening with a great loss of life.

The Plans of Mr. Jethro A. Cossins, of Birmingham, have been approved of for the proposed public buildings at Darlaston.

The Dundee Police Commissioners have decided to proceed with the extension of the Esplanade a quarter of a mile. By this work a large portion of the river on the south of the Dundee and Perth railway line will be reclaimed, and upwards of sixteen acres will be added to the Magdalen Green recreation ground. The cost is estimated at 15,000*l.*

Monte Testaccio.—The mound in Rome near the gate on the road to the Pyramid of Cestius and the Basilica of St. Paul derives its name, the hill of potsherds, from the immense mass of fragments of broken pottery, of which, during centuries, it was built up. Many valuable relics of antiquity, and of later times also, have been found there in excavating sites for wine cellars and similar cool receptacles. Quite lately two beautiful ancient vases were found, the one filled with lentils, the other with aniseed. Pieces of ivory have sometimes been found, but they were practically useless from the effects of damp.

The Architect.

THE WEEK.

THE competition for the New Barony Church, Glasgow, has been decided on the report of Mr. J. L. PEARSON, R.A. The successful plans are those submitted by Messrs. JOHN BURNET & SON. The premiums referred to in the conditions have been awarded to Messrs. LANDLESS & CLIFFORD, Mr. J. B. WILSON, Mr. JOHN HUTCHISON and Mr. JOHN HONEYMAN.

THE Leeds Corporation have yielded to pressure from some of the members, and the competition for the art gallery, which is to cost 8,000*l.*, is to be thrown open to the world. It is not a wise arrangement. The commission is not of great value, and it is only a resident in the town who will be able to derive advantage from the work. A case of this kind displays the weakness of an architect's position. The invitation of the Town Council to the Leeds architects was tacitly an agreement, but they had not written in return stating their acceptance of the conditions. There is consequently no case against the councillors. Will the Institute of Architects take any notice of the affair? The Leeds Society came to its aid at a time when the provinces were ready to revolt against the mismanagement in Conduit Street, but gratitude is not one of the virtues of the Institute.

THE series of paintings by LEBRUN, which glorify LOUIS XIV. under the title of ALEXANDER THE GREAT, have been hung at a height in the Louvre which makes it impossible for an ordinary spectator to appreciate their qualities. LEBRUN has been long under a cloud, and this was typified by the neglected condition of his paintings. The new officers of the gallery are showing their energy by altering the positions of many of the works, and are imparting an air of novelty to the walls. LEBRUN has been the gainer under the new conditions. His pictures are rehung with some of the best works of his contemporaries, and it is now seen that he is one of the artists of whom Frenchmen may be proud. From his *Victories of Alexander* students can learn much that will be useful.

MR. G. G. HOSKINS, F.R.I.B.A., has been commissioned by Lieutenant-General Sir HENRY MARSHMAN HAVELOCK-ALLAN, Bart., C.B., V.C., M.P., to carry out extensive additions and alterations to Blackwell Grange, near Darlington, formerly the principal seat of the ALLAN family, and inherited by Sir HENRY under the will of his relative, the late Mr. ROBERT HENRY ALLAN. The style of the mansion is Queen Anne, and it appears to have been erected at three different periods, the earliest during the latter part of the seventeenth century, and other portions early in the eighteenth century. Blackwell Hall, another estate inherited by Sir HENRY under the same will, was considerably enlarged and altered about two years ago, from the designs and under the direction of Mr. HOSKINS, and is at present the northern seat of the hon. and gallant member for South-East Durham.

"TOUCHINESS" has been added to the list of sins by an English bishop on his own authority, and Government officials of high standing appear to be subject to it whenever there is a suspicion of an invasion of their privileges. To find all civil servants working together for the common good we must go to Utopia. The Prisons Board of Ireland is now like the fretful porcupine, because it is proposed to erect a convict prison in Galway, and to employ the Board's prisoners in the construction of a breakwater. The Prisons Board has not been consulted on the affair, and an impediment is thrown in the way of the scheme by saying there are not enough convicts for the work. In England we are regaled every morning with stories of Irish crime, but the Prisons Board having taking count of its interesting clients finds there are only 250 convicts available. All the rest are invalids, eccentrics, probationers, and "fatigues," or are ministering to those classes. The Government has acted on the assumption that an unlimited number was available. A Government commissioner was sent to Galway to select a site, a Government sanitarian followed to see if the site was healthy, a Government architect and a Government professor of engineering were commissioned to make preliminary arrangements and discover a water supply. A Government chemist was called in to test the supply, a Government medical officer was summoned to discover if there was anything in the supply that chemistry could not discover, a Government arbitrator arranged with the owners of the supply, and a Government solicitor has approved of their titles. One's brain is puzzled in attempting to calculate the quantity of red tape and foolscap that must have been consumed in these scientific, legal, and diplomatic operations. But all the time nothing was thought about the hands that were to execute the wonderful works. The Treasury is, however, about to advance 10,000*l.* to pay the expenses of workmen that do not exist even on paper, and some outlet will be discovered for the money. Need we wonder if in Ireland people believe the English exchequer is unlimited?

A REMARKABLE return has been presented to the House of Commons, showing the amounts of loans and advances from the Imperial Exchequer for Irish purposes since the Union. It appears that the Board of Public Works in Dublin obtained 34,240,831*l.* in advances. Of that amount, which was a debt, nearly one-fourth, or 7,953,366*l.*, has been remitted. A large part is, of course, owing to the difference between the estimates and the actual cost of the arterial drainage works. In order that the people might find employment, plans and estimates were prepared in a hurry by engineers who were without experience, and in several cases the cost exceeded all anticipation. There were doubts about the power of the Government to recover more than the amount in the estimates, which were the basis of the agreements with owners and occupiers. In some districts not more than one-half the cost was charged, the remainder being made up from the Exchequer, and cases could be cited in which there was a much larger percentage of loss. In one district the estimate was 8,850*l.*, while the Board of Works paid 24,055*l.* If the discrepancies occurred in buildings there would be no end to the outcry.

M. GOBLET, the French Minister who is responsible for art, religion, and many other things, has received a good deal of abuse from time to time because he is supposed to know little about the subjects he controls. But he has just made one appointment which suggests that he is wiser than the journalists believe. An archæological mission is about to be sent to Greece and Asia Minor. M. GOBLET has placed M. GUILLAUME, the sculptor, at the head. It is not every Minister who would have the courage to employ one of the first sculptors in France for such a post; but M. GUILLAUME has shown his fitness for reporting before now. We hope he may be rewarded by discoveries. The contest between France and Germany can be fought in many fields, and it is praiseworthy to seek an opportunity of eclipsing the glory which has accrued from the Olympian discoveries. England is of course unrecognised in questions relating to archæological research, but some century hence we may have the courage to rake among the *débris* of the excavations of other countries.

THE paper on defective eyesight and deafness, which was read by Mr. JOHN OAKLEY, M.R.C.S., at York, is worth attention from managers of schools. Mr. OAKLEY says that one of the causes of slight deafness arises from variations in the temperature of the rooms. As a rule they are generally too warm; then the children are turned out into the playground in all weathers, with insufficient clothing and no covering to the heads, and the weakly children are as a result frequently suffering from catarrh. The prevalence of myopia was ascribed by Mr. OAKLEY to close application in early life and strong mental effort. He said that all children who are defective in vision should have special attention given to the postures in which they work. The desks should be so constructed that the child can sit with shoulders square, the work exactly in front, and the eye at least twelve or fourteen inches away. The light should be good, and if possible proceed from the left side.

THE ROYAL ACADEMY AND EDUCATION.

IT would appear from what is being said at the present time by reformers that it possible to arrange the Royal Academy in such a way that a young fellow, having only an elementary knowledge of art, can be put into the schools, and after a certain definite time he will be turned out a perfect painter, sculptor, or architect. We have grown so familiar with the processes of machines, it is not surprising if we think the human mind can be subjected to operations with as much certainty of result as a bale of cotton. The founders of the Academy did not propose to accomplish such wonderful feats. In spite of the royal support, they took a humble estimate of their powers. "We can teach you here but very little," were REYNOLDS's words, and the end of the instruction in those days was simply to enable the students to admire the works that were worth their admiration. When people say the Academicians have failed to carry out the intentions of King GEORGE, it would be well for them to direct their thoughts for a while to the early history of the Academy. It is sufficient by itself to show that the Royal Academy was not founded in order to enrich the country with a large number of immature artists.

Indeed, REYNOLDS seemed to think that there was a disadvantage in having a school like that belonging to the Academy, where so many facilities were given for study. He knew by heart the histories of the great artists, and remembered that their paths were not always along level ground. He therefore pointed out that the conveniences for study which were before the students were likely, from leaving no difficulties to be encountered, to have a deleterious influence. In the homely way that was familiar then he reminded his auditory that there were certain animals who refused to touch food when there was abundance before them, but were eager whenever the food was reached with difficulty. As for those students who were embryo system-mongers, and eager to follow a "course of study" on a philosophic plan, REYNOLDS had little hope of their sincerity. The words he uttered more than a hundred years ago are deserving of attention just now, when there is so much faith in the power of educational processes to lighten labour. "I have always strongly suspected," said REYNOLDS in 1784, "that this love of method, on which some persons appear to place so great dependence, is in reality at the bottom a love of idleness, a want of sufficient energy to put themselves into immediate action." Education with REYNOLDS, as with the philosophers of an earlier age, was an individual affair, and required efforts of a painful sort which could not be evaded by any plan that a *doctrinnaire* could devise.

It is evident that the first Academy professors and visitors were willing to admit that their power for good was limited, for otherwise they would hardly stand all that was said on the subject in the presidential addresses. REYNOLDS evidently thought that the best professor was only a sort of sign-post. Most people err, he said, not from want of capacity to find their object, but from not knowing how to pursue it. The teacher was to indicate in what direction they were to run. In another place he tells us that "the most skilful master can do little more than put the end of the clue into the hands of the scholar, by which he must conduct himself." King GEORGE and the professors do not appear to have been annoyed at so low a view of the teacher's office. As for the worthies who professed to be able to do more, the President warned the students against them. "In this art as in all others," he said, "there are many teachers who profess to show the nearest way to excellence, and many expedients have been invented by which the toil of study might be saved, but let no man be seduced to idleness by specious promises."

In that antiquated age people were unaware of the virtues of the modern process of cramming, by which so many men have been qualified to hold lucrative and influential positions in our time. REYNOLDS was simple enough to believe that a student could find no better teacher than himself. "We all must have experience," he said, "how lazily, and consequently how ineffectually, instruction is received when forced upon the mind by others: few have been taught to any purpose who have not been their own teachers." In saying this the President did not exclude those supposed secrets of painting which, according to Mr. HOLMAN HUNT, are among the traditions that the Academicians have dropped. "An eye critically nice," he says in one discourse, "can only be formed by observing well coloured pictures with attention; and by close inspection and minute examination you will discover at last the manner of handling, the artifices of contrast, glazing, and other expedients by which good colourists have raised the value of their tints, and by which nature has been so happily imitated." REYNOLDS believed that it was not more practicable to obtain knowledge in painting without a close study of pictures, no matter how many might be the harangues to which the student had listened, than to be a scholar by listening to lectures without reading books. He praises MICHEL ANGELO and RAPHAEL, not because they were assiduous students in classrooms, and had there acquired knowledge, but because they knew everything that was to be derived from the works of their predecessors.

It will hardly be credited that the dream of REYNOLDS, when the Academy was established, was not to have an army of professors with eloquent tongues, but to possess a large collection of masterpieces in painting, which the students could study—in other words, to create a National Gallery. This, however, is plain from his first discourse. After he had paid compliments to the King as founder, REYNOLDS set about explaining the meaning of the new institution. If the Academy corresponded with the schools which it was to supersede, he need hardly have taken so much trouble. But the new Academy differed from its predecessors in London, because it was to be "a repository for the great examples of art" in which they were deficient. And then REYNOLDS went on to explain how many men with great abilities were lost to England because they were not fortunate in having masterpieces before their eyes. Teaching was to be had, and Mr. HOLMAN HUNT is probably correct in saying that it was better than the Academicians', but there were no pictures of value in the other schools. The characteristic that was to be predominant in the Academy is also suggested by the way in which REYNOLDS met the objection that RAPHAEL had not attended an Academy. "All Rome, and the works of MICHEL ANGELO in particular, were to him an Academy," he replied, meaning that the city was also a repository for works of art, as, by royal favour, their Academy would be in course of time.

For REYNOLDS and the men of those days had a faith in the power of a good picture which now must seem to savour of a superstition. He believed it was possible by the mere sight of a masterpiece to "receive the principles which many artists have spent their whole lives in ascertaining." What happened to RAPHAEL might be their case, and as he became competent to work in the grand style from seeing the Sistine figures, so the students might also hope to acquire a noble manner from seeing the King's pictures every day.

REYNOLDS must surely have known something about the King's desire, and he was too good a courtier to say a word that would not correspond with the founder's intention. When, therefore, Mr. HOLMAN HUNT tells us that "the Royal Academy must be made somehow to fulfil the laudable intention of its founder, GEORGE III., not in word only but in the very spirit of our day," he must be aware that REYNOLDS is entitled to be considered as the exponent of the King's opinion, and the President was not an advocate of a school in the spirit of our time. We are not so vain as to believe that we are competent to interpret fully what that spirit is; but, apparently, there is a desire to have many teachers, who are to impart information in the easiest way and in the shortest period. Our time insists on short cuts to knowledge, and is adverse to an uphill road. Now, there never was a man more opposed to that way of becoming an artist than the first President of the Royal Academy. Some students, he said, are always talking of the prodigious progress they should make if they could only be taught by some particular eminent master. But, according to REYNOLDS, the disposition to lean on other men is only a sign of sloth; for such students wish to transfer to their master that care which they must take of themselves. King GEORGE's President deserves to be recognised as the advocate of self-reliance among art students. His "Discourses" may now be out of fashion, except as formal premiums in the Academy; but at a time when so

much is being done to upset the principles on which the school was based, and when art students are all treated as if they belonged to an effeminate race, they deserve to be again accepted as "golden precepts."

It will be said that the French Academical school—the Ecole des Beaux-Arts—is conducted on a different principle, and that, owing to the number of professors, it is a sort of university of art, and it is proposed for imitation in England. The success of the school is not universally admitted in France, and at the present time there are many artists who are advocating its abolition. It certainly does not owe its position entirely to esteem for the teaching. The school is really what REYNOLDS'S Academy was in theory—a sort of half-way house on the route to Italy. Take away the Prix de Rome, and the Ecole des Beaux-Arts could not long survive. The students who wish a residence in Rome have to attend in the Rue Bonaparte, and make a show of receiving instruction from the professors, but there are few of them who are not pupils of painters without any official position, and it is often in humble studios that the instruction is received which is put in practice in the competitions of the Ecole des Beaux-Arts. In government and municipal offices a good deal of importance is naturally attached to education which has the official stamp, and therefore the Ecole des Beaux-Arts will always have plenty of pupils. The public in general pass a very different sort of judgment on the school, and the newspaper critics try to please the public by ridiculing the works of the men who gained honours there. A few years since one of the journals, in describing the *Salon*, passed over many works by simply saying of each it is the work of a Prix de Rome. It was thought unnecessary to point out defects which were supposed to be inevitable with all students of that school.

What REYNOLDS and the founders of the Academy said about painting is even more applicable to architecture. The President's words, "We can teach you here but little," should be inscribed in every architectural school, in order that the students may not be inspired by delusive hopes. There are so many disadvantages accompanying the putting of architecture in connection with painting and sculpture, that one might doubt the wisdom of the association, if it had not been determined by a king. Professor COCKERELL was not given to speak rashly; and when he asserts that a great error of the English school of architecture may be said to have arisen from the juxtaposition in the Academy exhibitions of architectural drawings with paintings, we get a key to many difficulties. One is the risk of leading students to believe that architecture is simply an affair of draughtsmanship; and therefore COCKERELL quoted with approval the saying of PHILIBERT DE L'ORME, that those who amuse themselves with making pretty drawings only are those who least understand the real art and science of architecture.

We can understand the rulers of the Institute of Architects trying to make it appear that the blame for what Lord GRIMTHORPE calls the "no education" of architects rests with the Academy. If a mode of education is necessary to supplement or to supplant the training received in an architect's office, it should have been long ago initiated by the Institute. The Secretary may hint about a great and wide-spread evil, and the impossibility of saying all that ought to be said on the subject, but he must know that the Council of the Institute has not had the courage during the last fifty years to offer any suggestion to the members about the education of their pupils. "I believe," said Sir GILBERT SCOTT, "the founders of the Institute had some intentions of establishing artistic training, but I doubt very much whether it will ever be done." The sneer that is in the words was not undeserved. The Academy may be defective, but it cannot be charged with broken promises. In its records there is nothing corresponding with the declaration that was made at the opening meeting of the Institute, about having ample provision for the general information and improvement of the junior class. Whenever education is the subject, it behoves an officer of the Institute to be silent, for there is something comic in a representative of the Council posing as an advocate of an extended training in either science or art. In respect of education, the Institute has loyally followed the example of the trades unions.

The clamour for reform may induce the Academicians to make many changes. It is advisable to limit the claims of the members on the wall space of the exhibition, but in dealing with the schools there is much to be said in favour of a retention of the original principle on which they were established. As we have tried to explain, it was not intended to imitate the ordinary colleges by setting up a staff of professors. REYNOLDS, as we have seen, explained that teaching of that kind was not requisite in art, and his view has been adopted by other presidents. "What you cannot learn from his pictures," says SHEE, "the painter will in vain endeavour to impart. The candid painter will confess that he has but little to impart; he cannot inoculate his taste or transfuse his feelings. Whatever he values in himself he knows to be beyond the power of words to communicate; what he possesses he knows to have been obtained by self-effort, and to be attainable by no other means." The best students of the Academy have been those who agreed in that belief, and recognised the fact that it is by a study of works of art, and not by discourses upon them, that artists are made.

ARCHITECTURE AND SCULPTURE IN FRANCE.

IT has been often alleged that English architects do not care to patronise the sculptor's art. The public buildings that are without statuary are evidence. Gothic architecture, it is said, depends for much of its effect on statues; but how many are to be found in a building like the Law Courts? The very few figures that are visible were obtained, we believe, without any sum being entered for them in the contractors' schedules. Mr. Street adopted a give-and-take principle, and was obliged to effect a saving in order that a mason might hew such a figure as the *Lawgiver* that is seen in Carey Street. Public authorities have yet to be educated to a belief in the necessity for sculpture, and meanwhile architects must be under the accusation of being indifferent to the use of what Wotton calls "the natural and suitable ornament" of their buildings.

In Paris the architects are just now rather excited about an article by M. Adolphe Racot on the triumph of flatness. The writer argues that the modern public buildings in that city want sculpture, and therefore fail in some of the principal purposes which works of the kind should subserve. M. Racot believes that the general public is unable to appreciate architecture, however pure it may be, unless it is aided by figures. We give a translation of his article, which will enable our readers to understand his argument. One question must arise—If Frenchmen, among whom more or less knowledge of art is disseminated, cannot admire a building that lacks sculpture, what is to be said of Englishmen?

Some years ago, says M. Racot, the City of Paris acquired an eighteenth-century house in order to convert it into an establishment for public instruction. It was one of those old dwellings that are so deserving of admiration on account of the immense *salons*, the high ceilings, and the large windows that are never to be seen nowadays unless in engravings of that date. The windows had round heads and the eye was gratified by the charming sculpture in them, as well as by the sculpture of the panelling in the rooms, for as yet a mode of luxury that is at once ostentatious and economical had not thought of introducing a wall-covering which, as it makes all rooms become alike, is a means towards equality.

It was necessary to alter the most beautiful of the *salons* into a classroom. Sculpture which is in high relief stands in the way of such a transformation. So the panels were turned out and then all went well. A note of discontent was heard. Among the band of utilitarian architects there somehow was placed one of those men who look kindly on the past, and who believe that we ought to conserve as far as we can all it has left us that is good, including the elegance, the grace, the charm of things, qualities which in the modern desire for equality are not recognised, and are even abolished. He ventured to remark in a melancholy tone:—"I regret the sculpture. The sight of a good bit of that kind of work, on the panels of a door or of a wall, may do more towards the education of a young mind and soul than lessons in grammar or geometry."

It seems to me that what was said on that occasion about the carved wood expressed the idea that was uppermost in the minds of statesmen who wished to be rulers of men, in those days when the passion for equality had not brought everything down to a dead level, and when life was less wearisome than it is now. I firmly believe that when the first great buildings of France were ordered by Sully, and when under Colbert the Paris of Louis XIV. arose from the ground, and presented to the gaze of everyone, to the barefooted mendicant as well as the workmen, to the shopman and the shopkeeper, its architec-

tural masses; when the artists in stone had shown their fertility of fancy in colonnades and bas-reliefs, there was something else in view than the desire to appear great. There was also a resolve to create beauty, in order to introduce and to uphold constantly in the imagination of the people, and especially among the young and the ignorant, that good taste which is the source of so many things.

If a fine piece of carving on a door is able to arouse the sentiment of taste in a simple mind, as I believe it can, was it not wise to impress powerfully the imagination of our fathers by placing before the crowd at almost every step a masterpiece of art, and in default of masterpieces, to have in modest buildings something that might speak to the eyes and afterwards to the feelings?

If to-day water is required in one of the public squares, taps of brass or bronze are fixed on the conduits, and the material need is satisfied. In the times of François Miron, of Colbert, and of Marigny, there was not a fountain set up at the corner of a street without the ædiles of Paris calling in an artist to carve a bas-relief upon it, or at the least, some imaginative head.

On looking around the new Paris—that is, the Paris constructed within the last fifteen years—I see in public buildings and memorials evidence of what I must call an aversion to sculpture: in other words, I witness the triumph of flatness. There is nothing for the imagination, nothing to attract, nothing that seems to smile, nothing in fact to please the eye. About a century and a half ago a monument of public utility would open a career to artists, and it was a theme for their ambition and zeal. Who has not seen in most of the large towns of the provinces (for in those days Paris had not the monopoly of monumental works) buildings of the age of Louis XIV. and Louis XV. which show that the architect was then always accompanied by the sculptor, and in which the ornamentation strikes the spectator no less than the harmony of the structure?

Let us suppose that in the time of Coustou and Coysevox it was proposed to erect an immense post-office. We can easily imagine what a palace would be the result, and how we should have allegorical groups, and horses with broad chests and expanded nostrils of that kind of which the two great sculptors have happily left us types in Paris and elsewhere. If likewise, the Ecole de Médicine were to be rebuilt in those days, the first care would have been to disguise the sadness and melancholy inseparable from such an institution by a profusion of artistic decoration.

We have a new post-office and a new Ecole de Médicine. Space has not been spared in them. The architects have had a clear field. If we stop before the buildings, we are sure to say they are great and vast. But we see nothing to gratify the sight, nothing that will aid in the education of the ignorant, who should feel something else beside *ennui* in gazing upon a public building. The walls are smooth, polished, and massive, that is to say, flatness is everywhere.

Is it by accident that the art which formerly belonged to all, of which exemplars in marble, in bronze, and in stone were disseminated throughout Paris in order to uphold some sense of pride and admiration in the hearts of the most humble folks, that all of a sudden this art, owing to a system of equality and democracy, is reduced to be a hanger on of luxury, so that rich men alone are henceforth to patronise it, and sculpture is only to be enjoyed by a few in private mansions and parks? We may well believe this when we see the kind of buildings that are erected for palaces, the barracks, and penitentiaries that are built to lodge men who are free, and especially when we see everywhere the naked walls, the perpetual flatness, the everlasting straight lines without any kind of relief, and of which the monotony contributes to the lassitude and nervousness of a people deprived of an ideal.

Art has no longer a place in our social organisation, probably because it leads to dreaming; and since M. Goblet the Minister has never dreamt in his life, he probably does not wish anybody else to dream. It is now the turn of science, who appears in the person of a bold engineer and cries out, "I can also do something great, for I am able to build a tower that shall be lost in the clouds." This engineer is called Eiffel. The illustrated papers have given the plan, the section, the elevation of this monument before any part is constructed. It will be of course in steel, iron, and bronze, for science slights marble as too fragile. Well, I bow before this engineer. While flatness reigns everywhere, he at least has had the courage to create something elevated and developable, which mounts and astonishes. But I am not going to offend M. Eiffel by adding that if for the construction of his tower, for its detail, for its general effect he could utilise the skill of Bisconnet, who wrought the ironwork on the door of Notre Dame, and of Benvenuto Cellini, who, like M. Eiffel, worked in metals, then his work would be improved. Unfortunately both craftsmen are dead.

When that portion of Paris was created which comprises the Rue Royale, the two colonnaded buildings of the Ministry of Marine and the Garde Meuble, the Place Louis XV., now known as the Place de la Concorde, and the monumental bridge which is flanked by pedestals that await their statues, when that immense creation was drawn as it were out of chaos, it can be said that more was done for the development of taste and the love of the beautiful amongst the people than by all the freezing social dogmas that have been promulgated since that time.

It is by the perpetual contact between art and the public, the constant meetings between creations of genius and minds that are open to whatever touches them or excites them, that France during two centuries gained repute for its good taste. Every workman was then more than a workman; he was also an artist. There was not merely a Boule, but the poor village joiner, humble, obscure, and unknown, who for the marriage of his daughter, or other *fête* of that kind, would make a press with sculptured panels and ornamental mouldings. He was not a sculptor, but he possessed a feeling for art, and then he had time, for politics was invented subsequently. The work that was thought so modest at that time now holds a high rank. The modern workman has no longer the time to attempt a work of its class, and then where is he to find inspiration or examples to copy?

CHURCH RESTORATION.

THE following is the second letter of Lord Grimthorpe on the subject of restoration:—

The cant of "antiquaries," whether true or false, will sink church restoration into a lower stage of degradation than it reached under Wyatt and the Georgian churchwardens and deans if it is not stopped by the application of some common sense. And, therefore, I will use the Precentor of Lincoln and his answers and no answers to my questions as a peg to hang some general remarks upon, though he has put himself out of court by refusing to answer whether he has ever seen the work to which he applied some silly and vulgar epithets. He manifestly would have said he had, if he could say so. Does he not think it would have been more honest, as he writes to me about "honest architecture," to confess openly that he has not?

The leading idea of him and his associates, except when they quarrel among themselves about facts, as he and Mr. W. White, F.S.A., and a lot of other F.S.A.'s did about the history of the roof here, is that the latest things that they are pleased to call antique and "honest" ought to be copied when they must be rebuilt somehow; and that if you dare to try to imitate the original style of the building instead you are a Brummagem impostor and destroyer, and your building dishonest, false, and so on; but if you imitate the later antiquity, however accidental, defective, inconvenient, or ugly it may have been, you are committing no fraud, making no pretence, and are altogether a virtuous and exemplary restorer.

If such people were capable of reasoning they would see that even their own folly turns against them. For there is far more pretence and risk—or hope—of deception in rebuilding a copy of what the present generation has been accustomed to see than in building something else which every one can see is a novelty. I have been very successful in such deception wherever I have intended it. Indeed, that was the very argument used by the chief objectors here to my not rebuilding a copy of that west window which Fergusson, when he saw it, called "a very bad specimen of a very bad style." As soon as the new one was up those very persons candidly recanted, and Fergusson wrote not long before his death that "nobody with less confidence in his own judgment than Sir E. Beckett would have done so in the face of all that opposition, but that probably no one now wished it had been done otherwise." I only quote from memory, but that, I know, was the substance of it. Our telescopic precentor does think otherwise from his watch-tower at Lincoln, and perhaps he thinks that by perpetually writing his opinions about restorations all over England he has acquired a hundredth part of Fergusson's knowledge of architecture, who always protested, as I have, against the assumption of antiquaries to be *ex-officio* authorities on building.

As these people are so fond of talking of building, up to some undefined epoch, being always "honest," which they do not even pretend to mean either constructionally or architecturally good (but, for all that, it is our duty to copy it), I will give a specimen of that doctrine from the hand of our Precentor himself, with whom, no doubt, any number of self-styled antiquaries are agreeing just now in denouncing my "destruction of the large Perpendicular window in the south transept," which was obliged to come down with the rotten walls enclosing it. Of course, he means everybody to understand that it was a genuine, "honest" work of that Perpendicular old Abbot Wheathampstead, who lively jovially to 100, and introduced fellow-commoners and noblemen among the monks, and the monastery and the adjacent nunnery soon after became the sink of iniquity which even the Pope's commissioners denounced

in language for which I must refer to Mr. Froude's "Short Studies." For it is hardly conceivable that a Precentor of a great cathedral would write as he does if he knew all the time that that window was only a Brummagem relic of some William IV. restorers, and so a mere fraudulent pretender to Perpendicularity, and built in succession to a wooden one of some previous more economical ædiles. He may take his choice between knowing and not knowing; for in either case he has given us a very useful measure of the competence of "true antiquaries" to tell us how to restore churches. I did not expect such a piece of luck. It is much too good to be angry over, as he thinks I am.

And then comes another. For reasons of his own, which I well know, up starts a "judicious bottle-holder" to the canon, and a genuine F.S.A., Mr. W. White, architect—not Mr. W. H. White, the secretary of the R.I.B.A., with whose late remarks on the no-education of architects in England I cordially agree. Of course, he contradicts me about the old-roof question, but the *concordia discors* between him and the Precentor and a heap of other equally true antiquaries about the history of that roof is delightful. He need not think that I am going to argue either that or the other old questions over again. Whichever of them was right, we know perfectly that Mr. White's theory was, and is, as wrong as possible, from facts which stared us in the face, though not him. He distinguished himself, too, in a conflict (not with me) about that "interesting Norman corbel table," which the clerk of the works replied was singularly composed of modern bricks plastered. I have several times had to criticise his own restoration exploits, as a matter of construction, which would illustrate his namesake's conclusions about the practical and mathematical education of the R.I.B.A. fraternity, who are so fond of proclaiming themselves *homines trium literarum* besides.

I am not going to reargue the question of the south turrets with Mr. Venables. He thinks it a clever and safe thing to say—and the true antiquaries generally do, as it commits them to nothing, and intimates that we are not to be believed—that there are always two opinions about the stability of anything that has not actually fallen down. Yes, there are. One from those who have practically to deal with it, and must ascertain its real condition before they go on to do what is necessary, at whatever cost; and the other from vapouring outsiders, with no responsibility and no knowledge, and no care what may happen if the structure will stand a little longer for their amusement as an interesting semi-ruin. I remember the ruination society strongly dissuaded the vicar of St. John's, Chester, from restoring that fine tower; and if he did anything, he was to take care that it did not look like restoration. He was foolish enough to listen to them, and within a year the tower fell, as many people knew it would if not restored. We know to our cost here how much architects' estimates of the cost of repairs are to be trusted even when they have been paid for examining, some of those that we had having gradually risen in various proportions up to 22 before we could get the work undertaken. I was not very likely after that to attend to volunteered assurances that the turrets "would stand another hundred years," even if the assurers had had any independent claim to credibility. The Precentor naturally knows still less of the reasons why it was absolutely necessary to remove the good-for-nothing brick roof of the slype than he easily might of the history of the window over it, and I am not going to tell him. When the slype is restored and the south front finished he can come and see them, and find some more "Brummagem finery" to talk about, and make some mistakes in discriminating between old and new.

He evidently does not see what he is doing in being so ready to answer the leading question I put to him about the Lincoln restorations, which I thought generally very good when I saw them with Dean Blakesley in my visits to help the chapter about their great clock, made by Potts, of Leeds. He says exultingly that they are not done so as to make the work look shabby and patchy, as both I and others had told him that Scott's does here, and now must for a long time to come—*i.e.*, until all the semi-decayed stones that he persisted in leaving have got so bad that they must be replaced with new ones of the same kind and colour as his. The fact was that Scott was frightened out of his senses latterly by those pests of architecture into doing all sorts of stupid things which he did not in his best days. He actually wrote almost violent letters against my putting windows into the modern walls of the four dark bays of these aisles, which had consequently acquired the name of the "iniquity corners," all because there were none before. Can church restoration sink to lower degradation than that and the wish of all "true antiquaries" that I had either left alone or copied all the late rubbish at the west end, so rotten that it was dangerous to take down? Its appearance is, happily, preserved in photographs, and I have not patience to describe its nature again. Anyone who wants to know it may find it and a copy of the old photograph for a shilling in my little book on the cathedral. Perhaps by this time the Precentor wishes he had taken that trouble, instead of taking shots at a venture, and confessing that he and his chapter try to get their restorations done as fraudulent copies of the old work instead of "honestly indicating their own date" as much as possible, like the abominable slate-pencil looking shafts with which Scott defaced the western part of Salisbury, and many other churches too; not that I suppose he intended them so to indicate their date, but did it in ignorance both of stone and work; and so do most architects and builders if they are allowed. But, according to the antiquaries and anti-restorationists, that is the right way to restore churches when you must restore them for safety.

But it is time to stop. I said that Canon Venables had perhaps done some good by his former letter about real ruins. I think he will now have done more about real churches, with my assistance, and will have taught people of common sense to treat these meddling pretenders to knowledge of building as they deserve. Architecture does still mean building well, with a view to use, beauty, and stability, and the meanest and most degrading theory of it that ever was invented is that which I have been exposing now and whenever I have had the opportunity, by being either attacked or invited. Not that I am going to "blow trumpets" before any walls that I have not seen, even on invitation and second-hand information. I leave that to the Precentor.

LEEDS FINE ART GALLERY COMPETITION.

WE are asked to publish the following letter, which has been forwarded to the town clerk, Leeds:—

65 Albion Street, Leeds: September 16, 1886.

Dear Sir,—I am requested by the Council of the Leeds and Yorkshire Incorporated Architectural Society, and architects in Leeds who have entered upon the above competition, to draw your attention to the announcement which appeared in this morning's papers, to the effect that the competition which was limited by you to architects in Leeds has been extended to the profession generally, and to say that they cannot allow this extraordinary breach of faith to pass without protesting. They desire to point out that to change the conditions at the present advanced stage of the competition is to take an undue advantage of the competitors who have already laid out time and money, and would not have done so had the competition been advertised at first as an open one.—Believe me, dear sir, yours faithfully, G. B. BULMER, Hon. Sec.

The Town Clerk, Leeds.

The letter is further signed by twenty-three firms of architects.

THE RESTORATION OF WESTMINSTER HALL.

ON Monday, in the House of Commons, the First Commissioner of Works was asked whether the work of restoration now commenced at Westminster Hall included the building of two staircases having projections of about 23 feet and 15 feet respectively into Westminster Hall, and whether he would consent to reconsider this portion of Mr. Pearson's plan.

Mr. Plunket, in reply, said:—The scheme which has been sanctioned by the House includes the erection of two open flights of steps having projections not of 23 feet and 15 feet respectively, as stated in the question of my hon. friend, but of 20 feet 6 inches, and 9 feet 6 inches respectively. Flights of steps fulfilling the same object as those now proposed and occupying very similar positions have existed in Westminster Hall very nearly throughout its whole history. Thus one of the new flights of steps will be in the north-west corner of the hall close to Palace Yard, and will occupy closely the position of a similar flight which existed there since the middle of the thirteenth century—Henry III.'s time—and gave access to the first floor of the Exchequer Buildings. The second flight of steps, to which attention is called, and which has the projection of 9 feet 6 inches, will take the place of two others, which old plans, published in Mr. Pearson's report upon the scheme, show to have existed in the seventeenth century, and which there is very good reason to suppose were erected by Richard II. when the hall was remodelled by him. These two old staircases give access to the upper floor of the buildings which existed from before 1400 to 1822 between the great buttresses, which buildings are now about to be erected. As to the artistic effect, Westminster Hall undoubtedly presents an empty and bare aspect since it has become merely a passage-way to the Houses of Parliament, and I am advised that it requires some small well-treated features to give it scale and to suggest its size and impressiveness, and that these staircases—more especially as they replace old ones—will do just what is required in this respect. In fact Mr. Pearson informs me that he readily availed himself of the opportunity of reinserting them because of the distinctly advantageous effect he is con-

vinced they will have upon the interior of the hall. I cannot but think that his opinion deserves to have great weight attached to it upon such a point.

TESSERÆ.

Cultivation of Eye-power.

SIR G. G. SCOTT, R.A.

IT is ridiculous to suppose that such an art as architecture is to be learned without the most careful study of its existing productions, or that originality is likely to be developed upon a basis of ignorance; and it is equally unlikely that excellence will be attained solely through the medium of knowledge, without the most jealous and careful training of the eye to the most delicate and scrupulous perception of the right and the wrong in form and proportion. The want of this is the most crying sin in modern architecture; especially, I fear, in this country. Continually is the more cultivated eye offended by discords which in music would set the very teeth on edge. I know not how to advise you on this point. This delicacy of perception is in some degree intuitive; but that it is not wholly so is proved by the fact that the works of some periods are nearly all harmonious, while at other periods this harmony seems only occasionally to have been attained. The only rule I can suggest is the jealous cultivation of the eye. As the greatest of moralists has said, "Keep thy heart with all diligence, for out of it are the issues of life"; so one may say to the architect, "Keep thine eye with all diligence, for out of it are the issues of art." Never allow your eye to get accustomed to or condone errors of proportion, even in works which in other respects you venerate for the noble art which clothes them, and much less allow of any deliberate error in your own designs. To avoid these blemishes sketch your designs over and over again, no matter how slightly and roughly, rejecting rigorously everything against which the eye rebels, and never permitting a proportion which it has once condemned to remain even for a minute before you—for ocular perception is most delicate, and its instinct may be blunted by dwelling even for a few seconds upon what its first impression saw to be wrong. Never clothe a form with pleasant drawing till its proportions have been thoroughly sifted and rigorously collected; and if you fear that you have, by dwelling too long or too indulgently upon what you have sketched, prejudiced your eye in its favour, put it away and attend to something else, or take the opinion of some unprejudiced person in whose correctness of eye you have confidence, for the first impressions of another will often correct your own.

Church Restoration.

W. BURGES.

There is really no more difficult problem in the whole practice of architecture than that of restoration; for a man to succeed thoroughly in it must be not only versed in modern and ancient construction, but must also be an antiquary and something of an artist. Yet how often do we hear of young men just out of their apprenticeship, and with good connections, beginning life with the one or two churches to build, and five or six more to restore. Of course the new churches do not matter very much; for, as I said before, church building is the sole thing taught in an office; but it is a very different thing as regards the restored churches, in each of which we run a chance of losing some landmark in the history of architecture. So often, indeed, has this happened that, as a general rule, when one hears of a church having been restored, it is hardly worth going to study from. What really is wanted in the restoration of a church is to do as little as possible. Keep it together if it is possible. If an aisle or tower is tumbling down, rebuild it, using as much of the old materials as possible, and inserting a small inscription to record the fact. Should there be any money to spare, employ it in a work of art as good as you can get for your money, *i.e.* one stained glass window, a dossel, or a painting on a wall or roof; but then get it good, and let it tell some story; in fact, let it be such that an artist would think it worth his while to turn out of his way to look at it.

Architecture and Sculpture.

C. H. SMITH.

It is quite possible to introduce sculpture into an architectural design without reference to its proper adaptation, and it may be out of place, or out of proportion to the size of the building, when it will be a disfigurement rather than an embellishment; but if it be judiciously introduced, so as to form an integral part of the entire composition, and to convey to an intelligent beholder the idea that, if it were removed, the building would be incomplete, I think you will all agree that it gives to a fabric refinement and a finish of no common kind: in the one case it may appear like the ostentatious display of a wealthy nobody; in the other case it can scarcely fail to convey to the discriminating mind of a well-informed observer the impression that the entire edifice, including its sculptural decorations, is the design of a highly educated artist. In mediæval art it is almost impossible to separate the department of sculpture from that of architecture, of which it has always formed the most ornamental feature, more particularly in the style which prevailed during the fourteenth and fifteenth centuries. Few persons, except those who have paid attention to the subject, can imagine while they contemplate a venerable Gothic structure, how much beauty and refinement it has lost by the destruction of its statues and ornamental carvings. The pedestals and acroteria of a Greek or Roman façade may be left without statues; even the pediment may remain unadorned with sculpture, and the great number of observers would not be struck with its plain or unfinished appearance. But a rich screen, or the lady chapel of a cathedral, with a number of vacant niches and canopies, is somewhat analogous to a splendid apartment, on the walls of which are suspended handsomely carved frames for full-length portraits, without the pictures.

The Temple of Delphi.

E. DODWELL.

Delphi was plundered eleven times before the reign of Nero, and that emperor took five hundred bronze statues from the temple. Yet, after all these deductions from its ancient splendour, Pausanias left a particular description of one hundred and thirty-seven statues, besides a general mention of a great many others of warriors, wrestlers, and musicians, which probably amounted to as many more. These precious ornaments were included within the boundary, or sacred enclosure. Yet, even in the time of Strabo, its treasure had disappeared; in the time of Pausanias it was destitute of money, and the rich offerings of Gyges, Alyattes, Crœsus, and Midas, with the accumulated liberality of kings and of nations, could be seen no more. "Even the Phrygians, Lydians, Persians, Assyrians, Phœnicians, the Italians, and the Hyperboreans themselves," says Pausanias, "sent offerings to Delphi." The temple and the god, the rites of sacrifice, and the predominance of superstition enriched the barren rocks of Parnassos with a greater variety of sumptuous products than were to be found in the most fertile fields and cultivated plains. According to Justin, the army of Brennus revelled in its luxuries. Strabo calls the temple of Apollo "the common temple," and Livy "commune humani generis oraculum," as it had become the resort of all nations. Strabo and Pausanias denominate it generally, by way of eminence, "the temple." Even the form of the temple is not known. Cyriac of Ancona says it was circular, as it has been designed by the most celebrated painters, particularly Claude Lorraine and Gaspar Poussin. On a scarce copper coin which I procured at Delphi it is represented of the most common form—a rectangular oblong, with six columns on the sides and two in front, with a statue between them; but as it was frequently destroyed and rebuilt, its original plan was perhaps not uniformly preserved. It is not less surprising than true that one of the most celebrated edifices of the world has been so entirely destroyed and so thoroughly obliterated that sufficient traces are scarcely left by which the traveller can form even a conjecture as to its position. It must, however, have been magnificent, as the rebuilding of it by Spintharos, about 512 B.C., is said to have cost about three hundred talents. The *Apollo Belvedere* is supposed to have been a copy from the statue which was in the temple of Delphi. Canova thought the original was of bronze, alleging, in justification of this opinion, that statues of that material have a certain style different from those in marble, and that the *Apollo Belvedere*, particularly the drapery, appears to have been copied from bronze.

Greek Mosaicists in Italy.

SIR M. D. WYATT.

Although the Greek artists do not appear to have executed any great works, either in fresco or tempera, in Italy previous to the year 1150, still we have certain earlier indications of their, at least, temporary presence. We know that they were employed, because they were sent for to execute work in different places. Perhaps the most interesting instance on record is that of the monks of Santa Maria Novella of Florence sending to Greece for artists to decorate the substructures of their church. An additional value is given to this relic by the circumstance that Fra Giacomo da Turrita, the Monk of Sienna, who first acquired the art of mosaic for Italy, amused himself in his youth by watching the Greek artists at their work, and thus learnt to imitate the processes employed by them. He first executed a small mosaic for the cathedral of Florence, after which he is lost sight of for some years, until he reappears in Rome, where he produced, in the churches of San Giovanni Laterano and Sta. Maria Maggiore, several very beautiful mosaics: one representing the Coronation of the Virgin, and the other a species of allegorical composition, combining the mysticism of Dante with the old literal spirit of Greek tradition. Next to the works of Fra Giacomo we may particularly dwell on those of Andrea Tafi. At the time when

he began to work in Florence the Republic was building the baptistery, and wished to decorate the interior with mosaics. The authorities called Andrea to their counsel, and, evidently thinking him a very clever workman, sent him to Venice to ask the Venetians, who were then constructing the church of St. Mark, to lend them some Greek workmen. Accordingly, a certain Maestro Apollonio came to Florence, and taught Andrea Tafi to execute the desired mosaics. From that time the art of working in mosaic was naturalised among the Italians, and flourished to a high degree at Pisa and other places, and particularly at Florence, where the whole of the baptistery is covered with mosaic from the floor to the summit of the vault: and many, no doubt, remember the peculiar octagonal form of the vault and the brilliancy of the mosaics. As the prevailing tone in these last was golden, it became necessary that the colours should be of a brilliant character, in order to balance so large a mass of gold; and we find accordingly that even the pavement is entirely worked out in mosaic, to insure the harmony and keeping of the whole.

Insufficient Timbering in Houses.

J. LEMON.

Modern builders have found out that the element of strength in a beam is the depth, and they have carried this principle to such an extent that we now see boards on edge made to answer as joists. I do not so much object to the deficiency in thickness in joists if they are well strutted as to the want of sufficient depth in proportion to the span. Many persons are so ignorant of the strength of timbers that they have a stereotyped scantling for joists, which they use for all spans in small houses. The result of such a system may be easily imagined; in some cases they have more than sufficient and in others the deflection is considerable. Of all portions of timbering there are none so often scamped as the lintels, and when we consider the small proportion they bear to the total quantity of timber in a building, it is surprising that men will injure the stability of a structure by crimping their scantling. Gutter-plates in V roofs also afford a grand opportunity to the cheap constructor to save timber; it is unnecessary to state that he does not hesitate to avail himself of it, consequently in a short time there is a permanent set; this is one of the causes of leaky roofs. Light rafters of long span are amongst the things to be avoided in construction. A really good strong roof may be easily constructed by the introduction of a light truss, or by trussing two of the rafters, and placing the purlin upon the crutch formed at the junction of the strut with the rafter. By this means in small houses the span of the rafter is reduced to a minimum, and one of small scantling may be used with beneficial results. The construction of roofs by judicious trussing is a matter in which scientific knowledge will give the architect an immense advantage, enabling him to design a stronger structure with the same quantity of, and in many cases less, material. In the present mode of designing shop-fronts the bressummers are mostly formed of a baulk of timber, resting upon storey-posts of small scantling, and in many cases without any ties to the joints, to prevent the entire front from pitching into the street.

Origin of Architectural Style.

S. SMIRKE, R.A.

The experience of all ages shows that the fluctuations of style are the result of causes over which man can exercise but slight control. The varieties of soil, of climate, of available materials, are among the obvious causes of diversity in architectural style: the discovery of a new material, or of a new region: the requirements of religious, political, or commercial movement, these have been the chief agents that have given birth to those modifications of style which mark the history of our art. It may not be unprofitable to occupy a few moments in noting some instances of the operation of these external influences. The style now known as Byzantine owes its origin not to the inventive labour of any individual artist of Byzantium, but to the struggles for imperial power in Rome, which led Constantine to establish the seat of his Government on the Bosphorus, and so brought Eastern and Western art into such combination—each imbuing the other with many of its peculiarities—that this *tertium quid*, the Byzantine style, came into existence. Again, the style known as that of the Renaissance is traceable, not to the mere ingenuity of the artists at that period, but to the extraordinary growth of the power of the Turks, who, sweeping before them the degenerate remnants of Roman power, pillaged Constantinople, and scattered its comparatively polished inhabitants over Europe, there to sow the seeds of a taste for classic literature and art. The style of architectural decoration called Raphaelesque, after the great artist who first practised it, really owes its origin not to the inventive powers of that master, but to the eager excavations in search of classical antiquities which led to the accidental discovery of the Bath of Titus, the beautiful decorations of which building suggested to Raphael their resuscitation. Then, if we turn to another class of architectural design, we shall find that castellated structures, with their lofty towers and frowning machicolations, totally altered their style and aspect at about the fifteenth or sixteenth century—not from the caprices or ingenuity of artists, but because some unknown person had chanced to discover the chemical effects of combining, in certain proportions, nitre, sulphur, and carbon, thus totally altering the mode of warfare. If we descend to times nearer our own, we shall find like examples of the influence of accidental causes over the fate and fortunes of high art. Napoleon, for a while, found it his policy to take imperial Rome as his model, and to obliterate, as far as possible, the reminiscences of the ancient *régime*. Hence Percier and Fontaine, following out not an æsthetic law but a political necessity, inundated France, and, by consequence, Europe, with representations of curule chairs and the lictors' fasces, and at once the florid school of Louis XVI. was superseded by the severer forms of classical antiquity. I might draw further illustration from the ardent revival of Mediæval art in our own days. An enthusiasm which all the labours of a Carter, a Britton, and the elder Pugin failed to kindle, blazed forth, not at the call-note of archæology, but of a class of religionists who sought to feed the eye and the imagination with the materials of a more objective worship.

Contact of Metals.

G. R. BURNELL.

When two metals are used in contact in positions where moisture in any form has access to them, a species of galvanic action is established, which causes them to decay with great rapidity. Illustrations of this may be observed in iron railings, when the bars are secured to the stone curb with lead, and the decay is most evident when the iron is of the best and most malleable description. A similar phenomenon may also be observed when copper or bronze is in contact with iron in sea-water; though the iron decays rapidly, it appears to exercise a protective influence upon the copper.

Strength of Timber Beams.

C. G. SMITH.

Galileo was among the first to investigate the strength o wooden beams on purely mathematical principles; and, like many later investigators, after employing the higher mathematics to an unlimited extent, arrived at conclusions incompatible with practice. To use Tredgold's words:—"Fortunately that precision so essential to the philosopher is not absolutely necessary to the architect and engineer," consequently simple formulæ, such as $W = C \frac{b d^2}{L}$ may be resorted to in practice. These formulæ are generally deduced from actual experiment in the manner somewhat as follows:—If a beam of b inches in breadth, d inches in depth, and L feet clear span breaks with a weight W in cwts. applied at the centre, it is not difficult to determine in what ratio the strength of another beam of the same material will vary. If the breadth be double, it is at once evident that its strength is doubled; if its length be double its strength is practically halved, and, if its depth be double, its strength will be increased four times. For these reasons the sectional areas in tension and compression, as well as the distance apart of their centres of gravity are doubled, consequently the moment of resistance of the beam is increased four times, and similarly by using any other depth it will be found that this moment varies as the square of the depth. The breaking weight, therefore, varies directly as the breadth and square of the depth, and inversely as the length, therefore $W \propto \frac{b d^2}{L}$. Now, it is well known that the adhesion of the particles or fibres to one another affect the strength of a beam to an extent that can only be determined by introducing an unknown quantity. W therefore becomes equal to $C \frac{b d^2}{L}$, where C is the unknown but nearly constant quantity, the value of which can only be obtained by actual experiment. But since the strengths of no two beams of the same timber and scantling are precisely the same, it follows that no two constants will be equal in value. This accounts, to some extent, for the variety of scantlings employed for one and the same purpose. A short time since a warehouse floor gave way, and the engineers employed on opposite sides of the law action which ensued had little difficulty, by using the extremes of constants, in making their calculation suit the wishes of their respective clients. The floor was thus shown on good authority to be at the same time both amply strong and too weak. Under these circumstances the only course to pursue was to call in an independent witness, who, not being content to accept a constant which might at any time be disputed, had a beam from the floor in question tested, deducted a constant from the result, and gave his evidence accordingly. As the quality of timber varies very considerably even in the same cargo, before employing it in work of any magnitude one or more average samples should be tested, and a constant deducted on which all calculations for the strength of the timber may be based.

NOTES AND COMMENTS.

A FEW days brought unexpected luck to the French Exhibition fund, and, instead of eighteen millions of francs, the guarantees amounted to 18,373,000 frs. But it is now proposed to keep the fund open, and the more people who offer to subscribe, the less will be the individual liability. The French Government are eager to find a great number of supporters for the exhibition. It is therefore proposed to form a committee in each department who will organise local arrangements in connection with the exhibition. This is a concession. It is also proposed to raise subscriptions for paying the travelling expenses to Paris of workmen and others. As the project has advanced so far, it is likely to be realised in a successful style.

MR. WALTER SMITH, who died last week in Bradford, was one of the best known of the provincial art masters. Thirty years ago he was appointed to the Leeds School of Art, and he displayed much energy in its management. He soon established classes in Bradford. When a master was sought to organise the teaching of art in America Mr. SMITH was selected, and remained for several years attached to the educational administration. After he returned to England he was appointed to direct the Art Department of the Bradford Technical College—an office which he held until the time of his death. Mr. SMITH was a good lecturer and writer. He was one of the men who were most opposed to the stippling process which was in vogue in the Government schools, and as far as lay in his power he adopted the French system.

WHEN the sanction of HER MAJESTY was asked for the proposed Church House, it was given on the understanding that the building was not to be considered as the national memorial of next year's jubilee. It was of course believed that a different sort of memorial was to take precedence. The letter of the PRINCE OF WALES to the Lord Mayor, which appeared this week, suggests what was contemplated. As a Colonial and Indian Institute is now proposed, there is little use in questioning its suitability. But if the proposal is intended to be a means of utilising the bankrupt Albert Hall, or to cover the vacant ground near it with flimsy buildings, the most loyal subject must demur. Neither of those schemes would commemorate the event in a manner that would gladden the nation. It is well known that the authorities of that region have done many strange things because they are supposed to be in the sunshine of royal favour. But we hope they will not go so far as to seize the proposed Institute. It is not intended, we imagine, to be a place for sightseers, but a rendezvous where men of business might go when there was an opportunity to use Colonial or Indian products. The site should, therefore, be in a place that might be suggestive of the purpose of the building, and the further it is from South Kensington the better. It is, perhaps, too early to talk of the character of the Institute. We may, however, be allowed to hope that it is to be representative of the best architectural skill of the country, and which is not to be found in any Government office.

THERE is a temptation before the presidents of societies when they deliver addresses to announce something startling, and Sir SPENCER WELLS was not able to resist when he spoke at York on Tuesday. The Sanitary Institute may be a useful society, but it is not a great one, and, as yet, it has not done much to justify its title. It has hardly gained more than a footing in the country, and there is a suspicion it is simply an organisation to exalt a small clique. If the address could be taken seriously, Sir SPENCER WELLS was rather premature in proposing to transform the Institute into a College of Health, in which all the various sanitary societies might be consolidated. It appears the Sanitary Institute and the Parkes Museum have amalgamated their modest resources, and, says the President, "the National Health Society, the Ladies' Sanitary Association, the Cremation Society, the Smoke Abatement Institution, and others of a like kind must follow; while such societies as that of the Medical Men Qualified in Sanitary Science and the Society of Medical Officers of Health would find themselves more fitly placed and more usefully employed as sections of one united body than they now are." We are sure many of our readers have never heard of those societies, because they are not so successful in trumpet-blowing as the Sanitary Institute. It is possible some of them may be in a better position than the Institute, and may resent the proposal for amalgamation. But everything turns on money in the Institute. If we had only adequate funds, said the President, we could form commissions, send out expeditions, set up laboratories, museums, deliberative councils, exponents and consultants. Was there ever a more attractive prospect held out to persuade subscribers to join a society? The authorities of the College of Health, which is protected by the British Lion, in the Euston Road, may object to the arrangement, as they have a copyright title.

THE terrace of the palace of Saint-Germain has been selected as a site for the cast of TRAJAN'S Column, which was long lying in sections in the cellars of the Louvre. It will be seen to more advantage in that position than the copy in the South Kensington Museum. In the château two chambers have been arranged in the styles of HENRY IV. and LOUIS XIV. The former King had little regard for that building, and erected another château, but LOUIS XIV., before he was attracted by Versailles, was an admirer of Saint-Germain, and is supposed to have expended about 300,000*l.* on the place. The King afterwards placed the château at the disposal of JAMES II. At a later time it was used as a prison.

THE church of Walton-le-Dale, near Preston, is in a perilous position. It stands on a steep bank by the River Ribble. The bank is in danger of slipping, and should that event occur the church is sure to collapse. There are three courses before the parishioners. First, to lay out 800*l.* on a big retaining wall; secondly, to expend at least 600*l.* in reparations, for at present the building is not fitted to accommodate a congregation; and thirdly, to abandon the building and erect a new building in a safer place at a cost of 6,000*l.* There are associations about the present site, for a church was founded on it seven centuries ago. The owners of the estate are in favour of the first and second courses, but the parishioners are desirous of a removal.

AN inquiry has been made by Mr. T. HARNETT HARRISON into the constituents of the boards who administer the Public Health Act, and the results were furnished to the congress at York. Information was given in 202 cases. Although there are twenty-two classes among the 2,796 members representing those cases, Mr. HARRISON says the administration is virtually in the hands of four or five classes. It is needless to say the builders are supposed to be worst of all, for that is a fundamental principle with one class of sanitarians. The builder members of sanitary boards, says Mr. HARRISON, "generally get elected in order that they may build cheaply and in defiance of the law. The result is that the public health is often sacrificed in order that a paltry sum of money may be retained in the pockets of the men appointed to promote public health. A body of men who are elected by their fellow-men to save life turn round and kill their electors for a small fee. And one is inclined to say it serves the electors right, since the public are entirely responsible for the presence of builders on Boards of Health and for the kind of dwellings they erect." He quotes a brother medical officer of health, who writes in this strain:—"I deeply deplore that builders should obtain seats on health boards. I deeply deplore the terrific rate of infant mortality in my district, and would help in any way possible to reduce it. Of course builders of cottage property are well represented." But the amazing thing is that although on English boards everything goes by numbers, the builders are not numerically strong. Among the 2,796 members in Mr. HARRISON'S tables, only 212, or 7½ per cent., are builders. He explains their power by saying, "Verily a little leaven leaveneth the whole lump." It is foolish to talk in this way, because the builders have no society to back them; but if they had an institute, what strange stories could be told about doctors and medical officers of health!



Sw

FROM THE PAINTING

Apr. 24th 1886.



INK PHOTO SPRAGUE & Co 3, MARTINS LANE, CANNON ST LONDON, E.C.

R.

COLAS LANCRET.





The Crescent Presbyterian Church. - Belfast.

John B. Wilson. ARIBA.
Glasgow.





The Architect, Sept. 24th 1886.

Bemrose & Co 22, Martins Lane Cannon St EC



The Architect, Sept. 24th 1886.

ILLUSTRATIONS.

SUMMER.

IT must always be a subject for wonder that, at a time when the French Revolution was brewing, artists like WATTEAU, LANCRET, BOUCHER, and others painted idyllic scenes. They had no suspicion of what time was about to bring forth. LANCRET followed WATTEAU, and there were critics who gave pre-eminence to the works of the later master. The illustration we give this week is one of his most characteristic works, although this is, we believe, the first time an illustration of it has appeared in England.

THE CRESCENT CHURCH, BELFAST.

THIS new church, which is now being erected for the Linenhall Street Presbyterian congregation, occupies a fine site on University Road, between Upper and Lower Crescents. The accommodation provided is somewhat extensive, comprising, besides the church, which will seat over 1,100 persons, a hall to seat 600, arranged for division into classrooms; a lesser hall for 250 persons, session-house, vestry, ladies'-room, kitchen, &c., and ample cloak-room and lavatory accommodation. The masonry is already well advanced, and the church is expected to be ready for opening early next year. The contractors are Messrs. FITZPATRICK BROS., Belfast. The architect is Mr. JOHN B. WILSON, A.R.I.B.A., of Glasgow, whose design was selected in competition, our illustration being reproduced from the architect's drawing.

VICARAGE, MICKLEFIELD, YORKS.

THIS house is being built by the patron of the living, Mr. J. D. BLAND, of Kippax Hall, in order to supply the present want of any proper residence for the incumbent. The materials are brick with tiled roofs, and an attempt has been made to add ornament to what will be, in all essentials, a commodious residence. The architects are Messrs. CHORLEY & CONNON, of 15 Park Square, Leeds.

MEMORIAL CHAPEL, LLANDOVERY.

RESIDENCE, BOURNEMOUTH.

PROPOSED IMPERIAL INSTITUTE.

THE following correspondence has passed between the Prince of Wales and the Lord Mayor :—

Marlborough House, Pall Mall, S.W. : Sept. 13, 1886.

Dear Lord Mayor,—My attention has been frequently called to the general anxiety that is felt to commemorate in some special manner the approaching jubilee of Her Majesty's reign.

It appears to me that no more suitable memorial could be suggested than an institute which should represent the arts, manufactures, and commerce of the Queen's Colonial and Indian Empire.

Such an institution would, it seems to me, be singularly appropriate to the occasion, for it would illustrate the progress already made during Her Majesty's reign in the Colonial and Indian Dominions, while it would record year by year the development of the Empire in the arts of civilisation.

It would thus be deeply interesting to Her Majesty's subjects both within and beyond these islands, and would tend to stimulate emigration to those British territories where it is required, to expand the trade between the different British communities, and to draw closer the bonds which unite the Empire.

It would be at once a museum, an exhibition, and the proper locality for the discussion of Colonial and Indian subjects.

That public attention has already been forcibly directed to those questions is sufficiently proved by the remarkable success which is attending the Colonial and Indian Exhibition at South Kensington, and I confidently anticipate that arrangements may be made whereby the more important collections, which have so largely contributed to this success, will be placed at the disposal of the Institution.

I have much satisfaction in addressing this letter to your lordship as chief magistrate of the capital of the empire, and to invite your co-operation in the formation of this Imperial Institute of the Colonies and India, as the memorial of Her Majesty's jubilee by her subjects.

Should your lordship concur in this proposal, and be willing to open a fund at the Mansion House, I would suggest that the contributions received be vested in a body of trustees, whom the Sovereign would be asked to nominate, and I would further suggest that the institution should be under the permanent presidency of the Heir Apparent to the Throne.—I remain, dear Lord Mayor, yours truly, ALBERT EDWARD P.

The Right Hon. the Lord Mayor.

The Mansion House, London, E.C.: Sept. 17, 1886.

Sir,—I have the honour to acknowledge the receipt of your Royal Highness's letter of the 13th inst., and, in reply, to express the great pleasure it will afford me to give the heartiest co-operation and aid in the formation of the proposed Imperial Institute of the Colonies and India as the memorial of Her Majesty's jubilee by her subjects.

Your Royal Highness truly states that general anxiety is felt to commemorate in some special manner the approaching jubilee of Her Majesty's reign. There will, I am sure, be a universal desire to give expression, in a suitable and, if possible, adequate way, to the deep attachment, veneration, and loyalty which the Queen's subjects in all parts of her vast dominions entertain for a Sovereign whose long and illustrious reign has been productive, under Providence, of many blessings to her people, and been rendered memorable by the striking progress in civilisation and prosperity developed throughout the empire.

Difficult as it may be to signalise in a commensurate way the feelings which are thus naturally emphasised at the approach of the jubilee of Her Majesty's reign, I am convinced that the proposal which your Royal Highness indicates, and which has the support of your influence, will be considered singularly appropriate.

It will, therefore, give me much satisfaction to open a fund at the Mansion House for the receipt of contributions, as suggested by your Royal Highness.

I have the honour to remain, sir, with the greatest respect, your Royal Highness's most dutiful and most obedient servant,

JOHN STAPLES, Lord Mayor

To Royal Highness the Prince of Wales, K.G.

ST. MARK'S, VENICE.

THE following memorial has been sent to the Prefect of Venice by the Society for the Protection of Ancient Buildings :—

Your Excellency,—In reply to a memorial from Italian and foreign artists with regard to the so-called restoration of the interior of St. Mark's, at Venice, dated September 12, 1882, you were good enough to give the following assurance to the memorialists :—

"You must understand that the Minister for Public Education will never approve of repairs which involve alterations such as you deplore in ancient works of art, as, for example, in the last arcade to the right looking towards the basilica of St. Mark; and will no longer sanction the action of those persons who, to make work, destroyed like Vandals that which might have been preserved for future ages; neither will he approve of that fictitious restoration of which you justly complain."

The Society for the Protection of Ancient Buildings, in common with the other memorialists, accepted this assurance, as giving hope of a more reasonable treatment of the building committed to your charge, but they have recently learned with extreme regret that it is proposed to take up and relay a portion of the mosaic pavement of the nave for the purpose of correcting the undulations in the pavement caused by the subsidence of the foundations.

The Society has received reports from two correspondents resident in Venice, who have carefully examined the pavement, to the effect that as far as can be ascertained no recent settlements have occurred in the foundations of the cathedral affecting the pavement, which is practically in the same condition as it has been for centuries, and they are at a loss to understand the reason for the proposed alteration.

The Society would respectfully submit that the suggested relaying of the pavement of the nave is an entirely unnecessary work, and one, moreover, which, if carried out, will have the effect of obliterating an extraordinary and valuable peculiarity of the building.

The undulations in the flooring have existed beyond the memory of man, and have become, as it were, a part of the fabric; and some enthusiastic admirers of St. Mark's have gone to the length of believing that the undulations were purposely introduced at the time the cathedral was first built to mark the connection of the building with the Queen of the Adriatic.

The Society would particularly point to the lamentable effect produced by the relaying of the pavement of the north aisle, which work is now admitted by every one with any pretension to taste to have been a serious and regrettable mistake.

There can be no objection to repairing the pavement where defective, but this repair should be carried out by carefully replacing at once any loose, deficient tesseræ, supplying, if necessary, any missing pieces by new where required. By this means alone can the character of the ancient pavement be preserved; but, on the other hand, if the pavement, or any part of it, is taken up and relaid, the integrity of the design and the whole tone and character of the ancient mosaic will be irretrievably destroyed.

SIR SAVILE LUMLEY'S GIFT TO NOTTINGHAM.

IN addition to the letters which we published last week, the following has been received by Mr. Wallis, the Director of the Nottingham Museum :—

Rome : September 19, 1886.

Sir,—I have received three newspapers of the 7th inst., the *Nottingham Journal*, the *Nottingham Daily Guardian*, and the *Nottingham Daily Express*, giving an account of the proceedings of the Town Council on the 6th inst., at which a vote of thanks was passed for the collection of antiquities from the Temple of Diana Nemorensis, which I have presented to the Castle Museum.

Having been absent from Rome, I take this opportunity of expressing the sincere gratification with which I have received the news of the honour done to me by the Town Council of Nottingham, and of the handsome terms in which Mr. McCraith and Alderman Goldschmidt spoke of the donation in question, as well as the manner in which those remarks were received.

I have also to express my thanks for the appreciative terms in which those organs of the Nottingham press have been good enough to notice this gift. I find myself in a position of some embarrassment from the fact that the collection, which I had hoped to be able to send to Nottingham by the end of last month, has not yet left Rome, owing to the illness of the person charged with the packing, and I fear that its expedition will not be possible before the end of the month, as the steamer for Hull only leaves Leghorn once a fortnight.

The packages are more numerous than I expected, consisting of ten bales and sixteen cases. They will be addressed to you, to the care of Messrs. Bailey & Leetham, Hull. Each package will bear my seal, and I will write to the Customs officers at Hull to inform them that the contents consist of antiquities destined for the Castle Museum, Nottingham.

I am preparing translations of extracts from the "Bulletin" published by the celebrated Archæological Institute founded at Rome by the late King of Prussia, from which you will see what interest is evinced by the learned professors of that Society in the discoveries I have made at Nemi, and the importance attached to the relics of antiquity found during my excavations.

These translations I hope to be able to forward to you in a few days.—Believe me, yours truly,

J. SAVILE LUMLEY.

G. H. Wallis, Esq., Director and Curator of the Nottingham Castle Museum.

INDUSTRIAL ART.

A MEETING was held in the Birmingham Municipal School of Art last week for the purpose of distributing prizes. Alderman Kenrick, M.P., presided.

The Chairman, in his address, claimed that they were doing most valuable practical work. Any student who learnt practical geometry—who learnt to draw either as a machinist or as a building contractor—was advanced enormously in a great many of the trades and callings carried on in the town. Again, they were teaching in every one of the branch schools, as well as in the central school, elementary modelling, a purely technical art which was of the greatest use to the carver, the designer, the art-worker of every kind, whether he cut out metals, reset jewels, or whatever else. In elementary modelling the number of students passed this year showed a very remarkable increase. They thought they were doing pretty well last year when they passed twenty, and that number was only exceeded by one school, that of Sheffield, which passed 23, while the total passed in all the schools of England was only 138. This year they had passed 65. The examinations in solid geometry, building and machine construction and drawing, yielded this year 12 "excellents," against 3 last year, and 105 passes, against 75. In the third grade examination the number of passes and "excellents" in 1885 was 279; this year it reached 346. As last year they were ahead of all the schools in the United Kingdom, South Kensington coming next with 198, and Manchester third with only 60, he supposed they were this year almost out of hail of the other schools. They had met with a little reverse in one respect, for in the national competition for medals and prizes Manchester was first with 40, and Birmingham was second with 28. But Manchester had got all these prizes, with the exception of nine, in one department of study, viz. designing, while in the case of Birmingham the prizes were pretty equally divided over every subject of study, so that he might say their condition was sounder than that of the Manchester school, and he believed they would soon overtake Manchester in designing as they had done in other subjects.

Mr. E. R. Taylor, the head master, said the courses of lectures in design, architecture, sciography, and the history of art had been increased, and both lecturers and students had worked very hard and successfully. Last year in those of the advanced examinations for which these lectures prepare they passed fifty-three, this year 132. The lectures and classes in architecture were only commenced last year, and he wished to draw the special attention of architects' pupils and those engaged in the building trades, and also of those wishing for a thorough art training, to this part of the course. The standard of the examinations which the students had this year so successfully passed is as high as, if not higher than, that for the diploma of the Institute; and, indeed, they would be glad to prepare students for that examination also. Architecture had again begun to exert its legitimate influence in the higher walks of painting and sculpture, as well as in the designs for manufactures. The divorce which has so long been fatal to the cause of art was ending: architects were becoming more artistic, and painting, sculpture, and design were becoming more in accord with those high æsthetic laws which governed all real architecture. Mr. Taylor went on to give some advice to the students as to the methods of drawing, and to contend that if it be given fair play the faculty of imagination, so important an element in art work, is much more prevalent than has often been supposed. Ignoring it, people had tried substitutes for it. About thirty years ago almost every article of manufacture was in whole or in part a copy of some natural form. Then came literal thefts of scraps of historic art, and the publication of Owen Jones's "Grammar of Ornament," of which every manufacturer in England must have bought a copy. Indeed he saw indications that we were getting back to the naturalistic craze. Some of our best manufacturers said so, and, sad to say, were catering for it. The aim of the school was to develop and direct the imagination by really teaching to draw, instead of merely to copy; by allowing, concurrently with this, the exercise of the imagination so soon as any material had been obtained by the student; by encouraging decorative treatment of all studies from nature, including the figure; by exercise in design, based on such of the historic styles as have been mastered. All design work should be an exercise of memory and imagination, whether in designing from natural forms or attempting as an exercise a variation of any form of historic ornament, or a more original exercise based on a style. If the student have only sufficient knowledge to work when the material was before him, he had not yet acquired enough to enable him to design. In some instances, such as *repoussé* work, engraving, decorative etching, terra-cotta, wood-carving, painted decoration, and others, he was sure the committee would be glad to offer facilities for such as are engaged in these trades to carry out their designs in the school. In a paper read before the British Association he endeavoured to point out some of the difficulties which in the late past stood in the way of a real growth of art in our manufactures, and which in many cases still held their ground. In furniture there had during the past thirty years been some improvement; but in pottery, for example, there was on the average little that was artistic. There was not a manufacturer in the Potteries who could be considered as a worthy successor to the great Josiah Wedgwood. He had the art instinct, was an enthusiastic student of chemistry, had much engineering skill, in which he had also the help of Boulton or Watt; and at the same time could sit on the potter's wheel and show his workman what he wanted. United with these was skill in business and administration, which enabled him to build up an establishment which reached a world-wide fame. His ability and foresight, combined with practical knowledge of the details of the manufacture, taught him that daily development, both artistic and scientific, was necessary equally to fame and financial success. At the present time the aid of art was t often sought only to stay a dying demand, and then it was of the most scrappy character—just enough to stop the gap. So long as the demand continued, few would care to pursue art for its own sake, and as a means of raising the standard, other than financial, of their productions. With many manufacturers the notion prevailed that art is an adjunct and not an essential to their productions. Even the few who had a knowledge of art had so little faith in it that their cry was, "Art does not pay; the public will only have ugliness and novelty." Throwing the blame on the purchasing public was a constant cry, but the public could not select that which was not made for them. In art supply must precede demand. Happily this question had now got beyond mere argument or speculation, and the public

would select beautiful things instead of ugly, to such an extent at least as would warrant manufacturers in catering for this improved taste, for in many cases, besides furniture, design and execution had improved vastly of late years. But to get rid of the hindrances would require the united work of both masters and men, and to this end all should encourage hand labour and decoration, accepting frankly its want of mechanical precision and power of exact repetition. There had been too much demand for mere technical skill, to the loss of simplicity and individuality of expression. Simpler patterns and methods of expression more suited to the material, instead of trying to make things appear what they were not, would often, under artistic direction, enable hand-work to compete with machinery. It was unnecessary to dispense with all machine work; but, as the first cost of a design bore so small a proportion to the cost of each article, the highest skill and taste ought to be employed. Except for the cheeseparing suicidal policy which too often prevailed, machine-produced goods might be examples of a higher quality of design and technical skill than would be possible in hand labour, although they would lack that charming variation in each which was to be found in all true hand-work. No stronger proof of art progress could perhaps be given than the interest which was awakened in some public bodies and among manufacturers and tradesmen in the architecture of their town. Some of the buildings in the centre of Birmingham, its Board schools, and others, could not but have a stimulating effect on the quality of art manufactures. But even here the curse of quantity instead of quality of decoration sometimes spoiled the proportion and repose of a good design, while at the same time there were good and artistic carvers in wood and stone to do the work well. Some towns, on the other hand, unlike Birmingham, were still dead in this respect; as, for instance, a town in which the material of the manufacture is specially suited to adorn its buildings—Burslem, the birthplace and home of Wedgwood. In conclusion, Mr. Taylor pressed upon the students to make use of the noble collection in the Art Gallery. Besides sketching there, let them use it as a memory exercise; study earnestly one example, such as the Persian ware in the north gallery, or a piece of carving in the Italian court, and afterwards try to sketch it from memory. This would be a great help in designing. Two points in this year's programme were worthy of attention. The more valuable prizes were given for decorative work, and the scholarships were no longer limited to those who in previous years obtained free admissions, but were open to the whole school.

THE YARMOUTH TOWN HALL.

AT the monthly meeting of the Yarmouth Town Council, which was held last week, the condition of the town hall was again brought up. A report was presented from the Works and Repairs Committee, which stated that two resolutions were before the Committee for discussion. One proposed that the advice of Messrs. Bottle & Olley be followed, and that the west portion of the town hall should be taken down and rebuilt. The second resolution proposed that the whole of the present building should be taken down and rebuilt on another site. The Town Council did not arrive at any conclusion.

The following is the report of Messrs. Bottle & Olley on the reparation of the building:—

In reporting on the present condition of the town hall, we think it desirable to deal first with the westernmost part, up to points a few feet beyond the east wall of the assembly room, and then with the remaining or easternmost portion. The reason for this division is that the western portion is far the heavier, and has settled to a much greater extent, the fissures showing in the eastern portion being partly due to the drag of the heavier western section. The subsidence of the western portion, up to the limit above mentioned, has been from 6 to 12 inches, the greater subsidence having taken place in the west wall, especially at the south-west angle, and, since the recent operations, at the north-west angle also. This portion is, to a considerable extent, separated by serious fissures from the eastern portion. The fissures showing near the north-west angle are very serious, and there are various others along the west front and south return, as well as in some of the internal walls. The over-hang along the west front (especially near the centre) is also very considerable. It must also be remembered (and this is an important point) that two-thirds of the total subsidence occurred during the erection of the building, and that though the serious fissures thus caused were concealed, and to some extent made good, they were still sources of weakness, so that the fissures now visible gave a very inadequate notion of the defective condition of this portion of the building.

We have carefully considered the best method of dealing with this western section, and, bearing in mind the various movements that have taken place, the very serious settlements and resulting fissures, the considerable overhang of the west front, the deplorable condition of the north-west corner, and the nature of the subsoil, we are decidedly of opinion that the wisest and only safe course is to pull down, provide proper foundations, and rebuild. The subsidence has evidently been going on up to the present time, and during the last twelve months (according to our information) to a greater extent (proportionately) than before. This subsidence (with 18 feet of soft ooze under foundations before any weight-bearing stratum is reached), will, in our opinion, continue, and cause the building to go from bad to worse. With ordinary soils compression takes place, and a building soon reaches its bearings; but in this case we are sceptical as to the possibility of securing the requisite degree of compression before the building is utterly crippled, especially as there would, no doubt, be some lateral movement of the subsoil. We would further remark that even if effectual means could be adopted to prevent any further subsidence the west wall and its returns would still be both unsound and unsightly, and possess scarcely any elements of durability.

The condition of the eastern portion of the town hall, though not satisfactory, is much less serious than that of the western portion. There is one point here which should, we think, be dealt with at once. The heavier western section has evidently been dragging the eastern part with it, and the effect of this has, we think, been much aggravated by the ties that have recently been inserted in the hope that the lighter eastern section would assist in holding up and supporting the heavier western section. The result has evidently been just the opposite, and as it is desirable to save the eastern portion, we think the connection between it and the heavier western portion, should be severed as quickly and completely as possible. Various settlements have taken place in this eastern portion of the building, and it is instructive to note that these, as a rule, show internally just beyond the limits of the old town hall, indicating that the soil underneath the old structure had, in the course of time, been somewhat improved in its weight-bearing capacity. Apart, however, from the drag now on this portion from the western section, we do not consider its condition very serious, and are of opinion that (if this drag is removed) it may be made secure. The main reasons for the better condition (relatively) of this portion are no doubt—(1) that the weight is much less; and (2) that the subsoil is better, having less depth of ooze. No borings have been taken here, but there is no reasonable doubt that the sand slopes upwards very rapidly from the river. The borough surveyor informs us that in the shaft sunk near the north-west angle the upward slope of the sand bed was more than one foot from west to east in the 9-feet width of shaft. Certain works of repair would be required to this portion, and probably some amount of underpinning, so as to obtain greater spread in foundation without going down lower than the present concrete. But we believe that when these works have been carried out, and the western portion of the hall rebuilt, so as to act as a support instead of a drag, there would be very little further settlement.

The question of foundations for the western portion of the hall prior to rebuilding is, of course, one of the utmost importance. We are convinced that absolute security cannot be obtained on this site without taking the foundations required for such a heavy building down some 25 feet, so that they rest on the solid sand and gravel. This stratum may be reached either by piling or by cylinders, and we are of opinion that for the main walls cylinders are decidedly preferable in the present case. A few screw piles might perhaps be required at certain points under some of the internal walls, although for these internal walls generally all that is required for security is a wide bed of good cement concrete. The cylinders would be of cast-iron, in sections, and from 6 to 9 feet in diameter, as required. They would be filled with good Portland cement concrete (in which the concrete blocks already made could be used) and would form a perfectly safe and durable foundation.

As to the probable cost of these operations, we may remark that of course we can at present give no more than a rough approximation, as we have not had time to go very minutely into figures, and in any case it would be much more difficult to give an accurate estimate for work of this kind than for an entirely new building. Our opinion is that the cost would be approximately as follows:—Taking down west portion, 1,650*l.*; new foundations as proposed, 3,150*l.*; rebuilding west portion, 7,200*l.*; repairs, &c., to east portion, 600*l.*; total, 12,600*l.*

It may perhaps be thought that this estimate is a full one; and in fact we have wished to make it so, or rather, we have desired to lay before the Council, so far as our judgment goes, the full extent of the liability if the foregoing suggestions are carried out. There are, no doubt, other possible methods of dealing with the town hall, but we are strongly of opinion that they would involve great uncertainty and risk; and our belief is that the Council wishes now to apply, not a palliative, but a cure; to provide, not a possible, but a certain remedy. If it should be decided to adopt the foregoing suggestions, and to entrust the carrying out of the same to our care, we can

assure the Council that the matter shall have our best attention, and that we will spare no time or trouble in order to bring about a satisfactory result.

METHODS TO BE USED IN TAKING QUANTITIES AND MEASURING UP WORKS.

BY THE MANCHESTER SOCIETY OF ARCHITECTS.

(*Concluded from page* 172.)

Plasterer and Painter.

1. State description of materials, and keep the work of each kind separate.

2. Plastering on walls to be measured from the floor upwards, or from the point where each description of work commences.

3. Where cornices are lathed on brackets, measure ceiling and walls to the edge of the brackets only.

4. Where cornices are not bracketed, measure the ceiling full size of room, and the walls up to ceiling; all in super yards.

5. Deduct all openings 100 square feet and over; deduct materials and add labour (hollows) for net sizes of doors, windows, fireplaces, and other openings under 100 feet super.

6. Where ceilings are panelled and coffered, or coved, girth round all portions that are lathed, keeping circular work separate.

7. Ceilings plastered between spars, &c., to be measured across the spars and purlins, and even then kept separate, and described as such.

8. All work run with a mould to be measured lineal on the wall and the girth given, as cornices, rustics, strings, architraves, soffits, quirks, &c.; count all mitres, with the girth of mould they belong to; count mitres in panelled work.

9. All cornices, &c., lathed on brackets to be kept separate, and described as such.

10. All cast work to be counted, except running enrichments.

11. Enriched members to be measured lineal, with girth.

12. Modelling of enrichments to be, if special, so stated, and the models to be the property of the architect.

13. Ceilings or walls covered with panels, formed by small molds, to be measured super, with illustration or drawing, for "extra price over plain work;" larger panelling or special decorative features to be measured in detail.

14. Angles to pilasters, &c., if specially formed in cement or otherwise, to be so measured, lineal and extra to plastering.

15. Door and window frames, bedding and pointing, to be counted, and state material to be used; also flushing to inside of frames after fixing, or behind casings, window backs, or other work to be given.

16. Making good generally, and after plumber, gasfitter, bellhanger, &c., and chimneypieces, as an item, stating numbers.

17. Colouring and whitewashing walls, &c., to be in super yards, measuring over all openings under 100 super feet; if the work has to be pointed by the plasterer, state so.

18. Painting to include stopping and knotting, and to be given in square yards. Priming to be separate, if on work painted before being fixed. Painting to be girthed round all exposed surfaces, except as below.

19. Balusters, if ordinary square, and grids, gates, and other metal work painted on both sides, with bars about 5 inches to 6 inches apart, to be measured one surface only; if closer or slightly ornamental, 1½ surfaces; and for very close or very ornamental work, 2 to 2½ surfaces.

20. Windows to be measured each surface over full size of opening for painting frame and sheets, or else the frames counted, and the sheets, if large squares, counted; but if in small squares (as old-fashioned crown-glazing), then count the squares instead of the sheets.

21. Fancy or ornamental painting to be measured in detail, with lengths of mouldings picked out, gilt, &c. All work in parti-colours to be kept separate from plain work.

Plumber and Glazier.

1. The lead to be reduced to weight, and the different kinds of work kept separate, as gutters, flashings, valleys and ridges, and flats; the work requiring solder, as cisterns and cesspools, dressing over finials, and other fancy work; allow proper lap, as specified, to flashings, drips, and rolls; the net quantity of lead, as fixed, only to be measured.

2. All water, supply, service, waste, or other pipes to be given in lineal feet, with the weight per foot or thickness; the dimensions stated to mean in all cases, whether specified or not, the clear internal bore. The price to include all soldering and forming joints, wall hooks and fixings.

3. No allowance to be measured for sockets and joints in iron piping, down-spouts, &c.; but state whether flanges or holdfasts are to be included.

4. If pipes are to be laid in trenches in the ground, state so, and how, and whether plumber is to do the excavator's work.

5. Count all traps, and also all bends and shoes to down-spouts or soil-pipes, spitters from cesspools to spouts, rain-water heads, taps, plugs, overflows, wastes with plug and washer, water-closet and bath fittings (the pipes thereto and therefrom measured with the other piping), wash-basins, urinals, hot-water cisterns, and other special fittings, and in all such instances to give a clear, unmistakable description of what is required, or the price, exclusive of fixing.

6. Iron gutters and down-pipes to be measured in lineal yards; no allowance for joints, but elbows, stopped ends, &c., to be counted and described.

7. The different descriptions of glass, with thickness or weight per foot, to be given in superficial feet, assorting each into different average sizes, and keeping bent sheets separate. Curved or other special edges to be measured lineal, the glass being first measured the size such special shape has to be cut from. Special descriptions of work, such as lead lights, &c., to be described.

8. Pointing to flashings to be measured lineal and described.

9. Making good and leaving all perfect at conclusion of works, as an item.

Ironfounder.

1. The most suitable method is to reduce each description of work to weight, keeping columns separate from beams, small castings from large, and intricate ones, as railing, grids, &c., separate from plain ones; the cost to include pattern making; any fancy work to be specially mentioned, and the castings from each such pattern kept separate from others; the metal to be taken at 40 lbs. per foot super, 1 inch thick.

2. State whether price to include fixing. (*Vide* No. 45 in Carpenter.)

3. Special labour, as turning columns, coupling boxes, &c., to be given in detail.

4. State whether beams are to be tested, and if at contractor's expense and risk.

5. Bolts and other small fittings to be counted and described, with the labour necessary in preparing for and fixing them.

6. State whether lead or other material is to be found for running lugs, &c., and indicate the number of them.

7. Long bolts, tie-rods, &c., to be measured lineal, with allowance for head and nut, and count the number of nuts, and screwing, and washers.

8. Swing sheets, gates, &c., and their fittings, hangings, and fastenings to be fully described and counted, both for materials and labour.

9. In measuring wrought-iron beams and framework ascertain the weight of metal in plates and other shapes, adding the rivets and bolts, with the labour separate, on any particular forgings or cuttings.

10. All wrought-iron rolled or built girders to be fully described and given in lineal lengths, with section.

11. If painted before fixing, to be measured in full.

Slater and Tiler.

1. State size and description of slates or tiles, nails, and battens, and whether and how pointed underneath, and amount of lap.

2. The usage varying with respect to allowances at eaves for double course, and hips and valleys for waste, the Manchester Society of Architects purposes to measure slating net as finished, and to give the length of eaves for extra price of double course, and the length of each bevelled edge at hips and valleys, &c., for "single bevel cutting and waste," and also the bevel cutting where so done to land-gutters, &c. All openings of 100 feet to be deducted entirely, and any others, but allowing for labour as "hollows" below that amount down to 6 feet super, below which no deductions to be made. Any special cutting, as close hips, &c., to be separately mentioned and described.

3. In tile roofs, hips and valleys to be measured lineal, and fitting included.

4. Ridge tiling to be fully described and given in lineal yards, and state how to be bedded and pointed.

5. Pointing to overhanging eaves and gables in lineal feet.

6. Sweeping and cleaning out gutters, leaving all clean and perfect.

7. Circular slating, fancy courses, slating to spires, or other special work to be kept separate and fully described.

Sundries.

Floor or wall tiling, paperhanging, cooking and heating apparatus, bellhanging, and gasfitting are generally matters of separate arrangement with the tradesmen. If requisite to include the two latter, bellhanging may be given at so many bells with one pull and so many with two, the furniture being described and counted; gasfitting at so much per position, exclusive of meter, for piping and brass bits, or else measured in detail as for water-piping.

AMERICAN SANITATION.*

By JOHN B. GASS, A.R.I.B.A.

IN the following paper I propose to give a general account of the leading methods of sanitation adopted by American architects and engineers, noted by myself during a professional visit to America last year. Having had the honour of being elected by the Council of the Royal Institute of British Architects to the Godwin Bursary and Medal for 1885, I travelled with official letters and introductions to examine into and report upon American methods of building, construction, arrangements, sanitation, &c. My report on the latter subject, though probably not presenting anything new to specialists, may, I trust, be of some little general interest.

It is only of late years that much attention has been given in America to the sanitary arrangements of towns and buildings, and the better understanding of what precautionary measures are necessary for the public health. Architects and engineers recognise the importance of sanitary matters, and manufacturers are stimulated to develop appliances to meet the latest sanitary requirements. The American public mind has been stirred in these matters, and the National Board of Health at Washington, and the Boards of Health of the various States, are doing excellent service. The reports of the Washington Board, which (I believe) are in the library of the Sanitary Institute, and which I brought over for the library of the Royal Institute of British Architects, contain information of much value, though unfortunately the last report is only of small dimensions, owing to the limited appropriation of money granted by the Government. In many of the cities there are stringent sanitary regulations, which are very good, but, unfortunately, they are not always carried out, as the curse of the speculating and jerry builder hangs over America as well as England. Building inspectors are not always able to insist on a full carrying out of their regulations, and perhaps even building inspectors have occasionally the "itching palm" with which the American public service is so much credited. In one city, where the plumbing regulations are very strict, I was told that the purchasers of a row of good houses, on entering into possession, found that all the elaborate plumbing fixtures were without any service or waste piping at all.

As the ordinary system of city drainage takes rain and storm water in addition to foul water, pipes and culverts of large diameters are used. In hot and dry weather, which often lasts for a considerable time, when there is the greatest decomposition of sewage matter, there is no storm-water to flush; and there is also a decomposition of filth in the street water catch basins. There is also the difficulty of ventilation, and the storm-water makes an embarrassment in the treatment of the foul sewage. In some parts of Philadelphia the slop-water from the houses discharges into surface gutters in the streets. These are very objectionable, particularly in hot weather, when the smell is very offensive; or in frosty weather, when the foul water freezes. Many of the American cities are badly drained, and the disposition of the sewage is often a matter of great difficulty, owing to the sites of these cities being often very flat. There are very ingenious systems for its treatment and disposition, but in practically the majority of cases it is turned directly into the nearest river, lake, or sea, without any treatment whatever.

The connection of any good system of house drainage to the ordinary main sewer is trapped with "breather" pipe on the house side. This, where possible, is at some little distance from the house, and anyhow away from window or door; it is carried about 5 feet above ground, of good diameter, and with end turned downwards. In cities where the main drainage is only at the front of house and the closets, bath, &c., at back, it is necessary to run the pipes through the basement. This inside drainage is very common. The iron soil-pipe passing through cellar is carried, if practicable, in full sight along the face of cellar wall, or suspended from the floor beams. If it is carried under floor it is encased in strong cement concrete with sealed hand holes for cleaning. Where passing through foundation wall an arched opening is left, and the iron pipe taken at least 5 feet outside, where it is connected with the earthenware drains. If the ground is not solid the iron pipe is carried further and encased in concrete—this gives greater certainty of tightness and correct grading. When the trap disconnecting house drainage from main sewer is on the soil-pipe, and inside cellar wall, it is of iron and fitted with cleaner, the breather-pipe being carried outside to curb or fence wall with gird at end.

The ordinary system of city drainage being very defective, it is interesting to note a departure from it in the sewerage of the city of Memphis. Here is the best known and largest example of the application of the result of the investigations in various cities, by order of the United States National Board of Health. In these cities the main sewers were gauged to determine the actual size of pipes needed for the removal of the greatest amount of foul sewage matter only, produced under various circumstances. These gaugings (a full account of which was published in the Board's report for 1885, fo. 354) show conclusively that for foul sewage matter for a large population main drains of only small diameter are necessary.

Colonel Waring, of Newport, R.I., the engineer who designed the Memphis sewage scheme, communicated a paper to the Sanitary Institute in September 1880, giving a full account of this work, which is no doubt familiar to the members. It has now been in use over five years, and the practical working appears to have been very satisfactory. To recall the main features, I may state that Memphis is a city on the Mississippi, of between forty and fifty thousand inhabitants. The main drainage system is for foul sewage only, and when complete will have a total length of about forty miles. There being very few cellars, and the ground having a good natural fall, the drains were laid about 6 feet deep. No outlet drain from any house was allowed more than 4 inches diameter, the tributary mains being 8 inches and 6 inches diameter, and the two mains commencing from 8 inches diameter, and increasing to 12 inches and 15 inches diameter, all being of socketted glazed pipes. The two mains are joined together into a 20-inch brick sewer, which has switches turning the drainage into a 3-feet iron pipe for the high water outlet, and into a 20-inch iron pipe for the low water outlet, the extreme variation of level in the river being 35 feet. On the main lines, manholes have been put in at intervals. No house connection is trapped, but each has an unobstructed ventilator reaching to top of roof; this gives vent to about every 30 feet of sewer. Every slopstone, water-closet, sink, &c., has an independent trap; hopper closets are insisted on, the sanitary regulations are very strict, and all plumbing work is inspected by engineers. The whole system is flushed daily or half-daily with about 150 Rogers Field's well-known automatic flush tanks, supplied with town's water, and placed at the dead end of every branch to thoroughly flush each length; each flush tank discharging about 100 gallons in forty seconds thoroughly scours the pipes. The subsoil drainage is by agricultural drain tiles, 1 inch to 3 inches diameter, laid beside sewer and in same trench. These discharge into the nearest watercourse, or on very level ground into the main sewer, with special precautions against sewer water backing up. Storm water is removed by surface gutters with outlets through shallow conduits easily accessible.

On this system there have been official reports by Mr. Gardiner, for the Board of Health, New York State, and Mr. W. H. Baldwin, C.E., the latter dated March 29, 1884. The following is a summary of these reports with regard to the working:—"In the mains, from 10-inch and over, a deposit is found of fine silt, supposed to be mud and paper pulp; this is cleaned out once a month by rope and steel brush being dragged through from manhole to manhole. In the lateral sewers there are very few stoppages; where stoppages occur they are from schools or shops only, and in pipes 6-inch diameter and under, and caused by sticks or pieces of metal getting crosswise in the pipes. For stable washings catch-pits have been found necessary. A few T cleaning pipes have been inserted, and hand-holes are now put in all extensions about 100 feet apart. Some of the sewers are 2,000 feet from the mains, and the longest lines generally run about quarter full. Overflows had to be provided for taking the water in winter, when the water taps are left running in the houses to prevent them freezing. Neither in removing obstructions, in cleansing the main sewers, nor in connecting with house drains is the odour of sewer gas ever observed."

This system was adopted at Keene, N.H., and executed in 1882–83. I am informed that it is working well, though the greatest fall is only 4 inches in 100 feet, the lowest fall being one-tenth of an inch in 100 feet, and that line nearly two miles long. It is also being used in parts of Paris and other places, and may, I think, on a large scale be considered a success.

In the country districts, where there is no regular system of sewerage or convenient watercourse, house wastes are disposed of by means of cesspools, the commonest form of which is the "Leaching cesspool," which is only of use in sandy or gravelly soils, and should not be used where there is a chance of contaminating water supply. They are built circular, 8 to 12 feet diameter, of depth requisite to reach an absorbent stratum; the sides lined with dry wall of stone or brick, and the top drawn over dome-shaped, with manhole at top, covered with loose flat stone and earth over. Subsoil irrigation is being much used, the sewage being conveyed to tight cesspool or tank, having outlets to irrigation field or surface by a series of open-jointed tiles. Rogers Field's automatic flush tank is used most successfully, as also are ordinary tight cesspools placed at a higher level and let off at intervals. The tight cesspool with overflow at top is also in use, but, as the sewage water is not delivered intermittently or in large quantity, it is not successful.

To prevent damp in cellars or foundations, under-draining is resorted to, and formed with agricultural drain tiles of small

* A paper read at the Congress of the Sanitary Institute on Thursday last, September 23.

diameter, well graded, and laid with "muslin" joint or paper cap below level of foundation. This is kept separate from other drains, and discharges into watercourse if practicable, or, if connected with main drainage, is carried some distance from house, and tiles stopped at least 10 feet from connection, this length being filled in with very fine sand or gravel. When a gravel under drain is used it is excavated for as tile drain, and bottom filled in to about 12 inches deep with sand or fine gravel.

To prevent ground smells rising in house 6 inches clay puddle or thick coat of asphalte is put under floors and rammed in at side of wall.

Plumbing.—Lead is mainly used for plumbing in England, but in America iron takes its place, being used for soil-pipes, supply-pipes and wastes, except in cases where there are many bends, or in branches of small diameter.

The soil-pipes are generally of cast iron of extra thick metal, with turned socket-joints, made with oakum driven in tight, and finished with melted lead, which is tightly caulked after being put in place. Joints are also made with sal-ammoniac and iron filings; turned socketted cone-joints are used, and flange-joints, bolted together, with lead-washer, star-shaped in section, which flattens out when bolted up and forms a good joint. Wrought-iron soil-pipes in long length, with bolted flange-joints, are also used. The soil.pipes are usually coated with asphaltum, inside and out; some are enamelled inside, or dipped in patent solution, of which there are many sorts.

Owing to the severity of the weather in winter, it is often necessary to keep the soil-pipe inside the house or inside "plumbing tower," kept heated in winter. It is used as the waste for all the plumbing fixtures, the pipes being prepared with the necessary Y branches for connections. Where lead pipe is connected with the iron, a tinned brass joint-piece is inserted, caulked to iron pipe, and the lead pipe connected to it by a wiped solder joint. Under ordinary circumstances, 4-inch soil-pipes are generally found sufficient; in 3-inch pipes there is better flushing, but greater danger of syphonage upon lateral branches; this danger decreases by the use of larger pipes, being in inverse proportion to the diameter of pipe.

The soil-pipe runs up to the roof of full diameter, then for a length at least on the outside of greater diameter, using an increaser joint of 4 inches to 6 inches, which is said to give effective increase to the movement of air. At the top a spherical wire basket is placed to prevent obstruction. Ventilating cowls or covers of any sort are objected to by many as obstructing the current and increasing the friction, particularly so during calms or light winds.

The soil-pipes are carefully tested under hydraulic pressure, or by air pump and pressure gauge as used by gasfitters; the plumbing fixtures are afterwards tested by the usual peppermint or smoke tests.

Extreme simplicity of plumbing arrangements is advocated, and in some very large houses I visited carefully carried out. The water-closet is arranged to do duty as urinal, slop-sink, &c., and water drawn by housemaid from bath taps or stand pipes. All wastes and traps are exposed to view with absolutely tight blocking for every pipe hole, and no wood casings to closets, washstand, or bath. For water-closets the seat is formed of hard wood, on cleats at sides, and hinged to be turned back. Most of the water-closets are imported from England—the Brighton, Jennings', Hellyer's, and others being in use. The distinctively American ones are cleared by syphon action; the "Dececo" is on the principle of Field's flush tank, and seems to answer very well, but the trap cannot be ventilated, as it would interfere with the formation of vacuum before the syphon will act. There are others on the same general lines of varying values, some of which are arranged with air pipes to traps, which are kept closed by valve, except in case of under-pressure. Urinals are rarely found except in hotels and public buildings.

(*To be continued.*)

CHURCH BUILDING AND RESTORATION.

Aberdeen.—A Congregational church has been erected at the corner of Esslemont Avenue and Skene Street from the designs of Messrs. Matthews & Mackenzie. The style adopted is Italian Renaissance. Two kinds of granite are used in the building, the rock-face work in the corners and lower part of the wall being built of the dark-grey Rubislaw stone, while the dressings and more ornamental work are formed of light Kemnay granite. On the north side is a semicircular apse. The projecting porch at the south-west corner, which covers the main entrance, is intended to form the base of a tower or spire, surmounted by a dome, which formed part of the original plan, but has been temporarily abandoned for lack of funds. The church is 87 feet long, including apse, and 33 feet wide, and the height to ceiling is 32 feet. Boyle's concealed ventilators have been adopted. The contractors are, for mason-work, Mr. Leslie Smith; carpenter-work, Mr. William Dawson; plumber-work, Messrs. Thom & Strachan; plastering, Messrs. Kirk, Piggot & Co.; slater-work, Mr. James Wilson; painting, Messrs. John Mason & Sons. The total estimated cost of the building is about 3,000*l.*, exclusive of site.

Aberdeen.—All visitors to Aberdeen know that Oldmachar Cathedral is the most interesting example of Mediæval work that is to be found in the Granite City. It is used for Presbyterian worship, but it has the disadvantage of having no accommodation for classes and other meetings. A new hall, to be called St. Machar's Hall, was lately projected for that purpose, and the building, which is in Dunbar Street, will shortly be completed. In style the building corresponds with the cathedral. The main hall measures 56 feet by 38 feet, and will accommodate 500 people. The roof of the hall is open-timbered, and of a very high pitch, so as to give large internal cubic space, the height from the floor to the lower ties of the roof being 21 feet, and from the floor to the ceiling 28 feet, while the height of the side walls is but 18 feet. The architects of the new hall are Messrs. Ellis & Wilson, Bridge Street, Aberdeen

Chester.—St. Peter's Church is to be rearranged according to plans by Messrs. Douglas & Fordham, the contractor being Mr. W. Freeman. The tower is to be repaired, the west gallery and old vestry will be removed, new windows will be inserted on the south side, and where needful other windows will be releaded and reglazed. All the whitewash on the walls is to be scraped away. The Ecclesiastical Commissioners have granted 2,000*l.* towards the cost.

Edinburgh.—The memorial-stone of the new Baptist church in East King Street was laid on Saturday. The building is Gothic in style, and measures 31 feet by 55 feet. Seating accommodation has been provided for 250 persons. The architect is Mr. D. A. Crombie, Edinburgh, and the contractors Messrs. John Jack, mason; A. Henderson, joiner; W. Thompson, slater and plasterer; and W. Kyle, plumber. The church is expected to be ready for occupation in February.

GENERAL.

Mr. Watts's collection of paintings which he has bestowed to the nation will be shortly exhibited in the Castle Museum, Nottingham.

The National Competition Drawings have been on view during the week in Manchester. The local school of art was exceptionally successful this year, having won two gold medals, nine silver medals, and eleven bronze medals, with other prizes.

The Pictures sold out of the exhibition at the Manchester Art Gallery up to the end of last week numbered 47, of the value of 3,660*l.* 11*s.*

The Electric Light was on Saturday introduced into two of the rooms of the Walker Art Gallery, Liverpool.

An Exhibition of ecclesiastical art will be opened on Tuesday next in the Pavilion, Brighton. It will comprise both ancient and modern examples.

Excavations in Kertch have brought to light in the Woronzafskaia the marble basement and pedestal once supporting a statue. The inscription on one face of the pedestal, still in perfect preservation, records that the missing statue was raised by Marcus Aurelius in honour of Tiberius Cæsar.

The Howson Memorial Fund, amounting to 2,200*l.*, is (after paying for a memorial brass) to be applied towards discharging the liability incurred by the late Dean of Chester on account of the restoration of the cathedral.

Professor W. M. Conway is, during the next session, to lecture in University College, Liverpool, on the history, arts, and antiquities of Assyria and Chaldæa.

Major Cole, R.E., of the Survey of India, will probably succeed the late Lieutenant-Colonel Morant as consulting architect to the Government of Madras.

St. Thomas's Church, Stourbridge, is to be altered and enlarged. Parts of the building are in a dangerous condition.

A Petition from the citizens of Versailles, drawn up by M. Dussieux, one of the professors at the Military School of St. Cyr, prays the Senate and Corps Législatif to take steps for keeping the Château and its annexes in proper order.

A Public Meeting was held in Stirling, on Monday, when it was resolved to apply for a building grant for the erection of a new science and art school.

The Monument erected by public subscription over the tomb of Henri Conscience in the Kiel cemetery at Antwerp, was unveiled on Monday. The monument is the work of the sculptor Joris (to whose chisel is due also the statue of Conscience before the Antwerp Town Library), and represents the great Flemish writer in a recumbent position, with the lion of Flanders at his feet, and a broken column behind him.

The Architect.

THE WEEK.

A few weeks ago the Liverpool Corporation decided to annul the contract entered into with Mr. T. S. Lee for the bas-reliefs of St. George's Hall. The arrangement of the affair belonged to the Finance and Estate Committee. It was proposed at a meeting of the Committee that the decision of the Council should be rescinded and the matter be reconsidered after the second panel had been fixed. But an amendment was also proposed to the effect—"That the town-clerk arrange for the payment, without prejudice, to Mr. Stirling Lee, in full discharge of all claims under the contract, of the balance which would be due for the two panels if calculated on the basis of 500*l.* each." There was an equal number of votes for the motion and the amendment, but the chairman gave a casting vote against the amendment, which was negatived. A second amendment was then proposed, viz.—"That the contract with Mr. Stirling Lee having been terminated, the town-clerk be authorised to arrange, without prejudice, for the payment of the sum of 250*l.* in final settlement of all Mr. Lee's claims in the matter." It was carried by a majority of two votes. Afterwards it was put as a substantive motion, and adopted. This is no doubt a grievous disappointment to a young artist, but the opposition to the panels must be attributed in a great measure to the arrogance of some of the members of the Council, who acted as if none of the ratepayers had a right to express an opinion on their arrangements.

Among the celebrities who have been discovered after their death is Hector Berlioz, the composer. In his lifetime he could not subsist as a musician, and he helped to support himself by writing notices of plays, operas, and concerts for the newspapers. It must have been hard to bear when the composer found his articles quoted by *littérateurs* who were puzzled about the technicalities of a work, without a word to suggest that France had also a great musician. The venerable M. Signol some years ago made a splendid design, in which all the men of genius who led a life of suffering are grouped together. In the foreground he placed his friend Hector Berlioz, and he is shown prostrated on the ground, as the artist once saw him. But if posthumous fame can be of use, the shade of Berlioz may rejoice. His works are now admired in many countries, and they have their special worshippers. As a proof that the resuscitation has received official approval, a statue of the musician is about to be placed in one of the squares of Paris. It is, however, a very small square—probably the smallest in the city. The Square Vintimille is, however, in one of the artistic quarters of Paris. The statue is by M. Albert Lenoir, and will be unveiled on the 17th inst.

We have already described the conditions of the international competition for the façade which is to be added to the cathedral of Milan. The jury has been appointed. The only foreign members are Mr. Waterhouse, R.A., and two Austrian architects.

It is satisfactory to find that the part of Richmond Hill belonging to the Duke of Buccleuch will become public property, as the Richmond Vestry have obtained borrowing powers. The sum allowed to be raised is 15,000*l.*, which is only half the purchase money. It will apparently be necessary to sell a part of the land, which is not a satisfactory arrangement, and it was only suggested to restrain the opposition. In the northern suburbs another addition to the open spaces is likely to be secured. It was agreed at Monday's meeting of the Hornsey Local Board that a Bill was to be introduced next session authorising the purchase by the Board of Churchyard Bottom Wood, which belongs to the Ecclesiastical Commissioners. The sum of 15,000*l.* is to be borrowed, and 10,000*l.* is to be obtained from the fund administered under the City of London Parochial Charities Act. It is to be hoped an opposition like the one raised in Richmond may not appear before the Parliamentary Committee. Some alteration in procedure seems necessary when the Richmond people can borrow 15,000*l.* by appealing to the Local Government Board, while the Hornsey people must go through the costly process of obtaining an Act of Parliament before they are allowed to borrow a similar sum.

It is easy to be wise after the event, and the conduct of the quarry-owners, in allowing people to visit the scene of the disaster at Crarae, is now generally condemned, as if the consequences were to be foreseen. Blasting on the scale of 50,000 tons of rock, and with seven tons of powder, is not an everyday affair; and hitherto "choke-damp" has been supposed to be innocuous in the open air. The interest attached to the Grotto del Cano because of its dangerous air is suggestive of the rarity of the phenomenon. With over 15,000 lbs. of powder an enormous quantity of carbonic acid gas and carbonic oxide gas was generated, and the day being heavy the gases were not dispersed but sank towards the ground. In ordinary blasting there is often a disagreeable smell, but no one would think of considering it dangerous. What mainly causes accidents is careless tamping. Henceforth visitors will hesitate about entering a quarry, although on occasions of big blasts they have done so without any risk. One of the contractors suffered at Crarae; and, while the catastrophe is to be lamented, it is only right to say that no responsibility rests on anybody connected with the quarry.

The Eiffel tower is likely to afford plenty of excitement to Parisians before it is completed. The first step is about to be taken in ascertaining what curve is to be given to the sides. A chain or cord suspended between two points forms a catenary curve corresponding with the weight. Now it is supposed that something of the kind also occurs when the suspension is vertical. The engineers have therefore arranged to cause a balloon to ascend to the height of the proposed tower. From the boat ropes will be hung to the ground and fixed there. From their curvature the contour of the tower will be derived. It is a novel experiment, but as there is some difficulty in arranging the slope of an ordinary lighthouse, we cannot expect that a colossal tower, made of iron plates, is to be designed forthwith without much deliberation.

Mr. Thomas Webster, who died at Cranbrook on Thursday in last week, exemplified the form of art that was once supposed to be essentially English. His pictures were of a domestic character. There was nothing in them to shock anybody's susceptibilities, and they were easily understood. He was at his best when painting boys; but if compared with those dashed off by John Leech, it will be evident that the Academician's boys are rather unreal. It is to his credit, however, that he never attempted to suggest the superiority of the "Children of the Nobility" in his pictures, and this is the more remarkable if we remember that he was brought up in an atmosphere that was favourable to the creation of a caste feeling. His father was a domestic in the palace, and he had no higher ambition for his son than to make him a singing-man in a royal chapel. But, like Hollins and Callcott, the young Webster preferred painting, and found his way into the Academy schools in 1820. He obtained the medal for painting in 1825, and the same year he was successful with a little picture exhibited in Suffolk Street. From that time forward he might be considered fortunate, if judged by the standard of those days, when 20*l.* was an acceptable price for a painting. His best picture is the *Village Choir* in the South Kensington Museum. It is an illustration of a passage in Irving's "Sketch Book," and in its way it is as characteristic of perfunctory performances as Hogarth's print of *A Playhouse Orchestra.* Although his subjects are of so popular a kind, the print-sellers did not care to speculate in engravings from them. It was reserved for the Art Union to publish *The Smile* and *The Frown.* Mr. Webster had his full share of academic honours and offices. In 1840 he became Associate, six years after he was made Academician, and he enjoyed the dignity for thirty years before he retired.

THE SANITARY INSTITUTE.

NOW that the meeting of the Sanitary Institute at York is among the things of the past, we can consider how much was gained by sanitary science from the proceedings. As usual, there were two classes of papers. One might be described as the kaleidoscopic. The papers in that class resembled those which were heard before, and which will be heard again ; but there was supposed to be novelty in the re-arrangement of the stock subjects. The second class was made up of a few papers in which the writers endeavoured to increase the stock of knowledge.

It is known by this time that the Sanitary Institute differs from other ambulatory societies in the facilities it offers to certain of the members to become trumpeters of their fame. The British Association for the Advancement of Science, which was the first to introduce the principle of roving, placed science before scientists. The reverse plan is adopted by the leaders of the Institute, and it thus forms one of the most ingenious modes of advertising.

Practice has helped to make some of those gentlemen most admirable actors. They can be equal to any occasion. This year a few even tried to raise a laugh, but then humour is supposed to be a characteristic of people who are benevolent in acts. The joking had, moreover, an odd effect when introduced among speculations about keeping down the death rate. Mr. William Whitaker, B.A., F.G.S., Assoc. Inst. C.E., Assoc. Soc. Medical Officers of Health, was one of the successful aspirants. He found himself in the presidential chair of a section, and it was necessary to deliver an inaugural address to his disciples. He began in this style :—"I must, at the outset, express a hope that no one will expect me to be three single gentlemen rolled into one, able to discourse on chemistry, on meteorology, and on geology. Rather must I follow the advice given to the cobbler, and stick to the last." It is needless to say the well-drilled occupants of the seats near the punster-president were tickled by the wit, and encouraged their chief to attempt further efforts of that kind. He did not disappoint his supporters. He related his adventures : how on occasion "my nose (and most people can speak through the nose) said sewage !" and finally referred to a feat of one of the members, who "claims to have taken over twenty-three millions (of microbes) in eighteen months, but then he took them in hot water, which, perhaps, they may have relished less than he did !" This is recreative science with a vengeance.

The member who so heroically extirpated organisms has not claimed the renown that is due to such a feat. But it is difficult to resist the conclusion that it must have been Mr. Mansergh, for, as a mighty water drinker, he advocated the duty of every adult swallowing three or four pints daily, and assured his audience that it was easy, with the aid of a little imagination, to accept hot water as hot punch at night. A pamphlet was distributed on this important discovery.

Mr. E. C. Robins's humour took the form of as close an imitation of Mr. Tupper's philosophical aphorisms as is possible when the type cannot be set up as verse. The reader can, however, make the experiment for himself, and it will be evident how successfully the cadence and wisdom of the originals are reproduced in sentences like the following :—"Is anything more brilliant than the beaming face of an infant when it first finds the use of its legs and feet?" "Some women are weaker and smaller than others, for it is not exclusively the characteristic of the well-born." "Beauty cannot grow out of deformity, nor thrive as the semblance of disease." "The lady's riding-horse and the common cart-horse have been compared." "Nothing is more characteristic of good breeding than the performance of frequent ablutions." But the whole address is no less suggestive of poetic sententiousness and sanitation.

The humour of Mr. T. Harnett Harrisson approached the tragic. We can only give one instance. It appears that 1 in 700 of the members of sanitary boards belongs to that profession which is supposed to be so nearly allied to the doctor's. Mr. Harrisson moralised on the phenomenon in this fashion :—"If it is astonishing that life agents are so few, what will be thought of the fact that the agents of grim death himself appear among those elected as members of boards of health? Men who absolutely live by death, whose business becomes more lively as the epidemic becomes more deadly. Men who would only be expected to be found serving as promoters of a Public Disease Act. Men whose regular occupation it is to carry us from our houses to our last homes feet foremost ; who provide for us our 'customary suits of solemn black,' and whose crocodile tears are charged in the funeral bill. It is a horrible revelation, but of the 2,796 members of sanitary boards four of them are undertakers. And it is thought the undertaker comes appropriately at the end of all professions." After reading this soliloquy on the coffin-maker we are able to sympathise with one of Mr. Harrisson's correspondents who wrote :—"I am at a loss to understand any possible benefit that can accrue to the community from such statistics"—but the directors of the Sanitary Institute apparently know better what is useful.

It is time, however, we turned from the hilarious efforts of our instructors to the serious discourses. Since the talk about sanitation began the working plumber appears to have considered that it would be a good joke to perpetrate all sorts of blunders in laying pipes and apparatus. He feels he is watched, and he likes to show that he can evade detection when there is a scrutiny of his work. It is difficult otherwise to explain the defects which are revealed in modern work. All the blame is certain to be thrown on architects. Captain Douglas Galton related a case at York which occurred most opportunely a fortnight before. The Council of the Girls' Public Day School Company (of which the Captain is a member) directed that the drainage of all their schools should be overhauled. The report on one of the largest schools was as follows :—"To a great extent the drains not only fall the wrong way, but are absolutely without any jointing in many cases. In another case the pipes do not meet within two inches, and here a joint has been made with zinc and string ; this is under the kitchen." It appears the school was designed by an architect who has gained eminence by buildings of that class. The only explanation Captain Galton can offer for so serious an error is, "that the architect cannot have understood much of sanitation ; for any other supposition would imply that he cared little for the lives of the hundreds of children who were to be congregated in the building."

Nothing appears too strong for utterance against an architect at a meeting of the Sanitary Institute, for, although architects may be present, they are mute when their fellow members of the profession are attacked. Is it not reasonable to suppose that since it is an impossibility for an architect to be always on the spot during the whole of the time when a building is in progress, the defects in the girls' school arose during the absence of the architect? In every building much must be left to the honesty of the builder and his workmen, for even when a clerk of works is employed (which may not have been the case at the school) he cannot be simultaneously in all parts. We might, with almost as much reason, blame Captain Galton and the Council for the defects of the drainage. They must have examined the plans, and why did they fail to observe that the drains fell in the wrong direction? It is also likely that a Council wherein sanitation was so well represented did meddle with the arrangements for drainage, and, as happens in such cases, the men acted wrongly in order to show their respect for that kind of superintendence.

This year the architects were let off easily, for the only story that could be raked up against them was Captain Galton's. The doctors and medical officers of health occupied the position which was heretofore held by architects. It appears sanitary opinion is now divided about the expediency of allowing medical officers of health to retain their business as general practitioners. Doctors are only human, and, in spite of all we hear about the sacrifices they make to insure the health of the public, we find on examination that they are not more oblivious of their own interests than architects. They are even willing to ignore the public health for the sake of a mere point in professional etiquette. It is said, for instance, that the notification of infectious diseases is an important factor in preventive medicine, and, where practised systematically, leads to an abatement of the death rate and a diminution of diseases. But one of the objections to it is that, according to a speaker, "it disturbs the relations of medical attendant and medical officer of health." Another representative of the

medical profession at the York meeting stated that "on the one hand, there is a feeling amongst practitioners against being required, under penalty, to notify the existence of cases of infectious disease amongst their patients to one who is much junior to them in the profession; on the other hand, there is a dislike to notifying cases to a 'rival practitioner.'" The feelings and dislikes by which the community is sacrificed have their sordid side, for the doctor who describes them suggests that if medical men received a fee for notification, the disturbance might be got over! We are also informed that "local acts have been opposed because they impose statutory obligations upon medical practitioners." We learn, too, that the Local Government Board has been often compelled to send a skilled inspector to a district, in order to free it from the disease which occurred, because the medical officer of health, being a practitioner, and considering his private practice first and his public duties last, supported the opponents of sanitary improvements. When we find that a President of the Local Government Board would not agree to sanction any permanency of tenure for officers of health, because he was afraid they would become indolent or neglectful of duty, we may congratulate ourselves that there is some other cause for people dying than the want of understanding much of sanitation by architects. We are desirous to see an efficient administration of sanitary laws, and, as far as is requisite, by the employment of doctors; but we cannot forget that the prejudice against architects is mainly due to medical men, and that when they set up as the guardians of public interests they were seeking their own.

When Dr. Poore lectured on the life and work of Bremontier upon Saturday last, was he reading a lesson to those sanitarians who are perpetually thrusting themselves before the public? How many people have heard of that man's name? But he was one of the greatest benefactors to his race. Bremontier was born near Rouen about a hundred and fifty years ago, and during the greater part of his life he was a sort of county surveyor. In his day the dreary stretches of country known as the Landes were supposed to be as irreclaimable as if they were African deserts or Irish bogs. Bremontier set to work to study the question as if it were his duty as a citizen, for it had no connection with his office. He came to the conclusion that resinous trees, if planted, would in time aid in consolidating the sand. He did not take to spouting on platforms throughout France, but at his own expense he made experiments. Bremontier was able to demonstrate his theories among the wild dunes, and Napoleon, who would have been indifferent to the finest essays on the subject, was convinced and took up the work. It has since been continued, and the value of the improvement can hardly be credited. We are told that in the department of Landes there were 900,000 acres of uncultivable land in 1834, while now the area is diminished to 340,000 acres. It is not only the product of the reclaimed land that has to be considered, but roads, canals, and drains can be made through the district without any risk of destruction by the moving mountains of sand.

It is refreshing to meet with a paper like Dr. Poore's among so many egotistical productions, which are as barren in their way as the old Landes. Another that is welcome is Mr. Roberts's "Scheme for Defining Local Climates by combined Meteorological and Phenological Observation." The word "phenological" is so new that it is not to be found in the latest English, French, or German Dictionaries, although it stands for something that is not new. Every one has heard of a floral clock, but it is also supposed to be practicable to take flowers as indications of more than time. There is, for instance, a relation between certain kinds of vegetation and elevation. The relative dampness or dryness of the soil and atmosphere of two districts might be inferred from "a single natural order, such as *Ranunculacea*—the marsh marigold to the traveller's joy." Temperature may also be gauged by the survival of sub-tropical plants. Different species of plants are differently affected by atmospheric impurities, and it is supposed they can become more trustworthy evidence of the purity of the air than ozone tests. Rapidly-growing trees indicate prevailing winds. Round the coast trees lean inwards, but inland trees are most affected in their south-west aspect. The relative prevalence of leaves and flowers has much to do with the absence or presence of sunshine. This way of becoming a climatologist resembles that in vogue in the Forest of Arden, where tongues were found in trees.

Dr. Frankland the Younger read a useful paper descriptive of the results of an application of Koch's methods for determining the number of micro-organisms in a given volume of water. Instead of supplying such adjectives as "clear," "turbid," "slightly turbid," to characterise water, the degree of reduction of the micro-organisms can be stated numerically. Thus, one cubic centimètre of water taken from the Thames at Hampton in January contained 45,400 organisms. After filtration the number varied from 4,894 to 159, according to the company that filtered. The practical conclusions drawn from the inquiry are, first, that great storage capacity is advantageous, as there is more chance of deposition; second, that it is only the fine sand in filter-beds which is effective in removing microbes; third, that the slower the filtration the more perfect it becomes; and fourth, that filtration media lose their power of retaining microbes, although old sand as well as new produces water that appears clear when tested by the eye alone. Frequent renewal of sand is therefore necessary.

To what extent the microbes are dangerous to health remains an open question. Professor De Chaumont says that inquirers are working in the dark, and will continue to do so until the connection between the organisms and particular forms of disease can be made out. There are said to be microbes which are of use as agents in promoting the healthy action of organised beings, as well as others which are the opposite. "Our cue," says Professor Chaumont, "would seem to be to help the friendly microbes and to fight those that are our foes." Attempts have been made in a politic way to set one class against the other; but the great difficulty is to recognise the differences which constitute friends and enemies. As regards water, the desire at present is to get rid of good and bad microbes with equal impartiality.

The tests for organisms do not seem to have been applied to the rain-water filtered on a principle devised by Surgeon-Major Pringle. One peculiarity of this mode of treatment is that the two chief constituents of the soot (cinder and pure carbon) are separated. The soot carbon, or "sursum," is believed to have a marketable value as a material for making a black pigment that is said to excel those in use, while the cinder serves for the coarser blacks.

This year much was said about water at the Institute meeting. The most remarkable communication was the address of Mr. Baldwin Latham. In it he ran counter to the general belief concerning the advantages of drainage. Efforts have been made of late to secure as much dryness as possible, and rain is often regarded as an unfriendly visitant. Adopting the old theories on the subject, Mr. Baldwin Latham maintains that a dry winter is often the precursor of disease. According to him, that part of East London where the subsoil water was lowered by the main drainage works was the greatest sufferer during the cholera in 1866, and in previous visitations there was lowness of water from other causes. The conclusion of Mr. Latham is that "the death rate from year to year fluctuates in a very marked manner with the fluctuations of the ground water. The most healthy periods are those in which there is the most ground water, and the least healthy are those in which there is the least ground water in any year."

It is unfortunate that the experts who are competent to argue a theory of that kind keep aloof from the meetings of the Sanitary Institute. There may be something important in what Mr. Baldwin Latham says, but what would Mr. Hawksley say to it, and how far would his mountain of statistics bear it out? If so close a relation can be traced between dryness and disease, then too much money is being misspent every year on drainage.

The address is, however, suggestive of the state of sanitary science to every fair-minded observer. Our knowledge is limited. Sanitarians will not agree to this, and in consequence enormous sums are laid out in an unprofitable manner, and what is done in one year runs the chance of being condemned as useless in the next year. But, from its constitution, the Sanitary Institute must conduct its operations as if they were all of a certain kind, and however some interests may be served by that mode of action,

sanitary science would be the gainer if the example of scientific societies could be imitated by a lesser affectation of infallibility.

FRENCH ARCHITECTS AND WORKMEN.

THE discourse which M. Wallon, the principal secretary of the French Société Centrale des Architectes, delivers at the annual congress always receives the attention of architects, builders, and workmen, owing to the extent of the relations of the Society, and the personal interest which M. Wallon takes in even the humblest of the prizemen. The address which was read at the last congress having been printed, we give a translation of the principal portions.

Our prizemen to-day are some scholars, archæologists, and artists of the schools of Athens and Rome; some students of the Ecole des Beaux-Arts, and of various public or private schools; some artists who have distinguished themselves specially in the industrial interpretation or in the execution of compositions of masters; and, finally, some members of the great family of builders, contractors, foremen, and workmen, that we are glad to see around us every year, in order to render homage to their labour, courage and devotion.

The French Schools of Athens and Rome.

Athens and Rome, the Classic lands of civilisation, are the means of combining, in the study of the past, the scholars who issue from the Ecole Normale, and our brethren of the Ecole des Beaux-Arts who have won the Grand Prix of architecture. There they perfect themselves. Bringing together their knowledge of the ancients, their artistic sentiment, and their skill as draughtsmen and constructors, they go about exploring the two countries which appear to possess inexhaustible treasures. For some time past our students in the Villa Medicis have judged that Italy was insufficient for the completion of their studies, and they journey to Greece in order to discover the secret of that immortal beauty before which the whole civilised world bends in admiration.

That admiration is not, however, always accompanied by gratitude. But for Frenchmen Greece continues to be Ancient Greece. We are always glad to gaze on a country which has suffered so many vicissitudes, to meet a people who, like ourselves, have struggled and suffered for independence, and to behold the descendants of our illustrious masters in literature and art. Greece evokes in us memories of Phidias and Homer; we feel towards her that devotion which belongs to what is holy, and she excites in us that sympathy which we have for the feeble and the oppressed. And when recently the storm was about to burst, France was alone among the nations in displaying friendship towards that land. We ran the risk of raising the ire of some great Powers. Considering our relations with Greece, we owe something to the scholars of our school in Athens, who by talent and works have so well upheld the prestige and renown of France in the cultivation of *belles-lettres* and art.

M. Wallon next described the works which gained the rewards of the Société Centrale by students of the schools in Athens, Rome, and Paris. He then passed to the representatives of the art industries:—

Art Industries.

Last year, said M. Wallon, we offered a recompense to M. Guilbert Martin, whose mosaics are to be seen on the great staircase of the Louvre and in the Panthéon. This year the committee has selected a veteran among the architectural sculptors, Desire Hayon. He was born in Paris in 1815. The son of a mason, he was apprenticed in his tenth year, so that he has laboured for sixty-one years. Think of all the works on which he has been engaged, from the monument of Louis XVI. in the Place de la Concorde to the decoration of the new Court of Appeal that he is preparing to-day, under the direction of M. Daumet! The late M. Duc took notice of M. Hayon when he was working as a modeller on the ornamentation of the Column of July. From that time M. Hayon was kept attached to the architect, and co-operated so closely with him as to become his *alter ego*. In going over the galleries of the Palais de Justice, the Hall of the Pas Perdus, the audience-chambers, and the other parts of the building which were constructed or restored by M. Duc, we are everywhere struck by the unity of style that is seen in the ornament. It is simple, often it is elegant, always it is pure and beautiful, and while recalling the antique, it is distinctly French in style, for with us distinction and style have never been wanting. This sculptured decoration is the work of Duc and Hayon.

We find M. Hayon aiding Duban in the works of the Ecole des Beaux-Arts, where we now are; in the restoration of the Château de Blois, that charming example of French architecture which we owe to the conservation of Duban, and on which the master displayed such marvellous skill. Duban deserves to be remembered, and his restorations should always be treated as *chefs-d'œuvre* by his successors.

We meet with M. Hayon alongside M. Vaudremer at the remarkable church of St.-Pierre de Montrouge and the monument that is commemorative of the battle of Champigny; he is found with M. Constant Dufeux at the monument of Dumont Durville; with M. Coquart at the monument of the Generals Lecomte and Clement Thomas; with MM. Bailly and Godebœuf in numerous works; with M. Daumet at Chantilly, decorating the principal gate of the château and the pedestal of the equestrian statue of Constable Montmorency, the work of the director of the Ecole des Beaux-Arts, M. Paul Dubois.

During this long career, of which I can refer to no more than a part, M. Hayon has never ceased to be a modest and conscientious artist, working with a disinterestedness that is rare, indifferent to that fortune which should be the meed of such ability and talent, and preferring to satisfy his instincts as a decorative artist in the accomplishment of the numerous works that were confided to him.

The rewards gained by the apprentices of the Municipal School and by the masons and stone-cutters were described in succession by M. Wallon. He was able to announce that on the last occasion a contractor had come to him to announce that he resolved to engage the apprentice who had gained the prize for joiners' work. The director of the school also stated that the prizes of the Société excited a remarkable emulation among the students. M. Wallon followed with notices of the prizemen among the—

Building Contractors.

This year, said M. Wallon, the Société recognises the services of M. Hyacinthe Charles Mozet, president of the Chamber of Masonry-Contractors, and president of the Council of Administration of the Group of Syndical Chambers of Industry and Building belonging to the City of Paris and the Department of the Seine.

Beyond his official titles, which testify to the confidence and esteem of his brother contractors in the various branches of the building trade, M. Mozet as a practical man possesses claims on our recognition. He worked under Viollet-le-Duc at Notre Dame, Pierrefonds, and elsewhere; he has also been engaged in the restoration of numerous cathedrals throughout France. Formerly he served as one of the judges of the Tribunal of Commerce and as president of the section of building; he was also a member of the jury of the International Exhibition of 1878, and received the cross of the Legion of Honour and the Academic palms as a reward for his works, his knowledge, and his services to his countrymen.

Imitating the example set by M. Leclaire, the painter, and by MM. Goffinon, Babbas & Co., M. Mozet with his partner M. Delalonde had tried the experiment of dividing the profits with his masons. In spite of the condition of business, the result has been most satisfactory.

The Société offers its medal to M. Mozet as a testimony to his exceptional qualities as a contractor, to his honourable conduct, and to his self-sacrificing efforts for the amelioration of the condition of the workmen in his employment.

Building Workmen.

From masters the next step was to workmen. M. Salleron founded a medal, which is to be awarded to a foreman having at least ten years of service in the same firm. There is great competition for the medal, and, owing to the difficulty of making a selection, several medals have been granted. The first was awarded to M. Collet, a joiner, who has been for forty-three years in one establishment. A quarryman named Cochard has served for thirty years. Another quarryman, C. P. Guyot, has thirty years' services with M. Derville & Co. It was under his direction the great monolithic columns of the Opera staircase were got out, and the columns for the galleries on the river side of the Louvre. The ancient quarries of cipollino marble at Negrepont were reopened by him, and his operations extend from the Pyrenees to Carrara, in Greece and in Belgium. In the south he has from 250 to 300 men under his control, and he is able to boast that not a single fatal accident has occurred on his works. M. Brocard, a contractor, puzzled the Société by sending up a batch of eight foremen, who were with him from twenty-two to forty-two years. The youngest had doubly qualified for the medal. A worker in iron was able to show a certificate of even longer service, as he was forty-six years in the same employment. Considering the number of changes which have occurred in France, and the want of inhabitativeness which English phrenologists say is a characteristic of the French workmen, the lengthened periods of service which the prizemen of the French society have gone through become very remarkable. It is also evident that there are more examples of fidelity in French workshops than people in this country supposed. But there are fears of the new doctrines which are arising among the working classes, and on those occasions M. Wallon makes it a rule to raise a warning voice as the representative of architects, whose position makes them

equally interested in the happiness of workmen. On the occasion in question, he said :—

"France has much to recover. She needs the efforts of all her children—in arts, in literature, in science, in i his own sphere every one should labour for her.

"Let those present preach by example, by contin uin work, by inducing others to love labour, and to become distinguished by probity. Let them shun in their workshops the fatal doctrines which have led so many astray. Let them meditate over what is said on the subject in Germany :—'The friction, the perpetual antagonism between capital and labour in France is so favourable to us,' says Dr. Rommel, 'that many people believe it to be the work of instigators who are paid by us.' It is in this light we should regard the men who go everywhere sowing discord, raising the tempest, and exciting bitterness, with the object of creating discord between employers and workmen. They are labouring against your interests and those of the country. They are committing treason against France.

"Where is the enemy? Is he to be found among the employers, whose lives of courage and honour we have rewarded to-day? Workmen themselves they can understand what they needed at one time, and they try to render your struggles less painful. There is no doubt that life is hard for you, but you are not the only sufferers. In this school of art where we are, which is so rich in masterpieces, and which in its seductive beauty promises nothing but satisfaction and happiness, we who were students can say that life was a continual struggle against an uncertainty that was cruel. Labouring during the day for a livelihood, the students have to devote their evenings, and even their nights, to preparations for examinations and competitions. Have not those artists their share of suffering and misery? But they do not complain if they have that sacred flame which gives courage to accomplish superhuman tasks, which ennobles and makes us intoxicated with a life of successes and sacrifices, but which sometimes consumes and kills the possessor. I have no wish to make little of the sorrows of the workmen, but it may be worth remembering that the capitalist who passes by has also anguish and misery to sustain. Classes no longer exist. Every man holds his future in his hand, and the future of his children. In the highest positions among artists, scientists, and soldiers, men are to be found whose fathers were workmen."

M. Wallon concluded by drawing attention to a tombstone he saw in Brittany, and on which the deaths of three brothers, officers in the army, were recorded. They all were killed in the month of August 1870—one at Servigny, another at Reischoffen, and the third at Gravelotte. The father of the heroes was a humble workman.

FERNIHERST CASTLE, ROXBURGHSHIRE.

MANY will be glad to learn, says the *Glasgow Herald*, that the Marquis of Lothian has, before it is too late, given orders that steps be taken for the preservation of the baronial castle of Ferniherst, which for centuries was the abode of his ancestors. The castle, surrounded by fine old trees, stands on a commanding position on the right bank of the River Jed, about two miles above Jedburgh. It was erected in the fifteenth century by Thomas Ker, of Kersheugh, who was the eighth laird, and the first who was designated of Ferniherst; but most, if not all, of the existing buildings belong to a later date.

The tower, which is the most interesting portion, is four storeys in height, with corbie-step gable tops and bartizans at the corners. The second storey is reached by a broad stone stair, but a narrow turnpike stair leads to the others. In one of the rooms portions of the old wood panelling remained attached to the walls until the work was commenced the other week, when it was found necessary to remove it. This has been taken to Mounteviot for preservation. The greater part of the castle buildings was modernised many years ago, and serves at present as the residence of Colonel Paton. Throughout the entire building the ground storey consists of a series of dungeon-like vaults, the only exception being an apartment which seems to have been a kitchen at one time, and possesses a fireplace of great size. The tower is the only part at present undergoing repair. The front wall was almost entirely covered with ivy, but this has been taken down, and the points of the masonry have been all cleaned, previous to the walls being repointed with cement. The removal of the ivy has exposed to view three shields, which were nearly wholly covered. Two of these are over the principal doorway, and the other is over a gateway in an adjoining wall. Those over the doorway bear respectively the arms of Sir Andrew Ker, the twelfth laird, and of his spouse Dame Ann Stewart, daughter of the master of Ochiltree. The doorway is prettily decorated with shallow mouldings and with small square ornaments. Along the top is a row of a small double zigzag, forming a sort of imitation of the dog-tooth, and over this is a kind of ogee hood-mould with moulded finials. Supporting the spiral staircase there is some beautiful corbelling, which forms a fine feature between the front wall of the tower and that of the main building. The third shield bears the arms of Sir Andrew after he had been raised to the peerage as Lord Jedburgh in 1622. Sir Andrew was the son of the celebrated Sir Thomas Ker, the zealous supporter of Queen Mary, for whose cause he suffered fourteen years' banishment, besides forfeiture of his estates and honours. The plaster has been all removed from the inside of the walls, and the flooring, which was in a bad condition, has been taken up. The oak beams, however, upon which the flooring rested, being still wonderfully fresh, have been allowed to remain. During the progress of the work a Scotch copper coin and an antique spoon—apparently copper, with a thick coating of silver—have been come upon and handed over to Lord Lothian's master of works. What is known as the library—a small circular room—is well worth particular mention for its beautiful oak panelled roof, and nicely-carved central pendant. A portion of the panelling is somewhat broken, but this could be easily restored. A building standing detached from the others is in several respects a highly interesting structure, not only for its architectural features, but also because the purpose for which it was erected has never been satisfactorily ascertained. Mr. Jeffrey, in his history of Roxburghshire, calls it "the beautiful chapel"; but others hold that it must have been intended for more secular purposes. The ornamentation on this building is somewhat peculiar. The ornaments at the corners of the walls would almost suggest the horse-shoe, while all up the jambs and round the arch of the doorway there seems to be representations of eggs. There is a circular window in one of the gables. This place has for many years been used as a stable. It was probably built by Sir Andrew Ker, as a shield over the doorway bears his arms, and the initials of himself and his wife. There is a detached stone in the castle with the arms of Robert, Lord Jedburgh, the last of the Ferniherst line. A drawing of Ferniherst Castle, by Mr. Haig, appeared in *The Architect* of September 9, 1871.

RESTORATIONS IN VENICE.

SIGNOR BONI, the architect, writing to the *Times* on the restorations in Venice, says he does not participate in the optimist views expressed with regard to the restorations carried out in the past, and he believes that, in spite of the good sense of the Administration of Public Buildings, there remains much to be done before the public can admire new patches inserted into old buildings and come to look upon such repair as anything but unfortunate mutilations, even if necessary, and before the public reprobate the practice of rubbing with pumice stone marble already coloured with age.

So much for public buildings. With regard to private buildings, says Signor Boni, while we protect them from the whitewasher's brush, let us, at the same time, obtain a law to save them from the depredations of the *bric-à-brac* hunter, who does not scruple to enrich himself by spoiling his country of its lawful artistic heritage. I wish your correspondent would hold up to public reprobation those foreigners who, having the means, come to this country to tempt the cupidity of some and the poverty of others; who reduce the palaces of Venice to mere skeletons, and carry off from our dwellings their bas-reliefs and friezes. I say this in no hypercritical spirit, because we have among us many who regret the dilapidation of our city, and the remonstrances of one honest man should counterbalance the effrontery of those who work our shame and ruin.

Mr. G. Aitchison, writing on the subject, says :—Your correspondent "Beo" is hardly fair to the Society for the Protection of Ancient Buildings. Although their last request may not meet the views of every one, the Society's action generally has been of great service. I feel sure that those Italians who are most anxious for the preservation of Venetian buildings are by no means sorry to have their hands strengthened by this Society, and, if free to acknowledge it, would say that much real vandalism has been prevented by its action. It may be an open question whether it is worth while perpetuating the waves in the floor of St. Mark's; the pavement was originally flat, and has only assumed its present shape through unequal settlement; still this peculiarity has attracted the attention of natives and visitors, and has caused much wonder and some admiration.

It is most fortunate that in the case of the angel's wings there was a picture by Gentile Bellini, by which the restorer could be guided, for generally he produces—

> A plan whereby to erect
> New buildings of correctest conformation,
> And throw down old, which he calls restoration.

"Beo's" last observation, though perhaps admissible from a controversial point of view, has no analogy with the case in point, and he does not seem to understand the objections to so-

called restoration. When mouldings or carvings have perished, the so-called restoration in literature would be called forgery. If your correspondent restored the lost books of Livy, it would be as useful to the student of Roman history as the restoration of perished work to an antiquary. That whole phase of human progress and cultivation that can only be gathered from architecture and sculpture is hopelessly obscured by so-called restoration.

The perished capitals, friezes, and panels of Byzantine, Norman, or Lombard work have too frequently been replaced by artists possessed of the talent of the carvers of comic pipes and umbrella handles; but does this work give us much insight into the skill, talent, or humour of the original artists? As the philosopher has not yet arisen who will give us the mental condition of the bygone nations or people, we should carefully preserve what remains to us, and not tamper with the records.

There may be little harm in restoring that which is but slightly defaced, but when ornament or sculpture has perished, its place should be supplied by the best work the time and country afford, and in the style of the day, so as not to perplex or mislead future antiquaries or philosophers of art.

TESSERÆ.

A School of Architecture.

Sir G. G. Scott, R.A.

I AM convinced that we shall never obtain for our architectural students that artistic training which we know to be necessary unless we put our own shoulders to the wheel and provide it ourselves. I would, therefore, propose that a central School of Architectural Art shall be founded in London, in which all those branches of high art which I have enumerated as bearing upon architecture shall be taught by men of the highest ability in their several branches, these several teachers being paid so liberally as to secure both the best men and their best exertions; that this school shall be mainly self-supporting, though aided by annual subscriptions from individual architects, and perhaps by grants from the Institute of British Architects, the Architectural Association, and any other societies which may be willing to afford aid, the self-supporting element being a regulated payment by the students; for it is quite certain that the students of such an art as ours do not desire to have instruction on any terms short of its proper value, though they will be too glad to obtain, by means of a combined effort, teaching of so high a grade as would have been impossible to procure by private means; that this School of Architectural Art shall be under the management of a board of visitors, to be jointly appointed by the council of the Institute and the council of the Association (and which shall, if possible, include one eminent painter and one eminent sculptor), a certain proportion of its members retiring every year, and not being re-eligible for two years. That the teachers be elected for terms of one or two years, open to re-election, and shall be as numerous as the board of visitors deem necessary; as, for example, a teacher of drawing from the human figure, and a teacher of modelling the same (these two duties being open to be performed by the same man); a teacher of animal drawing, if the last-named cannot undertake it; a teacher of drawing and modelling architectural ornamentation; a teacher of coloured decoration, &c., the number being always dependent on circumstances and on the judgment of the visitors. There may also be occasional teachers of special subjects, such as the designing of stained glass, of mosaic, and many other branches of art, the great principle aimed at being the power and the command of funds to be attained by combination—in fact, the self-supporting element of the institution. Every architect who joins it should consider himself as bound in honour to use all his influence with his pupils to become students, and every student should be under the same obligation to give as constant attendance as possible. The instruction may be enlivened, from time to time, by lectures—not the casual papers customary at meetings of societies, but paid and practical lectures, by men of known eminence in their several departments of art. Each year there should be a competitive examination of the students, with prizes in their several departments, followed by exhibitions of the performances of the students. In fact, everything should be done to offer incentives to the most strenuous exertion, and to inspire the students with an ardent enthusiasm for self-culture, and for using every possible endeavour to attain eminence in the noble art which they profess.

Subordination in Gothic Arching.

Edmund Sharpe.

The arch, as handed down by the Romans to our forefathers, exhibited one broad uniform soffit, extending throughout the whole thickness of the wall, panelled and relieved on its surface and sides with superficial mouldings, but unbroken and undivided in the principle of its construction. It appears to be extremely probable that this simple form of construction prevailed throughout the first thousand years of the Christian era; and, so far as we are able to form an opinion from the few remains which are left in buildings belonging to the Saxon period, it appears almost certain that all the arches of that period were of the same form. In the Norman period, however, a new principle was introduced, which was rapidly adopted and soon became universal, and was never subsequently abandoned. According to this plan, the arch was divided into two or more layers or orders, which formed, in fact, a series of concentric receding arches, of which the innermost or lowest carried on its back the one above it, which was in turn subordinate to the next, and so on. This new principle, then, was that of subordination, one which was not indeed confined to the member of which we are treating, but which rapidly overspread the whole of the building, and the influence of which became eventually perceptible in its minutest detail. We now approach the subject from a new point of view. A Mediæval arch was composed of a series of consecutive and concentric courses or orders, and each order carried a series of mouldings on its outer edge. We have now a key to the classification and arrangement of these mouldings; and, instead of viewing or representing them any longer as one continuous, undivided series, we must look upon them as the ornamental portions of a series of distinct subordinate arches, grouped and combined in a highly-artistic manner, so as to produce an appearance in which the due subordination of parts, so uniformly characteristic of the designs of their periods, is made consistent with the general unity of effect essential to the importance of so principal a member of an ecclesiastical building.

Characteristics of Good Timber.

Professor Rankine.

There are certain appearances which are characteristic of strong and durable timber, to what class soever it belongs. 1. In the same species of timber, that specimen will, in general, be the strongest and the most durable which has grown the slowest, as shown by the narrowness of the annual rings. 2. The cellular tissue, as seen in the medullary rays (when visible) should be hard and compact. 3. The vascular or fibrous tissue should adhere firmly together, and should show no wooliness at a freshly-cut surface, nor should it clog the teeth of the saw with loose fibres. 4. If the wood is coloured, darkness of colour is in general a sign of strength and durability. 5. The freshly-cut surface of the wood should be firm and shining, and should have somewhat of a translucent appearance. A dull, chalky appearance is a sign of bad timber. 6. In wood of a given species, the heaviest specimens are in general the stronger and the more lasting. 7. Amongst resinous woods, those which have least resin in their pores, and amongst non-resinous woods, those which have least sap or gum in them, are in general the strongest and most lasting. 8. It is stated by some authors that in fir wood that which has most sap wood, and in hard wood that which has the least, is the most durable; but the universality of this law is doubtful. Timber should be free from such blemishes as clefts or cracks, radiating from the centre, "cup shakes" or cracks which partially separate one annual layer from another; "upsets" where the fibres have been crippled by compression; "rind-galls" or wounds in a layer of the wood, which have been covered and concealed by the growth of subsequent layers over them, and hollows or spongy places, in the centre or elsewhere, indicating the commencement of decay.

Fallacies about Superiority of Roman Building.

D. Arago.

It has been said "Some of the Roman buildings have lasted eighteen centuries. A great number of modern buildings are in a deplorable condition!" This comparison is essentially erroneous. To give it any value we must draw a parallel between none but the greatest monuments of the two epochs. The results will then be very different to those on which the learned support their position. The ramparts of the Bastille were of extreme solidity even in the centre of the masonry. It was necessary to use gunpowder to destroy them. Gunpowder was also found necessary to destroy at Agen the ruins of a bridge built about the year 1200. M. Vicat ascertained that the mortar of the bridge of Valentré, built at Cahors in 1400, surpassed in hardness that of the ancient theatre, of which the ruins are seen in that town. Ancient architects, like modern, built according to the nature of the materials at their disposal, and also according to financial exigencies, either edifices which were indestructible, or with the same exterior forms, temples, palaces, and houses, without solidity. The constructions of the latter class rapidly disappeared. The others alone have resisted the ravages of time and the violence of the seasons. The blind admirers of bygone ages, have they forgotten the words of Pliny, "The cause from which at Rome so many buildings fall is the bad quality of the cement"? If, as it is pretended, the Romans knew certain methods of preparing good mortar,

we ought to find this substance in all their public monuments with qualities almost identical. Now this is not even the case in comparing different parts of the same edifice. Experiments made with mortar taken from different points of the bridge of Gard, gave resistances varying in the proportion of one to three. Those who devote themselves to these comparisons should remember that time acts unceasingly in foundations on the hardness of mortar. The mode of action by which this conglomerate hardens—acquires adhesiveness—is still a matter of controversy among the learned. But no one can deny that there are circumstances under which it is impossible for this mysterious action to continue for a long series of ages. It would seem forgotten, that in considering the knowledge of cements in the art of building, we are not reduced to simple conjectures. Vitruvius, contemporary and architect of Augustus, has left a detailed account of the precepts in use among the builders of Greece and Rome. These precepts are far from justifying our unreserved admiration of the ancients. The ancients were not in possession of any exact notion concerning the chemical modification that calcareous stone undergoes in the kiln, a modification by which its friability is so much increased. Neither did they know anything of the kind of action which restores to the disintegrated molecules of this stone converted into lime the adhesion and hardness of which they had been deprived by heat. The efforts of Vitruvius to give a plausible explanation were ineffectual. The same was the case until the chemical discoveries of Black respecting carbonic acid, with the attempts of the most illustrious successors of Vitruvius, Scamozzi, Philibert Delorme, Perrault, &c. One single word will disabuse all those who persuade themselves that the theoretic errors of these great architects are of no consequence. Take the instance of Philibert Delorme. To arrive at a maximum of solidity in edifices, he thought it necessary that the lime should be taken from the same bed of limestone as the materials of the masonry. This direction, if it had been followed out, would have involved an enormous increase of expense.

Robert Hooke, Surveyor.

JAMES ELMES.

Robert Hooke was the assistant, and sometimes the rival, of Wren during the greater part of that architect's career. He, like Wren, was an experimental philosopher; like him, had received a doctorial degree, when that honour was conferred only upon men of first-rate talent. To use a theatrical phrase, Hooke may be considered as Wren's double, and took the part of his principal whenever called upon. The great and extensive charge which devolved upon Wren after the fire of London induced him to take to his assistance this ingenious and able associate, whose avocations, under Wren, were chiefly those of measuring, adjusting, and setting out the ground of the houses in the private streets to the several proprietors, while he reserved the higher and more important works of designing and superintending the execution of the public works to himself. Hooke, at the same time, divided the labours and honours of the Royal Society with Boyle, Moray, Wren, and other philosophical members. Among the subjects submitted by Hooke to the Royal Society were a new method of making bricks, with less charge and more speed than had been then practised, and a design for a collegiate building for the use of the Society, to be built on a site of ground presented to them by their munificent associate, Mr. Howard, of Norfolk. This volunteer design did not please the Society, nor did the manner in which Hooke appeared to trench upon his master's ground, for at a meeting of the council on May 4, 1668, the president (Lord Brouncker) moved that the building of the Society's college might be begun forthwith, and Dr. Wilkins was desired to procure, at the next meeting of the council, Dr. Wren's design for the building. This was done, and Hooke was ordered to get a model made of the approved design, to contract with proper persons for the execution of the work, as also to find some one to be constantly present, and to see the workmen do their duty: thus appointing Wren as architect, Hooke as surveyor and valuer, with a resident clerk of the works. Of Hooke's repeated invasions into his master's province, abundant proofs are found in the records of the Society, and Wren at last complained of these interferences. Few men had more reason to say *sic vos non vobis* than Wren. Hooke appears throughout to have followed, thrust, and attempted to supersede in the public estimation his friend, patron, and principal, in every thought, invention, and discovery. Among the most prominent of the attempts is that recorded in the Transactions of the Royal Society, of his submitting to the council on September 19, 1666, a model for rebuilding the city, with which the Society is said to have been well pleased. Dr. Waller, in his life of Hooke, affects to wonder why this model was not accepted. The reason was, that the superior and more digested plan of Wren, to say nothing of Evelyn's, had been previously before the King and council. Hooke is believed to have been the architect to the Duke of Montague's house in Bloomsbury, afterwards the British Museum. Of his authenticated works, the best are the Royal Hospital of Bethlehem, which formerly stood on the site now occupied by Finsbury Circus, Moorfields, and Aske's Hospital at Hoxton. The former of these buildings had a Frenchified palatial look, not in accordance with its destination—a hospital for lunatics; and the latter, a collegiate appearance, with colonnaded ambulatories for the aged inmates, a hall and chapel for their accommodation, and a school for the education of orphan boys of the company, with a handsome statue of its founder in the centre. The style of both these buildings may be seen in the various illustrated histories of London, and a large perspective drawing of Aske's Hospital, by the architect, was among the pictures that decorated the court-room of the Haberdashers' Company, who are the trustees and governors of the hospital. This building has also been pulled down.

Building Workmen as Firemen.

J. BRAIDWOOD.

In forming the brigade in Edinburgh, where the firemen are only occasionally employed, the description of men from which I made a selection were slaters, house carpenters, masons, plumbers, and smiths. Slaters make good firemen, not so much from their superiority in climbing, going along roofs, &c., although these are great advantages, but from their being in general possessed of a handiness and readiness which I have not been able to discover in the same degree amongst other classes of workmen. It is, perhaps, not necessary that I should account for this, but it appears to me to arise from their being more dependent on their wits, and more frequently put to their shifts in the execution of their ordinary avocations. House carpenters and masons, being well acquainted with the construction of buildings, and understanding readily from whence danger is to be apprehended, can judge with tolerable accuracy, from the appearance of a house, where the stair is situated, and how the house is divided inside. Plumbers are also well accustomed to climbing and going along the roofs of houses; they are useful in working fire-cocks, covering the gratings of drains with lead, and generally in the management of water. Smiths and plumbers can also better endure heat and smoke than most other workmen. Men selected from these five trades are also more robust in body, and better able to endure the extremes of heat, cold, wet, and fatigue to which firemen are so frequently exposed than men engaged in more sedentary employment.

The Sketch-Book in the Lille Museum.*

PROFESSOR DONALDSON.

Who was the real author of these sketches? My own impression is that the whole book may be attributed to Vasari himself—that all the sketches of the library, of the Cupolino of the Sepulchral Chapel, and of the other details of Michel Angelo's work, were taken for his own guidance, or for the purpose of sending off copies to the master, to enable him to give the proper instructions to direct Vasari's proceedings in the completion of the buildings confided to his care. The sketches generally are executed with a certain ready freedom of hand and no great care; but some are drawn with much delicacy and with considerable precision and minuteness of form. Hardly more than two or three evince that bold and vigorous freedom of treatment which we are accustomed to consider as characteristic of the Maestro, as Vasari repeatedly calls him. One circumstance particularly struck me, and that was the numerous sketches of the circular chapel built in the cloister court of St. Pietro a Montorio, by Bramante. This building excited vast admiration at the time, and Serlio himself gives the plans, elevations, and sections of it in his work next to those of the cupola of St. Peter's, and among the numerous illustrations of ancient buildings, and Palladio also gives it among his ancient edifices. Other writers of the time mention it with unqualified praise. It would therefore be no wonder if Vasari, who was employed upon designs and models for tombs at St. Pietro a Montorio by order of Julius III., should have sketched parts and kept a record of such details. But that Michel Angelo, who despised the trammels of ancient art, should condescend to the task of minutely drawing the work of a cotemporary, and that cotemporary no friend of his, but the uncle and supporter of his rival Raphael, and one who crossed him in his great work for the tomb of Julius, seems beyond probability, however noble were many impulses of Michel Angelo's generous nature. I am given to understand that many French artists who have visited the Wicar collection concur in my opinion as to the propriety of not attributing this collection of sketches to Michel Angelo; and a distinguished member of the French Institute, a great amateur and connoisseur, assures my friend Hittorff that he had traced the writing on some of these drawings, and that it did not at all accord with that of the great master. I am therefore confirmed in the conviction that these architectural sketches are not the production of Michel Angelo.

* Vide *The Architect*, July 16, 1886, p. 33.

NOTES AND COMMENTS.

The fate of Mr. Nathan C. Hughes must make painters fear when their friends invent names for them. This unfortunate gentleman was styled "the swiftest painter of the age." Patrons in consequence were shy of him. All his commissions amounted to about twelve original pictures and twenty copies. He is now an inmate of the Lambeth Workhouse; but as a few orders came to him owing to the mention of his case in the papers he may soon be at liberty. We are not acquainted with the painter's works, but the description he gives of his method is not suggestive of a charlatan. "I paint from the shoulder," he says, "and never use a rest-stick. After each touch I walk backwards to see the effect a few yards. I then stand still a few seconds, or minutes, and consider what touch to give next. I then walk forward and give the touch with great care and deliberation as to its exact location, form, and colour. I then walk back and consider as before constantly. I always stand still before the canvas to give the touch slowly and accurately. I average about one touch per forty seconds; sometimes I give two or three touches before I walk back. I use flat hogshair brushes, and a palette and colours the same as other artists; and first I only locate and then I draw my objects on the canvas with charcoal carefully, so that they never require moving or altering afterwards. To paint a lady's eye with the proper expression from the shoulder requires a steady hand and nerves, and those I have. The simple secret of the swiftness lies in the slowness and care of my touches, which seldom require correction. To judge from my movements alone, you would think I was 'the slowest painter of the age.'" Mr. Hughes is evidently an artist with precision of style.

It is not generally known that the Louvre possesses sculptured stones which formed a part of the Parthenon. They are not of great importance if compared with the marbles in the British Museum. However, from their origin, interest belongs to them, and the eight or nine fragments are to be placed in the new Salle de Phidias.

Anything that is said by M. Jules Simon on the subject of education is sure to receive serious attention in France. When in the preface to his last book he is found denouncing the expenditure of so much money on school buildings while the teachers are badly paid, his argument does not augur well for architects. Apparently the sum voted for education will not be enlarged. It is not prudent that the services of masters of schools should be gauged by a lower standard than prevails in other branches of the public service, for they may not serve the cause of the Republic with the young generation; but it can also be said that the schools lately erected in Paris and the provinces are not of a grandiose or over-expensive kind. The cost per head is less than the average in England.

The replies which have been addressed to the Foreign Office on the subject of employers' liability abroad are interesting. It is remarkable that in America, where labour is said to be powerful, there are no statutory provisions imposing liability on employers in any of the States of the Union except Iowa. The common law doctrine in the United States is that common employment relieves the employer from responsibility for the injuries which one employé may receive through the negligence of a co-employé, unless negligence can be shown in the employment of unfit agents. This doctrine is the law of the United States, the single exception being in Iowa, in which the statute law provides "that every railway company shall be liable for all damages sustained by any person, including employés of the company, in consequence of any neglect of its agents, or by any mismanagement of its engineers or other employés of the company." But this law applies only to railways, the common law applying in all other cases. Parties seeking work in factories or on railroads can make a special contract relative to damages in case of accident through the negligence of co-employés, but this privilege throws the burden on the shoulders of the workman. The employer is now liable, under the common law, for two classes of injuries caused by fellow-workmen: when he has directly interfered in the act which caused the injury, and when by his negligence in selecting he has employed an incompetent workman. In all other cases, except where special legislative restriction exists, he is not liable for injuries to co-workmen unless by special contract he assumes to become liable. It is now, however, sought to change the "status" of the parties by legislative action, and to make the employer also liable for all injuries caused by his authorised agents in the legitimate performance of the duties which he has prescribed, such regulation to apply to industrial works and railroads. Such a law would place the necessity of proposing a special contract upon the employers instead of upon the workmen seeking employment.

The administrative council of the Paris exhibition of 1889 have estimated the expenses at 45,000,000 of francs. M. Lockroy, the Minister, has cut off eight millions at one swoop. The cost may therefore be estimated at one and a half million pounds of English money. The works are put down at thirty millions; the remainder is for administration and contingencies. The credit was originally for forty-two millions; two millions will be applied for reproductions of Old Paris, and the remaining three millions will be afterwards utilised.

German literature is not much studied in France, and there are fewer translations of the great authors to be found in that country than in England. The speculations of Semper have a chance of being made known there—or at least among French architects—for Mr. Harvey has commenced a series of articles on that philosopher in the architectural review which is edited by M. César Daly. It is the more remarkable to find articles of the kind in such a publication, for some of M. Daly's essays in bygone years bore a resemblance to Semper's.

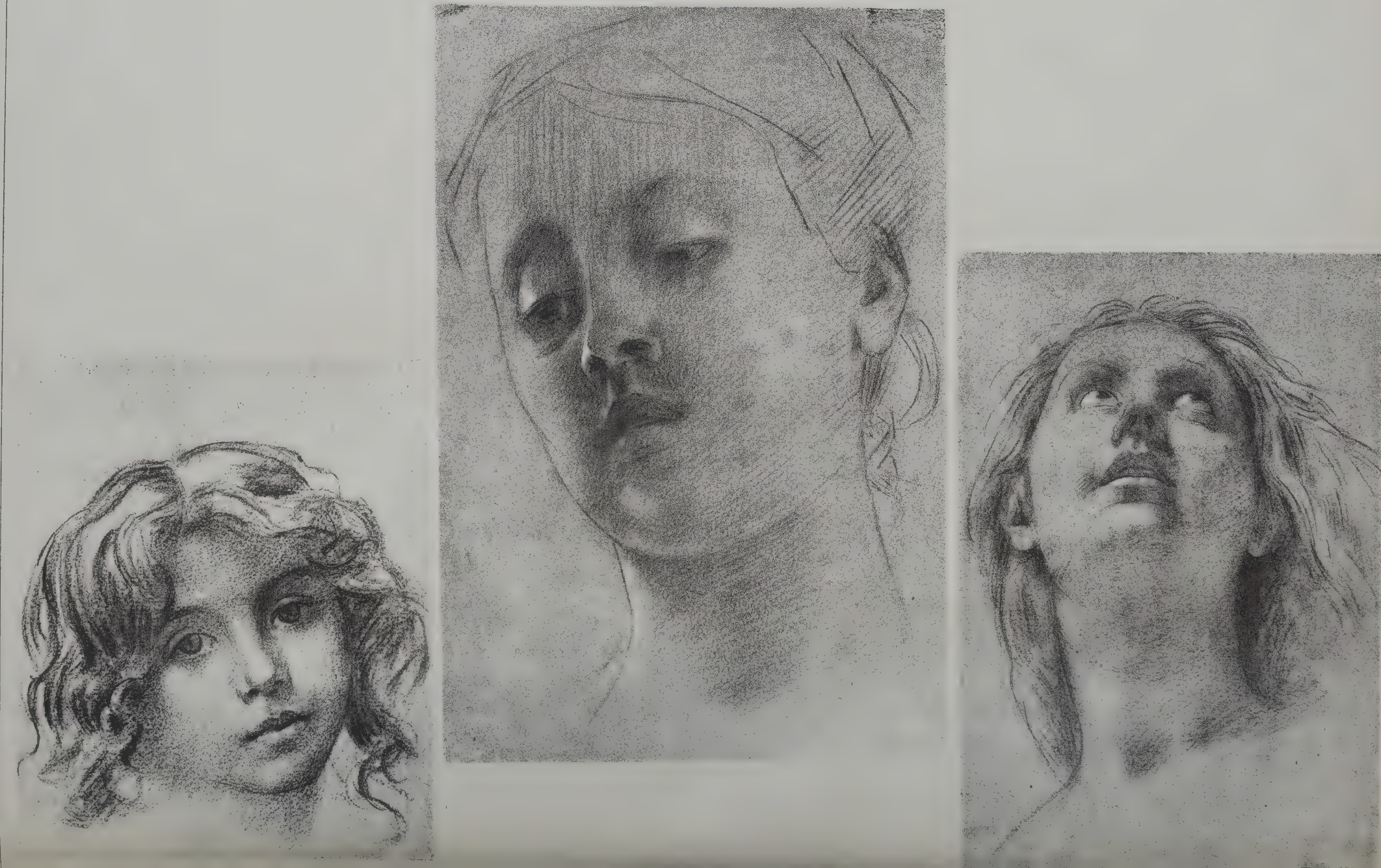
There has been commotion among the artists of Ghent in respect of the Prix de Rome—a reward which Belgium possesses as well as France. The prize for painting was obtained by a M. Montald, and he and his friends made merry over his victory. But there was consternation when, after the feast, it was discovered that the Government had annulled the decision of the jury. It is needless to say the brave Belgians almost rose in revolt. Afterwards it was discovered that the election was not recognised because of non-compliance with the conditions of the prize. The law prescribes an absolute majority. Of the nine judges two would not vote, three were against M. Montald, and four were favourable to him. A new election took place, and, as the two recalcitrants no longer stood aloof, six votes were then obtained by the artist, and no doubt the prize has become more enjoyable through the temporary disappointment. All the authorities desired was a compliance with official forms.

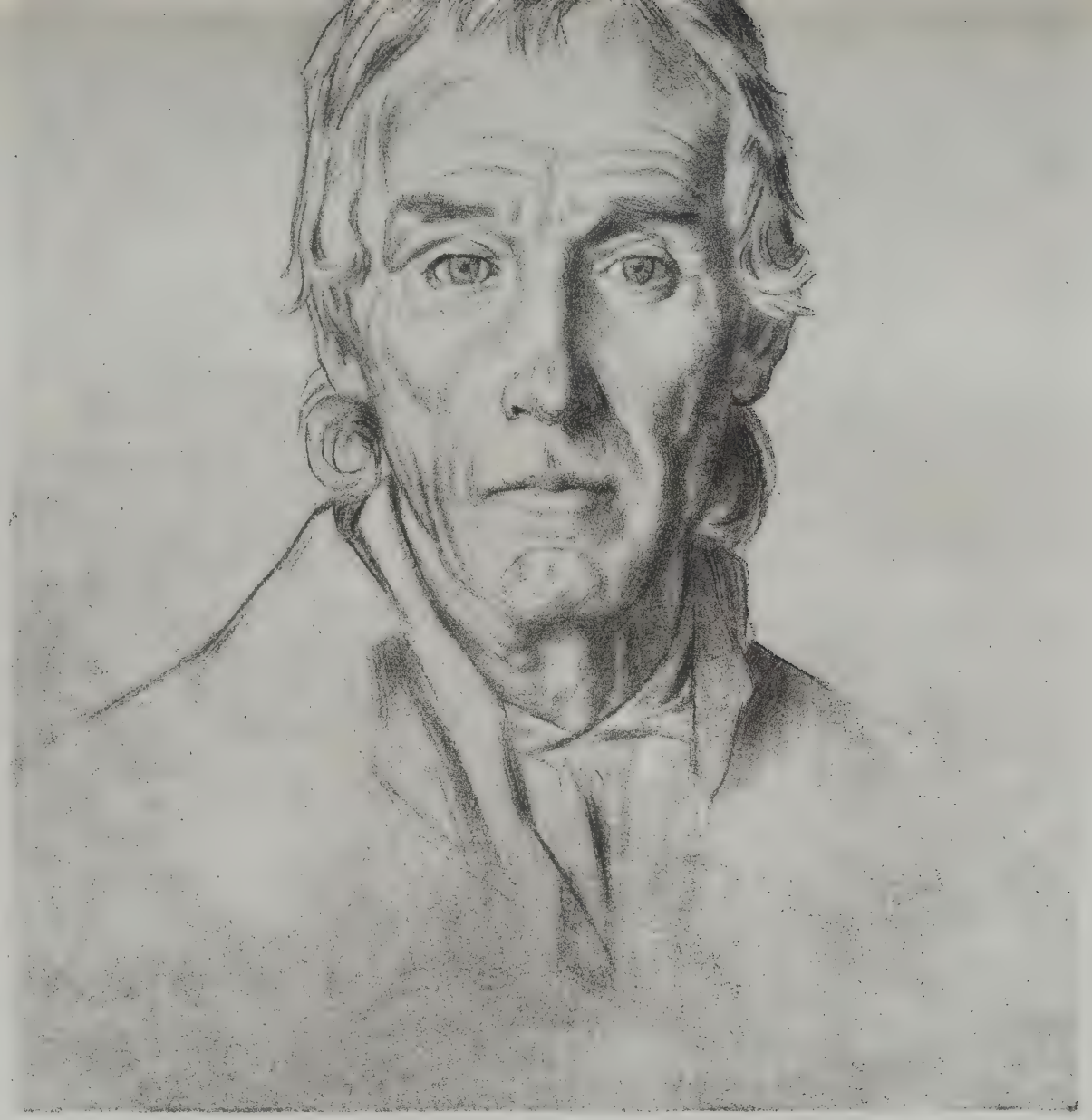
"Hamlet" at the Théâtre Français is less of a success than we had anticipated when writing on the subject a few weeks back. Many of the defects which we had hoped might be avoided are almost obtrusively perceptible. For example, we ventured to suggest that M. Got should remember the position of Polonius. He was a gentleman, but he is not so represented in the house of Molière, M. Maubant apparently is fixed in French classic mannerisms, and cannot adapt himself to so foreign a *rôle* as a ghost. M. Silvain is disappointing, for there is nothing about his manner that would be likely to captivate a queen. In one or two of the earlier scenes Mdlle. Reichemberg played well—as she does whenever she has to be demure—but the mad scene was beyond her powers. It is difficult at present to criticise M. Mounet Sully. He was evidently not at ease on Tuesday, but he has taken a very lofty conception of Hamlet's character. He suggests that when the Prince spoke of being carried away by whirlwinds of passion, he was remembering his own impulsiveness. M. Mounet Sully's last scene was magnificent. The tragedy is mounted in an expensive way, although more archæological accuracy has been witnessed in London theatres. As a scenic display it was novel; and since M. Meurice's version is far more impressive than the one lately performed at the Porte St.-Martin we may expect the tragedy to be a great success, according to managerial ideas.



The Font
Leverington Ch
Cam.
Sketched Sept.r 1886
A. Needham Wilson

INK-PHOTO. SPRAGUE & Co 22, MARTINS LANE, CANNON S. LONDON E.C.





"INK-PHOTO," SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

STUDIES FROM LIFE.

By M. URBAIN BOURGEOIS.



Printed by Spottiswoode & Co. 22, Martins Lane, Cannon St. EC

The Font
Walsoken Ch.
Norfolk.



Sketched Aug. 22 1886
A Needham Wilson.

INK PHOTO. &PRAGUE & Co 22, MARTINS LANE, CANNON St. LONDON E.C.

ILLUSTRATIONS.

STUDIES FROM LIFE.

M. URBAIN BOURGEOIS holds a prominent place among the decorative painters of Paris, and his works are in much request for churches in many parts of the world. At the present time he has several important commissions on hand for Canada ; the French Canadians are never forgetful of their relations to France. We publish this week some sketches from M. BOURGEOIS's portfolio of life studies. The head of the old man might be supposed to belong to a philosopher, but a French peasant sat for the portrait.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 25. GATEWAY, PALAZZO TOLOMEI, SIENA.
NO. 26. TOWER, S. MARIA DEL CARMINE, SIENA.
NO. 27. FONT, LEVERINGTON CHURCH.
NO. 28. FONT, WALSOKEN CHURCH.

THE ARCHITECTURAL ASSOCIATION.

WE understand that the Architectural Association's practical class of masonry, under the direction of Mr. Lawrence Harvey, will be carried out on the same lines as the classes of masonry in the old guilds of stonemasons. The students will be made to construct models of various structures at the scale of about one-eighth real size, and will execute for that purpose the working drawings, as well as cut out each stone. The instruction will be mutual, as is still usual in the remaining guilds of stonemasons abroad. Every student will be expected to give as well as to receive instruction, so that the lessons delivered to a few by the director of the class may be transmitted to all those who wish to study masonry. By this means two advantages are secured : firstly, a much closer supervision can be given to each student than when the teacher has to deal with large numbers of pupils ; secondly, each student has an opportunity of testing his own knowledge when he endeavours to teach others. Therefore none of those who apply to join this class need fear to be disappointed. The selection of the ten members of the first class will be made on the principle of their seniority in architectural practice, as being the most likely to profit by the instruction given, and to be able to teach in their turn. The others will join the subsidiary classes, which will be formed as soon as possible under the direction of the members of the first class.

We advise architectural students to utilise this opportunity of studying the science of masonry, a science indispensable to the true comprehension of the art of architecture ; for, as Mr. Dobson truly says in his rudimentary treatise on masonry, "The character of all genuine architecture, no matter of what age or country, is so dependent on its mechanical structure, that we cannot successfully imitate the style of any period, without thoroughly understanding the principles of construction which prevailed at that time."

THE ORIGINS OF ORNAMENTAL ART.

ON Sunday a lecture was given at the New Islington Hall, Ancoats, Manchester, by Mr. William Morris, on "The Origins of Ornamental Art."

Mr. Morris began by explaining what is meant by ornamental art. It is, he said, the art of the people—the art produced by the daily labour of all kinds of men for the daily use of all kinds of men. All the things produced by human labour might be made without any reference to anything but their first obvious use. But men would not have it so. From the very first they have striven to make their household and personal goods beautiful as well as useful. The rudest savage no sooner learns how to make anything than he learns also how to ornament it. Before the earliest dawn of history this instinct for ornament existed as clearly as it did in the palmy days of Italian art. As you know, implements exist of men who dwelt in Europe ages before any of the races we name now on which are carved with no little skill the forms of the beasts of the forests they wandered in, and in which life must have been so hard and beset with so many dangers that we may well wonder that they had time or courage to think about art. So divine a thing is the spark of human intelligence ! What does all this mean ? Why did they do it and take all this trouble ? Who taught them ? Indeed their teacher is not far to seek. Whatever lived or grew about them—nay, the mountains, the rocks themselves—"the bones of the earth," as the Northmen called them—had something about them which they must have dimly known for beauty. The things which were useful to them for food and fuel and clothes were ornamented ; the day and the night, sunrise and sunset, which showed to their dim minds as beings of passions like themselves ; the serpent whose lurking malice and swift wrath they feared, and whom they worshipped lest he should slay them—all these had been fashioned fair and lovely by forces of which they knew nothing, and they, the latest born and may be the most terrible force of nature, how could they choose but take up the links of the chain and work as nature worked about them ? Many things she compelled them to, and this also. This, then, was the birth of popular or ornamental art, the birth of man's intelligence. It seems to me that ornament on wares had its origin not merely in an attempt to escape from the wearisomeness of labour, but rather in an expression of pleasure in the hope and sense of power and usefulness which men felt in the making of things in the childhood of the world. That pleasure of labour did not fail man for many ages. That which makes Gothic art—by which term is indicated the work of the Middle Ages—what it is is its freedom. It was above all things the art of the people—the art of co-operation. No craftsman who is a real one is despised in it. There is room for every mind and every hand that belongs to a real man ; something to express, and some means of expressing it are all that is asked for. All the time this art lasts no handicraft lacks beauty for a moment, nor is any one set to dull and slavish toil. Things grow beautiful under the workman's hands without effort, it would seem, and men do not know how to make an ugly thing. Nowadays when we light on a piece of the household goods of this period we pay vast sums of money for it and treasure it up in a museum, for it teaches us—us who know everything else—this rough piece of handiwork, done by an artisan who thought that the world was like a flat dish and that the sun went round the rim of it. If this seems strange to you, let me remind you of one kind of work wrought by these craftsmen which is both more accessible and more impressive than their movable household goods. I mean some of the buildings which our forefathers lived in, and among which it is your rare good fortune to live—a good fortune which I hope will leave its impress in many an hour of sweet indestructible pleasure on the future lives of every one of you. I am afraid I am taking you a long way from the first dawn of popular art. Centuries we cannot count lie between the day when the cave dweller scratched his drawing of a mammoth on a mammoth's bone, and the day when the English masons and wood-carvers struck the last stroke before the Reformation on the work at, say, St. George's Chapel, Windsor. During all those ages whenever we catch a glimpse of the life of the people we find the popular arts progressive on the whole, and seldom failing in their first aim of lightening the toil of man by giving him pleasure in his daily work. A long lapse of years indeed, while from the time when Sir Thomas More wrote his eloquent attack on commercialism and land-grabbing till now, the days are few, the time short. But what has happened to popular art in that short while ? What has happened to the popular arts, I say, in those three hundred years of struggle, mostly successful, for religious and political liberty ; in those centuries of miraculous progress, during which England has grown from a semi-barbarous island-kingdom into a mighty empire, the master of the minds of men as well as of their bodies ? I can tell you in three words what has happened to those arts : they have disappeared. That is a strange story indeed, and you may well doubt its truth, the change is so tremendous. But my whole position is this—to have popular art, or the art of the people, it must be made by and for the people, which means, as I have said, that man's handiwork is universally beautiful to the eye and elevating to the mind. But such art as pretends to be popular nowadays, do the hands and minds of the people fashion it ? Do the people use it ? Are the people rejoiced with the making and the using of it ? So far is this from being the case that the people do not even know that such an art exists or ever has existed. What pretence there is of decorative art is little touched by the people's hands and not at all by their minds. They work at it not knowing what they do. Like all other toilers nowadays, their work is a grievous burden to them which they would cast off if they could. We cannot help knowing that not another hour's work would be done on the decorative arts to-day if it were not that the workers feared death by starvation if they left their work. I hope you do not suppose that on these terms of labour you can have an art which has any life in it. If you do you are dreaming, and will have rude awakening some day. The existing gulf between rich and poor, which is in fact a gulf between civilised and uncivilised people living in the same State and under laws nominally the same—this is the gulf which has swallowed up the popular arts ; the art which raised our ancient buildings here and elsewhere, and under which every man's intelligence, were it great or small, was used and subordinated at once for the creation of a great work of art, whereas now it is

accepted as a fact that whatever intelligence one of the non-gentleman class may possess is not, and cannot be, exercised during his working hours. In order to win that privilege he must raise himself out of his own class and become a gentleman. The essence or soul of popular art is the due and worthy delight of each worker in his own handiwork—a delight which he feels he can communicate to other people, as it has been communicated to him by the thoughts of many generations of men under the name of tradition. If any of you care about art in any form, I am sure you will allow that this reciprocal pleasure of communication is always present at the birth of a work of art. When you have been listening, for instance, to a beautiful piece of music, could you possibly suppose that it was an irksome task to invent the sounds which were filling your whole soul with satisfaction, or, when you have been reading some beautiful passage of poetry, could you suppose that the strong and melodious words which were elevating your soul and opening new worlds to you had been given forth from the writer's brain in a dull and pleasureless mood? Surely it is impossible that it should be so. Yet, remember, the artist's, the musician's, the poet's work is not easy; it is real labour enough unless he is a pretender. There are traps and pitfalls on the right hand and on the left into which his hope of creating a work of art may fall, and against which even the best man has to be laboriously on his guard. I say he is a workman or no artist, and on those grounds I claim some share of the divine pleasure of creation which accompanies it for all handicraftsmen, believing firmly that the making good of this claim is a necessity for the world, if civilisation is to be anything else than a name. For, first, unless this claim is allowed and acted on, unless it is insisted on as a necessary part of the organisation of society, it must be the rule that all things made by man for the use of his daily life will be ugly and base, will show wherever they are placed as mere blots on the beautiful face of the world. And, secondly, it will surely be but right and just that they should be ugly and base, for so done they will be but tokens of the enduring sorrow and slavery of the great mass of mankind; for all people not dishonest must work, and in one way or other their working hours must be the most important part of their lives. If, therefore, they have due hope, pleasure, and honour in their daily work, their lives will, on the whole, be happy; if they lack that hope, pleasure, and honour, their lives will be unhappy. It would, therefore, be unjust that art should come from the unhappy lives of the most of men, or, in other words, that the great mass of people should toil miserably for the pleasure of a few dishonest people. Fortunately, you see, as far as the arts go, that cannot be; it is a question of art and the happiness of the worker, or lack of art and his unhappiness. For these days, then, in which man has obtained so much domination over the forces of nature, in which so much of what passes for wealth is produced, in which society, taken as a whole, either is or could be so rich—in these days what are the conditions of life for the working classes—that is to say, for most men—which would produce beauty and happiness for the world? 1. No honest or industrious man must be under fear of poverty. The sordid troubles which this fear produces destroy imagination and intelligence, or turn them into other channels than the hope of giving pleasure to the world. Every man, therefore, must be certain of earning a due livelihood, by which word I understand all things necessary for his mind as well as his body. 2. All men must have due leisure—rest for body and mind, time for following according to their bent other occupations than the mere breadwinning one, even if it be pleasant; and if their breadwinning work is of such a rough nature as of necessity to lack art or expression of pleasure in it, the daily hours of such labour must be very short. 3. It follows from this last remark that all work in which art or pleasure is impossible should be done without as far as may be—that it should be looked on as a nuisance to be abated, a sickness of society. As far as possible it should be done by machines; and machines should never be used for doing work in which men can take pleasure; whereas at present, as we all know too well, men do the work of machines and machines of men—both disastrously. 4. Those who are to produce beauty must live amidst beauty; their homes and surroundings must be clean, orderly, and, in a word, beautiful. This should be no hard matter to accomplish, since the whole world is beautiful save where man has made it ugly. 5. All men should be educated, and have their due share in the stored-up knowledge of the world, so vastly greater now than in the days of art, but so much more unequally shared. All men, I say, should be educated, not down to their "station in life," as people call it—that is, according to the amount of money their parents may have—but according to their capacity. 6. When all these claims are allowed and acted on, the last claim I make for labour will come of itself—that is, that there should be an end of class distinctions; that is to say, that all crafts should be honourable and honoured, and that every man should be able to rise to eminence and fame by the exercise of his own craft, the work he understands best; whereas at present he can only rise to eminence by deserting his craft, by taking an undue share of the wealth of the world as wages for doing lighter work than his fellows—by becoming a capitalist, as the phrase goes. To my mind these are the conditions of life for working men, or really for all men, under which we can have in these days once more popular art or a happy life for most men. Is it worth while to strive to bring about this happy life? If it be, can we say that the price to be paid for it can be too high, whatever it may be? You will have understood, if you have followed my statement of the due conditions of labour, that in my belief that price is the reconstruction of society, for no mere palliatives of the evils of the present system will bring about those conditions. Furthermore, I admit that such a great change would involve the sacrifice from many of us of things now much cherished; yet, as I believe that those who uphold the present conditions of labour on the grounds of self-interest do so rather from stupidity than malice, so I think that their loss, or punishment if you will, will be rather imaginary than real when the change comes. I think what we shall chiefly have to sacrifice will be the incumbrances, the troubles, the sorrows even, which we now cherish as part of our wealth. As to the means by which the reconstruction is to be brought about, I must for more than one reason say nothing of them to-day save this, that you yourselves in one way or other will, as time goes on, have offered to you opportunities of helping forward or of hindering that reconstruction. I believe the time is at hand when each one of us of the well-to-do and rich classes will have to choose whether he will strive to have the great mass of men his equals and friends or to keep them down as his slaves. When that time comes may we all remember this, that wretched and shameful as is the condition of a slave, there is one condition more wretched and shameful still—that of slaveholder.

THE SHREWSBURY BATTLEFIELD.

THE members of the North Staffordshire Field Club took part in an excursion to Battlefield and Haughmond Abbey on Thursday in last week. Mr. Charles Lynam, architect, who was the leader of the party, read a paper on the battle of Shrewsbury on the site where, it is said, the slain were buried. Mr. Lynam said:—Henry IV., having usurped the throne of his cousin Richard, and having put that unfortunate monarch secretly to death, naturally had many enemies. Some of these were great barons of ambitious mind, who, seeing the success of an adventurer, thought to follow his example. Others, like Owen Glendower, friends of the late king, wished to avenge his death, and put upon the throne the rightful heir, the Earl of March. Others again, like the Percys, having been chiefly instrumental in putting Henry on the throne, did not consider that they had been sufficiently recompensed for their great services. Therefore the Percys, father and son, Owen Glendower, Thomas Percy, Earl of Worcester, many knights of Chester and the Marches, made a rendezvous at Shrewsbury, meaning thence to march in overwhelming force against the king. However, Henry, ever active and prudent, was equal to the emergency. From Burton-on-Trent he marched straight to Shrewsbury, and prevented the junction of the Welsh under Glendower, who were at Oswestry, 12,000 strong, with the insurgent army from the north. Arriving in time to prevent Harry Percy from scaling the walls, he did his best to force on a battle at once. An attempt made by Percy to come to terms was frustrated by the treachery of Thomas of Worcester, who perverted the friendly answer of the king, and made it an insulting command to submit. The fiery Hotspur replied with a challenge to Prince Henry to settle the matter by duel, which the king forbade, and on the vigil of St. Mary Magdalene, July 22, 1403, the armies met; the battle was one of the bloodiest and fiercest in our history, the forces were equal—12,000 on each side. The leaders were well matched. Henry exposed his person in the thickest of the fight; his gallant son, whose military achievements were afterwards so renowned, and who here performed his novitiate in arms by his valour, regained his father's lost opinion, and, even when wounded by an arrow in the face, refused to quit the field. Harry Percy supported the fame for fiery valour which in many a bloody fight had won him the name of Hotspur, and Douglas, his ancient enemy, and now his friend, still appeared his rival, amid the horror and confusion of that day. Through all the fight he sought the King of England, and determined to slay him with his own hand. Henry had accoutred many of his knights in the royal armour to elude his enemies and to cheer his friends, and this honour the sword of Douglas rendered fatal to many. The battle having raged from the Bullfield, where Douglas had ranged his forces in a field of ripe peas, to hamper the heavy infantry of the King, right away to Haughmond, was at length decided by the death of Percy, who was shot by an arrow from an unknown bow just at the critical moment when Douglas, having killed Sir Walter Blount, the king's standard-bearer, was pressing Henry hard. But the cry "Percy is slain!" discouraged the rebel soldiers,

and the three hours' fight was brought to an end. Douglas was let go free without ransom by Prince Henry, who admired his valour, but Thomas of Worcester and Sir Richard Vernon were beheaded at Shrewsbury; also many knights and gentlemen of Chester were slain. In all, 2,300 gentlemen fell and 6,000 private men. On the king's side fell the Earl of Stafford, Sir Hugh Mortimer, Sir John Calverly, Sir Hugh Shirley, and Sir Robert Malveysin. There is a tomb to the latter in the church at Mavesyn Ridware. The others were buried in the convent of the Augustines, Blackfriars. Shortly afterwards the elder Percy, Duke of Northumberland, who, lying sick at Berwick, could not come up in time for the battle, being defeated by the Earl of Westmoreland, was put to death. Owen Glendower, who during the fight was lying inactive at Oswestry, maintained his independence and waged successful war in Wales against Henry, and died at last in peace. Henry erected a collegiate church at Battlefield in honour of his victory, and placed in it five canons to pray for the souls of those who fell on the fatal field. Shakespeare's account has immortalised the battle, but of course the trustworthiness of his narrative is interfered with by his free use of the dramatist's license. Still, though his account of Falstaff, and the fight for an hour by Shrewsbury clock, and the death of Percy at the hand of Prince Henry is fictitious, nevertheless much of his description is historical.

The original authorities are the "Chronicon Angliæ tempore Henrici Quarti," of uncertain authorship, and the "Historia Anglicana" of Thomas Walsingham, monk of St. Albans, who gives a very full and interesting account, published in Latin by the Master of the Rolls.

From Battlefield the members went, under the guidance of the vicar, to the Manor House at Albrighton Hussey, and inspected both the inside and outside of the house. The party then took carriage to Haughmond, where Mr. Lynam took them over the ruins, of which he gave an elaborate architectural description. Afterwards Haughmond Hill was ascended, and the party subsequently drove to Shrewsbury.

THE KING'S PALACE AT SUSA.

THE Louvre has been enriched by a collection of remains from Susa, in Khurzistan, obtained by M. Dieulafoy. A correspondent of the *Times* gives the following interesting account of the discoveries:—

His first trench opened on the Achæmenian tumulus was on the south-east side of the *apadana*, and at an acute angle with the line of the columns, he being convinced that it was on the southern side that the entrance must be sought. The labourers very shortly laid bare a colossal capital of a column, composed of a double-headed bull, which, happily, is now in the Louvre. Continuing the work until the original level of the court was reached, the excavators came upon a mass of brickwork that had evidently fallen in a piece, and face downwards. The bricks were about 14 inches long by 7 inches high and 9½ inches thick. They were composed of a hard cement, the outer surface being enamelled in colour and showing ornamentation, both modelled and in the flat. It was clear they formed portions of some vast piece of wall decoration, which it might be possible to reconstitute. This in effect was accomplished, and the result revealed a superb frieze of lions, in low relief, set between bands of ornamentation, incised in outline in the bricks, the whole being delineated in colour and enamelled.

The lions measure about 5 feet 9 inches in height, and more than 11 feet from the muzzle to the end of the outstretched tail. They are essentially naturalistic in treatment, while retaining archaisms in the lines of the face and superadded bosses in golden yellow colour on the shoulders and flanks. The anatomy is well understood; the accentuated joints, the massive paws, the lithe body, the long stride, and balanced head display all the characteristic points of the animal. The freedom of line and the exact modulation of relief testify that the sculptor was as masterly an executant as he was a close observer of nature. To these qualities must be added a sense of colour of rare delicacy. On a pale turquoise ground, suggestive of the limpid sky of Persia, the lions are relieved in a predominating tint of white, a tawny gray mane and the above-mentioned bosses emphasising the variety of texture and the more salient masses of muscle. Above and below the main motive are bands of ornament; serrated, honeysuckle, and rosettes, analogies of which are found in Egyptian and Assyrian edifices. Below the ornament are lines of cuneiform inscriptions. The extreme top was probably crenellated, since enamelled blocks decorated on five sides have been found. This implies that the frieze occupied an elevated position; M. Dieulafoy believes it to have belonged to one of the pylons or porticoes that stood in advance of the *apadana*, similar to those now remaining at Persepolis. The lower portion, he concludes, was faced with white and rose unglazed bricks (of which he has found many) arranged in diaper fashion, something after the manner of the outer walls of the Doge's Palace at Venice. Unfortunately the inscription is imperfect; M. Dieulafoy gives valid reasons, however, for attributing the decoration of the lions to the period of Artaxerxes II., and for the supposition that the pylons replace others of the time of Darius. Fragments of unglazed bricks, being portions also of a lion frieze, were found in such a position as to lead to the conclusion they had been used for filling in the more recent construction.

Other examples of enamelled bricks, with ornamentation in the flat, are believed by M. Dieulafoy to belong to a still earlier building, and to have been the walls of a staircase which had crenellated tops, like a staircase at Persepolis. The scheme of ornamentation is of rare beauty; on a ground of olive green spring ascending lines of conventional flowers; they are coloured alternately golden yellow and turquoise blue, each line being surmounted by a honeysuckle ornament in white. Their derivation is palpably Egyptian. As an example of surface decoration they will rank with the finest work of any period.

A trench sunk immediately in front of the *apadana* showed that the floor of the hall was only six inches above the level of the court. Excavations were then made south of the pylons, and the grand staircase was at length discovered. It is similar in plan to that at Persepolis, but on a larger scale, sufficiently wide for an army to ascend its stately steps. Two lateral entrances were found to the *apadana*. That on the east is supposed to be the royal entrance; the brickwork also showed clear indications of successive palaces. One mass of enamelled bricks, when separated, proved to be a portion of a panel containing a representation of a man wearing a green robe ornamented with embroidery in yellow, blue, and white; a tiger-skin hung from his shoulder; in his hand he held a gold-headed lance. The ornamentation is archaic, and suggests Babylonian influence. The face and hands are painted black; the type—thin lips, long nose—is not, however, of the African negro. M. Dieulafoy suggests that the ancient Elamites were black-skinned, and that the Susians were an isolated tribe of the antique colonists of Asia, the Diasgons of the Rig-Veda, the Ethiopians of the Levant mentioned by Homer and carefully described by Herodotus. It was in the vicinity of the royal entrance that the most important example of Achæmenian art was discovered. This consists of a vast expanse of wall space containing a frieze of armed men in enamelled bricks. The figures are moulded in low relief, and while soft have undoubtedly been finished by hand. The warriors are arrayed in processional order, and are seen in profile; each man grasps a lance, and carries, slung over his shoulder, a bow and quiver full of arrows. They wear a close-fitting cap with a rolled band, both of a green colour. A tunic open at the sides descends to near the ankles. Over this there is a long-sleeved jacket confined at the waist by a girdle; a vest covers the breast, its sleeves, open from the elbow to the wrist, showing the undershirt and the golden armlets. The costume is completed by low boots laced in front. The pattern of each man's dress is the same; the colour and ornamentation vary alternately. In one instance the tunics are yellow, spotted with rosettes in white on a green ground; in the other the tunics are white and covered with squares containing three towers, with triangular battlements, in yellow on a purple-brown ground. We have here one of the earliest known instances of heraldic blazonry, the towers are evidently intended for those of Susa; they are similar to the castellated towers in the representation of Susa on a slab in the Nineveh collection at the British Museum. The tunic has an embroidered border in purple and yellow, green and white. The long sleeves are varied; on the yellow tunics, purple; on the white, yellow. The quivers are dark purple strewn with bean-shaped patches of malachite. The figures stand about five feet high. They belong to a black race of Semitic type, prominent noses, firm lips, short curled beards, and a bush of hair curled at the ends giving them a decidedly resolute and martial air. It will be recognised here that there are obvious analogies with Assyrian sculpture, but there are also indications of Greek influence. Folds are not indicated on the Nineveh bas-reliefs, although they were doubtless expressed in the colouring. Here the tunics have plaited folds extending from the front of the figure downwards and backwards. Where the tunic opens the suggestion of a "cascade" is also Greek. The eyes are modelled as in Egyptian sculpture. Bands of similar ornamentation to that on the lion frieze frame the procession. The ground also is turquoise blue, not precisely the same tint throughout, but here inclining to purple-blue and there to green. So with the costume, where varieties of tone and delicate modulations of tint are arranged with consummate taste. It may be said that we have in this unique and remarkable frieze one of the most splendid and important examples of chromatic decoration that have come down to us from antiquity. Certainly nothing in its special character as wall decoration can surpass it. A study of its technique will display some interesting methods of manipulation of the highest value to artists, but the discussion of which would be beyond the scope of the present notice.

Those acquainted with the Persepolitan sculpture (a small

collection of marble bas-reliefs is to be seen at the British Museum) will recognise figures similar to the above in the bas-reliefs from the staircase; the costume, however, is somewhat different. In point of artistic excellence the Susa work has a decided advantage, showing, undoubtedly, that the Persian artist had a more pronounced aptitude for modelling than carving. It must, however, be remembered that the Persepolis figures have lost their colour. The scheme of colouring applied to stone and marble, and its method of application at this remote period are, saving in the case of some Egyptian edifices, comparatively unknown to us. Detailed descriptions of Persepolis, as that, for instance, by Flandrin, omit all reference to the fact of the stones having once been painted. No indications of applied pigments are apparent, but that is scarcely matter of surprise, considering their long exposure to the weather. Neither in the double-headed bull capital and other sculpture from Susa can traces of colour now be observed, yet here also exposure and subsequent burial in earth soaked by torrential rains will account for its obliteration. But it is impossible to conceive that where the walls glowed with chromatic decoration, where the pavement shone with precious marbles, and where the roof was spread with ultramarine and gold, the columns and capitals were allowed to remain in their Quaker garb of cold gray—such is the colour of the limestone. The eye accustomed to the public buildings and monuments of Paris and London accepts this monotonous gray without question; it is critical of form, but insensible of the absence of colour. Not so the ancients; the Susian was compelled to use stone for his supporting columns, his predilection was for the moulded brick, whereon he could spread his dazzling enamel. But nothing was easier than to colour the former in harmony with his cherished vitreous glaze. How long he had acquired the art and whence derived can be stated with tolerable certainty. The frieze of warriors is of the time of Darius. Earlier specimens of glazed bricks have been found at Nineveh and Babylon. Still earlier are those from Tel-el-Jahûdî, for they bear the cartouch of Rameses II. An examination of these remarkable fragments (due, we believe, to the enterprise of Mr. Greville Chester) in the Egyptian department of the British Museum will show certain of the original motives of the Susian decoration. Historians of Italian art speak of the "discovery" of Luca della Robbia; here is the faïence decoration in the highest state of excellence more than 2,700 years before he was born, and, in respect of imposing design, nothing from his furnaces approaches the Susian friezes.

Besides the artistic value of the frieze of warriors, it possesses a remarkable interest historically considered. Readers of Herodotus will remember that his description of the costume of the Persians and the arms of the guards—the Immortals—tallies exactly with that on the frieze, even to the silver knob on the foot of the lance. Thus we have brought before our eyes the effigies of the body-guard of the Persian king, that would be appropriately depicted on the wall of the porticoes surrounding his palace. It was doubtless in the *apadana* that Xerxes assembled his council before setting forth on his expedition against the Greeks, related by Herodotus. And if the same Xerxes was the Ahasuerus of the Bible, it was here he held his great feast. "Now it came to pass in the days of Ahasuerus (this is Ahasuerus which reigned from India even unto Ethiopia, over an hundred and seven-and-twenty provinces), that in those days, when the King Ahasuerus sat on the throne of his kingdom, which was in Shushan the palace, in the third year of his reign, he made a feast unto all his princes and his servants; the power of Persia and Media, the nobles and princes of the provinces, being before him; when he showed the riches of his glorious kingdom and the honour of his excellent majesty many days, even an hundred and four score days."

Thanks to the discoveries of M. Dieulafoy, we can, in imagination, come up from the city by the gently inclined road for cars. We curiously examine the stately façade of the *apadana*, glancing at the Immortals that guard the precincts of the enclosed court, cooled by fountains and water tanks. We pass between the pylons, staying to contemplate the gigantic human-headed bulls covered with elaborate inscriptions (these we know from their Persepolitan fellows, those at Susa are not yet discovered). We stand at the head of the grand staircase and see before us the massive citadel and to the left the enormous pile of the King's palace and the palaces of his wives. Then retracing our steps we enter the many-columned *apadana*, stand on its "pavement of red, and blue, and white, and black marble." There are "white, green, and blue hangings, fastened with cords of fine linen and purple to silver rings, and pillars of marble," and "the beds (couches) are of gold and silver." We can stroll through the porticoes, the walls of which display the pictured Immortals, and comparing them with the living originals, admire the sculptor's proficiency. Then passing behind the north portico, a dip in the outer fortification permits us to contemplate one of the most marvellous panoramas on the face of the earth. Below lies the city with its domes and monuments interspersed with groves of date and konar and lemon trees, beyond in the dazzling sunshine stretch rich pastures and golden seas of corn, and in the far distance rise the snow-topped chains of Láristán and the Bakhtiyárí.

M. de Roncourt, the Director of the Louvre, is preparing a handsomely decorated hall in that building for the reception of the contents of the 275 cases containing the multifarious objects of the Susa find. To his constant support and interest with the Government is due, in a great measure, the successful result of the exploration. And, if we are rightly informed, through his courtesy in furnishing South Kensington Museum with reproductions of the friezes the English public will before long become acquainted with those remarkable examples of Achæmenian art.

TECHNICAL EDUCATION CONGRESS.

An international congress on technical education, commercial and industrial, was held last week at Bordeaux. Sir Philip Magnus read a paper on technical education in England. He stated that the English are no longer so dependent as they were on Parisian artists for industrial designs, and that they now almost exclusively employed English draughtsmen in manufacturing lace, carpets, wall-papers, curtains, and furniture.

M. Roy, the delegate of the Chamber of Commerce of Paris, replied to these statements. He admitted that, in consequence of the very meritorious efforts of associations and private persons, the production of articles of luxury had made great progress in England, under the direction of Parisian managers, tempted to cross the Channel by the attraction of high salaries. But much was still wanting to elevate the taste of the English to the French level. Especially with regard to tissues, Lyons, Saint-Etienne, Rouen, and Roanne maintained an incontestable superiority. It should, however, M. Roy added, be admitted that English competition was in the main a fair one. The case was quite different as regarded German competition. The English strove to equal the French by improving their methods and getting their work done by good men. The Germans purely and simply appropriated French patterns and reproduced them in inferior goods, which they sold as French products. M. Roy had no hesitation in stating that, as regards the greater number of products, France could manufacture more cheaply than England, and with the same cheapness as Germany. The Germans and the English were spreading reports everywhere that the French could not manufacture cheaply. They knew better than anybody that this was a complete error. But they also knew that the best means of closing the markets against rival manufacturers was to say that the goods of the latter were dear. By dint of hawking about this calumny in all directions Europe had begun to believe it, and the error had even taken root in France.

AMERICAN SANITATION.*

By John B. Gass, A.R.I.B.A.

(*Concluded from page* 188.)

The bath tubs are ordinarily of tin and planished copper, 16, 18, and 20-oz. metal; they are also used of iron, enamelled or painted, while the earthenware ones are imported from England. In the overflow to bath tubs, as ordinarily arranged in English baths, the dirty water rises to some height in it as in the bath when let off; it, therefore, gets fouled, and not getting flushed is a frequent cause of bad smells. In many baths in America there is no overflow at end, but a copper or brass stand-pipe, the height for water, fits into outlets and serves as plug.

Wash-basins are in single pieces of earthenware, with several patent overflow and wastes; the stand-pipe overflow is in use for these, the basins being drained from the back, with the stand-pipe in recess, and raised or lowered for outlet by small lever at the top of basin. Kitchen sinks are the same as in England, and made of metal or porcelain, with outlets as used in wash-basins.

Each of the plumbing fixtures is separately trapped, there being many traps of varying value. The common S or V trap, with ventilation connection attached, is ordinarily used. Putnam's Sanitas trap is said to be made so that it cannot be syphoned. It consists of an adaptation of the S trap, with the water passage diverted by a bent plate, causing it to flow round a strong glass bowl let into side. It has no moving parts, is easily cleaned, the interior being exposed to view, and holding a large quantity of water. The water seal cannot be readily broken. There are several traps having movable parts, usually with ball valve, but these are always liable to get out of order.

* A paper read at the Congress of the Sanitary Institute on Thursday, September 23.

To kitchen sinks numerous forms of grease traps are used: the ordinary one is outside in yard, forming a settling pit and with cleaner on top. The "Dececo" flush pot is fixed underneath sink; it is made of glazed earthenware, inverted-pear shape, and holds about six gallons. In the sink is the ordinary grid with waste, which discharges into the flush pot, at the bottom of which is also outlet, with plug worked by lever from top of sink. When the pot gets filled the outlet from it is opened, the rush of water carrying everything with it and flushing the drain.

All the municipal plumbing regulations require that traps shall have back ventilation with air-pipe not less than $1\frac{1}{4}$-inch diameter for small traps, or 2-inch diameter for large traps. The question of the back ventilation of traps is a point of contention with many of the leading sanitary engineers in America. The results of experiments by various engineers are published in the National Board of Health's report for 1882 (folios 135 to 152), but unfortunately there is a complete divergence of opinion. If traps are not ventilated, there is a danger from syphonic action and traps emptying for want of air. When traps are ventilated the danger is from destruction of water seal by evaporation, or from aid to trap emptying by capillary attraction when any hair or material gets over the edge of trap. Further experiments are, I believe, being conducted on this vexed question.

At the Mass. Geiz. Hospital, Boston, a sanitary tower and ventilating shaft has been recently built for the wastes from hospital plumbing fixtures; it is an addition to the old building and there was only a limited site. The tower is 2 feet 9 inches square inside, and carried 24 feet above top floor ceiling, with flag cover at extremity, the outlets being at sides. It serves for two distinct sets of plumbing fixtures, and allows easy access to all the pipes. Wash-basins, sinks, and water-closets are grouped round it, with the baths between water-closets and end wall. A 5-inch soil-pipe is fixed in tower and runs full height, with a 3-inch ventilating pipe parallel to it and turning into it above highest connection. Steam-pipes from the heating apparatus are taken up the full height, allowing a good flow and return. All the wastes are separately trapped, and discharge into soil-pipe, with vent near connection into main vent pipe. There are 4-inch outlets from water-closet and sink, and 2-inch from bath-trap, the waste being under ceiling. The inner sink has 2-inch waste, discharging into soil-pipe at bottom, and connected with it as vent above ceiling line of top floor, each inlet into this having separate vent connected with continuation of waste below top ceiling. The pipes were all carefully planned and holes left in the walls; these were afterwards solidly built up. The steam-pipes in tower prevent any possibility of the wastes freezing, and cause a continuous upward current of air. There are ventilating flues, exhausting into tower where there is any possibility of smell or steam being offensive.

The water-supply to cities is from various sources—ordinarily from the nearest river or lake, which, being at low levels, necessitates the use of pumping stations. At Chicago a tunnel is driven under Lake Michigan, with inlet some distance from the shore, the water flowing to pumping station and there forced up large stand-pipe. At Philadelphia, the supply is taken from the River Schuykill, quite close to the city, the land for twelve or fourteen miles on each side of the river having been acquired and formed into the beautiful Fairmount Park. This park to some extent keeps the river partially free from objectionable drainage, but not altogether, the cemeteries, for example, draining directly into it. Dr. Billings says, in a recent article, that the cities whose water-supply is more or less polluted by sewage are so numerous as to form the rule rather than the exception.

It is of some interest to note that although a better water-supply is contemplated at Philadelphia, and the reservoirs partially made, the work has been for the time abandoned, owing, I am told, to causes which unfortunately too often interfere with public works in America, and also to the necessity for the city fathers being economical in everything except the new public buildings, whereon they are lavishing immense sums of money.

The water-supply pipes to buildings are of various metals, but ordinarily of drawn lead tinned inside. Seamless drawn brass tubing is largely used, particularly where the pressure is heavy or the water very soft. For cold water the pipes are tinned inside, but this is not necessary where the water is not used for drinking purposes or for hot-water supply. Where exposed to view all brass tubes are coated with tin, plated or varnished with shellac. Wrought-iron water pipes are also extensively used, the inside being galvanised, enamelled, lined with tin, and occasionally glass lined. Other protecting mediums are of coal-tar or paraffin enamel, and of course there are many patent solutions, one having a base of vulcanised rubber. Iron pipes are sometimes zinc-cased outside, particularly when exposed or where possible leak would do injury. In fixing, the horizontal pipes are secured by stout brass bands, screwed, while vertical pipes have cars soldered to the pipes and screwed.

It will be understood that the methods of sanitation before described are not in general use throughout the country. The remarkably rapid growth of most of the western cities, and the natural difficulties of the disposal of refuse, conjoined with the general apathy in matters of sanitation, from which both Americans and we ourselves are only just emerging, leave a great deal to be done everywhere, and it must take many years to bring most of the American cities into a thoroughly sanitary condition. Even in so enterprising and wide-awake a city as Chicago, for example, behind the fine houses in its famous Michigan Avenue there is hardly a single house, I am told, where proper provision is made for the disposal of the refuse of the household. The decaying vegetable and animal matter is simply thrown into the unpaved back street, or on to the nearest unoccupied ground, and allowed to lie and rot there. At all times these alley-ways are filthy, and in hot weather both disgusting and a source of great danger.

But the American public mind is rapidly awakening to a recognition of the necessity for proper sanitation, and, with its hospitality to all new ideas, the inventive genius of the people, and their insatiable desire for "progress," I think it is very probable that they will move much more rapidly than we shall be able to do in our own country, with its conservative instincts and its archæological love for the "dear old cesspool."

THE PARISH CHURCH, HALIFAX.*

HALIFAX Church makes no appearance in the Conqueror's Domesday Book. Whether the town itself, under another name, finds a place there or not is a question which it would be out of place to discuss on this occasion. The first documentary reference to a church here is to be found in the charter ascribed to the year 1145, whereby William, the third Earl of Warren, granted the church of Halifax—under which title was passed also the manor of Halifax—to the Cluniac priory of St. Pancras, that his grandfather, the first earl, had founded, under the walls of his castle of Lewes. Of the fabric of the church thus granted I do not myself believe that any material portion is preserved. The next mention—so far as I am aware—of Halifax Church is discoverable in a very interesting letter which I have had the satisfaction of unearthing in the Public Record Office. The letter, written in Latin, and in a very cramped and contracted style of caligraphy, is assigned by the Record Office *savants* to the time of King John (1199–1216). In this document an early rector—Hubert Walterson—profusely and lavishly thanks the prior and brethren of Lewes for having without any merits—as he alleges—of his own, appointed him to the cure of the church of *Halifiex*—so Rector Hubert writes the name. This is, I fancy, the earliest original document extant in which the place appears at all by name. Adam de Copley is set down by Mr. Watson as the earliest rector whose name has survived, and the last was Walter de Chameur, promoted to the Bishopric of Lof'on, in France, but under what title that to me unrecognisable see of Lof'on may pass to-day I know not. In prospect of the resignation or decease of this last rector, Pope Alexander IV., in the third year of his pontificate, 1257, by his bull granted to the prior and convent of Lewes leave to appropriate the church and its appurtenances to their own use, assigning what was necessary in the way of maintenance to the vicars of their own appointment. The bull was dated at Viterbo, where it will be remembered this pontiff died four years later. An "apostolic mandate" was also sent at the same time, by the same pope, to the Benedictine abbot of St. Albans, commanding him to induct the prior and convent into the corporal possession of the church. Upon the promotion of Walter de Chameur to his bishopric, these acts of papal supremacy were executed, and in 1273 the Archbishop of York, before wending his way to the fourteenth Œcumenical Council, then convened at Lyons, commissioned his vicar-general to carry out the order of Pope Alexander IV., and, moreover, to apportion the income of the rectory between the prior of Lewes and the future vicars. In consequence, in 1274, the archbishop's vicar-general, after personally and solemnly singing mass in the church, duly inducted Ingolard de Turbard, the first vicar, into the living. The reason assigned for the change of the rectory into a vicarage in the archbishop's decree is that the Court clergy, and sometimes foreigners who knew not the English tongue, had by oppression, powerful entreaties, and violent threatenings of great men, been thrust into the rectory, attracted by the great profits thereto belonging, caring more for the milk and fleeces than the souls of their flock.

Portions of the church, as it was reconstructed shortly after the induction of its first vicar, still remain visible to our eyes, consisting of the larger part of the northern aisle wall, built of rough rubble masonry, and the two double-light windows that

* A paper by Mr. J. Lister, M.A., read at the visit of the Bradford Historical and Antiquarian Society.

pierce it. A third window inserted in the western and later portion of the same wall, is of similar design, style, and date. The jambs of the west door of the tower, and those of the great south door are also believed to belong to what is known as the Decorated period of Gothic architecture. Certainly to my mind the inner doorway of the north porch is covered with the rubble-built portion of the north wall. The style of the windows would lead one to fix their date about the year 1290, when the lancet style was changing into the geometrical. Why so little of the church of this period is preserved seems somewhat strange, as there is no tradition of any fire or other calamity necessitating the rebuilding of the church. Perhaps the great and rapid progress made in the woollen trade in our parish in the fourteenth and early parts of the fifteenth centuries, and the consequent increase of population, demanded the almost complete rebuilding of the church on a very enlarged scale. The church, according to my view, which I advance with modesty, but which coincides largely with that put forth by that late esteemed and indefatigable archæologist, Mr. Fairless Barber, was almost entirely rebuilt in the early years of the fourteenth century. Mr. Barber held that the building of this period consisted of all the present structure excepting the tower and the three eastern bays of the chancel, with a tower, of which the lower stage survives, set at the south-west corner. The position of the present chancel screen appears to me to mark the site of the eastern wall of this church, and its rood screen stood, as several indications show, beneath the great arch which then distinguished the nave from the chancel. About 1450, as we have it on the alleged testimony of John Waterhouse, the present tower was begun and in twenty years completed. At that time, too, or later, the chancel was extended eastwards by the addition of three new bays, the clerestory formed in the chancel, and the two aisles of the chancel erected. The basement of the eastern wall of the north aisle, before this extension was made, is still visible in the vaults beneath the church.

There is so much to puzzle the architect in any attempt to denote the various stages of construction in the church that I must, as an amateur, speak with much diffidence, and without any pretence of dogmatising on the matter about which opinion is notoriously divided. I cannot, however, for one moment agree with those who hold that the arcade of the nave and the two western bays of the chancel belong to an earlier period than that covered by the Perpendicular style of architecture. The *cavettos* of the arches and pillars seem to me to proclaim in the clearest tones their fourteenth-century origin.

The great east window of the church is supposed to have been finished about 1480, at the close of Vicar Wilkinson's pastorate, whose crest of the unicorn may be yet seen on the parapet of the chancel. The only structural additions to the church after this time were the two chantry chapels, founded respectively by Wm. Rokeby, Archbishop of Dublin and Vicar of Halifax, and Vicar Holdsworth; the date of the former being about 1521, and of the latter about 1534. The founder of the north chapel, Archbishop Rokeby—who, by-the-by, was Chancellor of Ireland—directed in his will that his heart should be buried at Halifax, in the choir there, and a stone with a heart engraved thereon is reported to have been of old time visible in the chancel floor. Dr. Holdsworth, the founder of the north chapel in 1535, about the very time he was building his chapel, incurred the displeasure of the vicar-general of the newly-created Supreme Head of the Church of England, being accused, on the evidence of a servant to Lord Cromwell, of treasonable words, probably in relation to the royal supremacy, for which offence he was haled up to London and had to pay a heavy fine. His vicarage house was twice robbed in the reign of Edward VI., and he was, as he states, "in utter fear to repair to his vicarage of Halifax for fear of death and cruel handling." Nor was his fear misplaced, for on May 8, 1556, he was foully murdered in the vicarage house, as was afterwards alleged by one of his own kinsmen. The unfortunate vicar now lies buried in the chapel, which he had founded about twenty years previously. The chantries in the church were—beside Rokeby's and Holdsworth's, which are not named in the certificates of the chantries—six in number, viz.:—

1. The chantry of the Trinity, or Wilby's, on the south side of the church. 2. Hunter's. 3. Brigge's, on the north side of the church, adjoining the Rokeby chapel. 4. The Rood service. 5. Firth's. 6. The morrow mass.

The last was stipend paid to a priest to say mass daily, at 5 A.M., for the benefit of all servants, labourers in the town of Halifax, and it had been established by subscription on the part of the inhabitants.

The lady altar of the church, in accordance with ecclesiastical ritual arrangements, must have stood at the east end of the north aisle of the chancel, the corresponding aisle on the south side being probably used as the chapel of the patron saint, St. John Baptist. There was an altar in honour of the patron saint of England, St. George, and statues of SS. Anthony and Catherine in the church, before which lights were burnt on Sundays and other feasts. Tapers also were appointed to be burnt before the Blessed Sacrament on the like occasions. The gross value of the vicarage in the Valor Ecclesiasticus of 1534 is set down at 100*l.*, the net at 84*l.* 13*s.* 6*d.* The number of "housling people" at the beginning of Edward VI.'s reign is returned in the chantry certificates at 8,500, and the church was served by the vicar and an assistant priest, and also to some extent by the six chantry priests.

The font canopy is a splendid example of Gothic carving, and was in Mediæval times gorgeously illuminated in gold, blue, and vermilion hues. This treasure of art was removed from the church in Puritan times (1650) by one of the churchwardens, and conveyed to Chr. Hartley's parlour, where it remained till Charles II. and the Anglican ritual were restored. Portions of the old rood loft were visible before the late restoration of the church. The loft was, as usual, crowned by a crucifix, referred to in several old wills. When the Royal supremacy triumphed, the Royal Arms, supported by the lion and the unicorn, replaced the crucifix, and the figures of SS. Mary and John. Of the old stained glass with which the church was lavishly adorned in the Catholic period, only the merest fragments escaped the process known as "purifying the churches," in the days of Edward VI. The few but excellent relics of this old glass are all placed in the little dormer window on the south-west side of the nave. Among these may be detected the first syllable of the murdered vicar (Dr. Holdsworth's) name, the painted windows of whose chapel was destined to beautify the church for barely fourteen years. The chancel stalls, with their *misericordes*, are of considerable artistic interest, the carving of some of them being of superior character. In the nave the solid oak benches of probably the fifteenth-century period may still be seen enclosed in the Jacobean pews. The arms painted on the roof of the church are—in the nave those of the vicar's, and on the chancel roof principally those of Halifax parish families.

The registers of the church are believed to be the most perfect and the best preserved of any parish church. They start with the year 1458—the year in which Henry's vicar-general, Cromwell, issued the injunction to the clergy by which the keeping of them was enforced. The first volume is on paper, and has not been copied on parchment, as ordered in 1603. The very valuable library of early printed books owes its origin, we are told, to Vicar Clay, who lies buried in the vestry among his books.

BUILDING SOCIETIES ON THE CONTINENT.

IN France little has been done in the direction of building societies. The French, and more especially the Paris, workman prizes the liberty to live where he likes, and has not perhaps so strong a feeling for a home as the English and Germans. Indeed, no instance of co-operation by workmen alone for this object can be found. At Mulhausen leading manufacturers, in order to build houses for their hands, formed a building club, advancing the necessary money at low interest, the price of each house being 3,000 frs. The workman became an owner by paying from 2 frs. to 400 frs. down, and from 13½ frs. to 16 frs. monthly for seventeen years. Thus a man of twenty-five making his first payment might look forward to being actual owner of the house at forty-two. With the money paid in, this club went on building fresh houses. At Strasburg benevolence also endeavoured on a different system to improve the dwellings and lower the rents paid by the working classes.

Near Paris, at Colombes, a certain number of houses were built by a club started by the "Caisse d'Escompte des Associations Ouvrières." Members in turn of their seniority had the refusal of the apartments thus built: payment might be made gradually in small instalments if required. A few similar building societies have been started, but apparently not by co-operation of workmen spontaneously. Some large manufactories, such as M. Godin's "Familistère," build dwellings on a large scale for their hands.

At Havre, Her Majesty's Consul-General says that the "Société Havraise des Cités Ouvrières" was founded in 1871, with a capital of 200,000 frs., to provide improved dwellings for workmen. It erected in that year seventy-seven houses, and in 1883 forty, of which the first lot cost 3,000 frs. to 5,000 frs., and the last from 5,000 frs. to 6,000 frs. a piece. The interest payable to the shareholders is limited to 4 per cent. The rent, including interest and redemption, in fourteen years, is fixed at 10 per cent., making a yearly payment of from 300 frs. to 600 frs This is higher than the ordinary workman can afford, and the tenants are nearly all of a superior class. At the end of 1884 forty-five houses were entirely paid for, and had become the property of the occupiers.

"Cités ouvrières" do not, however, as a rule, seem to be popular with the working classes. The question of the lodging of workmen, in the towns especially, is a very important one; their roving habits are admitted by the evidence to be an evil. Co-operation will never take great hold in France till the

workmen's residences become more fixed, but it may be said that co-operation in production is the best way to make the workman settle down.

Societies for building dwellings for the poorer classes have met with but little success in Germany. They appear to have succeeded best in Alsace, and one at Flensburg, in Jutland, founded in 1878, possesses, according to the report of 1884-85, nineteen houses, with a value of 100,000 marks, and 800 members, one of whom has the sum of 87,000 marks to his credit in the society's books. Schulze-Delitzsch says that "so much capital not subject to withdrawal is needed for the successful and persistent activity of a building association that the procuring thereof will always form one of the main difficulties of such societies."

To overcome this difficulty, and to bring the capital up to the requisite total, several societies grant permission to acquire several business shares, according to the amount of which losses are apportioned, or grant permission to acquire several business shares, but with a proviso that the losses are to be defrayed in the first place from the first business shares, the remainder from the second, and so on.

To obtain a capital not liable to withdrawal they admit of the admission of sleeping partners with deposits not liable to withdrawal before the lapse of a certain time, who share in the profit and loss of the society, and have attempted the establishment of a loan association for building societies on a system of limited responsibility.

In commenting on the want of success that has attended such societies, the editor of the report of the German Co-operative Union for 1884 remarks that they were mostly started at a time when land was cheap, and immigration to the large towns caused a brisk demand for houses. This demand, however, no longer exists, and it is now difficult for the societies to obtain a rent sufficient to pay interest on money borrowed, and still more difficult for them to sell profitably, while the great difficulty of obtaining capital not liable to withdrawal is as conspicuous as ever.

The number of building societies has risen from six in 1872 to twelve in 1873, twenty in 1874, thirty-three in 1883, and thirty-three in 1885 (January 1).

Berlin would appear at present to be the best possible field for an association of this kind, and such an association has accordingly been established (1886) by Herr Schrader, at Köpenick, within a few miles of Berlin, but in a direction in which the city is little likely to spread, and consequently the value of land is unlikely to rise greatly. This association, which proposes to build for the poorer class of artisans and labourers, has been founded with every hope of success in spite of its founder's unfavourable experience in similar undertakings in other parts of Germany.

In Austria five co-operative building societies existed in 1881, all but one of which were in Lower Austria; their object was to provide dwellings for artisans, but they were not a financial success, and are all at present in liquidation.

Co-operative associations for building improved artisans' dwellings, and letting or selling them to their own members, are fairly numerous in Italy. In some of these the houses or apartments are drawn by lot when completed, the winner ceasing to belong to the society, the amount of his shares being accepted in part payment, and the balance being made up by monthly instalments, extending over a period of from ten to twenty-five years. In others the members desirous of hiring or purchasing the house must send in an application to the directors, and, in case of purchase, must pay down one-fourth at least of the yearly rent, and the remainder in monthly instalments, extending over a period of ten years. After payment of two-thirds of the price, the occupier may be recognised as owner, the society still keeping a lien on the property until completion of the payment. A house or apartment taken merely on lease must be for the sole use of the member and his family, and cannot be sublet. In other respects the statutes of these societies resemble those of other co-operative enterprises, and owing to their recent introduction it is not possible to obtain any definite information as to their results.

In certain parts of Belgium efforts have been made, from time to time, to provide improved dwellings for the working classes, but with very partial success, the pay of the work-people being, generally speaking, too low to enable them to profit by such assistance. At Ghent some years ago plans were prepared for building artisans' dwellings which were to become the property of the tenants after a fixed number of annual payments, but the scheme eventually fell through. The Ghent workmen's quarters are usually built in large blocks, incapable of subdivision; they are well built and mostly new, rents varying from 1 fr. 50 c. to 3 frs. a week.

At Antwerp there is a society (De Maisons Ouvrières) which has built a great many workmen's dwellings in the northern quarter of the city, and has paid special attention to sanitation. The charitable society (Bureau de Bienfaisance) has also constructed 150 dwellings in the northern and 85 in the southern districts of Antwerp; they are well built, comfortable, and salubrious, let at rents varying from 5 to 8 frs. a week. These lodgings are all much sought after, and lists are kept, on which intending tenants can inscribe their names for the vacancies as they occur.

None of the above undertakings, however, are carried on by means of co-operation. There are no co-operative land and building societies as in England, and all that has been done to improve the homes of artisans is due to private enterprise and speculation.

On the other hand, the People's Bank do all they can to help any provident workmen who desire either to buy the homes occupied by them or to build new dwellings, and offer special facilities to enable their clients to raise the necessary capital, to be paid back in periodical instalments.

In Amsterdam and Leeuwarden there exist workmen's co-operative societies of this nature, purely self-supporting. The Amsterdam society ("Building Society for the Provision of Workmen's Dwellings") has been very successful of late years. It was at first established on purely socialistic principles, the formation of capital forming no part of the scheme; but it very soon got into difficulties, and was obliged to adopt the economic principles which it had begun by rejecting. The contributions of the members are fixed at a minimum of 2*d.* per week, or 5 fl. (8*s.* 4*d.*) per annum. The capital for building purposes is raised by mortgage loans, and the municipality has assisted the society as far as possible in placing cheap and suitably situated land at its disposal. The right to acquire a dwelling is distributed by lot among the members, and the rent paid includes the amortisation of the property. Three per cent. interest is paid on all the deposits. In case of the death of a member, his widow or heir can withdraw the deposit, but in no other case is the withdrawal permitted, and the renunciation of membership involves forfeiture to the society of the amount deposited. The houses are let in flats, and the rent of two good rooms and a kitchen is fixed at 2 fl. 20 c., or 3*s.* 8*d.* per week; a comparatively high figure, but it must be borne in mind that building is exceedingly expensive in this city. The society has already constructed about seventy houses of three dwellings each, and is steadily progressing. The results in Leeuwarden are said to be also satisfactory.

Building societies are found in considerable number in Sweden. The members club together and subscribe to a fund for the building or purchase of houses, usually large houses divided into several small flats. When the society has a house ready to be inhabited lots are drawn for it, the member winning it paying off by degrees, under certain easy conditions, the sum fixed by the society, after due valuation, as the amount to be paid before the house becomes the member's own freehold.

Correspondence

The Royal Academy and Education.

Sir,—The article you published last week under the title of "The Royal Academy and Education" has caused me so much amazement that I ask leave to make a few comments on it, particularly as you have done me the honour to refer to recent letters on the subject in the *Times*.

The words used by the writer of the article, such as "the dream of Reynolds when the Academy was established" and "Reynolds and the founders of the Academy," half imply that Sir Joshua was foremost in the steps taken to establish it, while the whole article suggests that education by mere sublunary methods of teaching was not one of the principal objects for which the Academy was founded. Now it is possible to read, in a quarto publication issued by the Academicians of 1860, the original Memorial, with the names of the twenty-two memorialists appended, praying for that assistance, patronage, and protection which led to the grant of the historical "Instrument." The only man of the world amongst them appears to have been Mr. (afterwards Sir William) Chambers, Architect of the King's Works, a gentleman in whom George III. had apparently implicit confidence. Having, at a personal audience, previously prepared the way for the interview, he, with Francis Cotes and Benjamin West, painters, and George Michael Moser, a sculptor and gold-chaser, presented the memorial on behalf of the artists—a memorial which Reynolds had refused to sign. Indeed, the execution of the Instrument by the King was postponed because Reynolds declined the Presidentship of the new Academy, and it was only in deference to the unanimity and goodwill displayed by his colleagues that he at length consented. As for the objects for which the Royal Academy was founded, the memorial prayed the king to assist in "establishing a well-regulated School or Academy of Design, for the use of students in the Arts, and an Annual Exhibition

open to all artists of distinguished merit, where they may offer their performances to public inspection, and acquire that degree of reputation and encouragement which they shall be deemed to deserve." The Instrument of institution contains twenty-seven paragraphs, thirteen of which relate to Teaching and one to the Annual Exhibition, though the latter is mentioned in two other paragraphs. The first form of the Diploma, drafted by the king's own hand, contains the words :—"We have thought fit to establish in this our city of Westminster, for the purposes of cultivating and improving the Arts of Painting, Sculpture, and Architecture, under name and title of the Royal Academy of Arts, and under our own immediate patronage and protection." Further, Sir Joshua Reynolds, having conquered his hesitation, delivered a discourse at a general meeting of the Academy on January 2, 1769, containing, at the outset, the words, "An Academy in which the polite Arts may be regularly cultivated is at last opened amongst us by royal munificence"—a reference amplified by a statement of the Academicians of 1860, in the document before mentioned, that "the earliest subject of consideration with the Council was the establishment of the *Royal Schools*, consisting of an Antique academy and a school for the living model."

In your article the writer informs us that there are many artists in France who would abolish the "Academic School of the Fine Arts," and doubtless such persons abound among a people who have recently done things even more foolish. But is he not mixing up the privileged and perpetually-hated *Academy* of the Fine Arts, which is housed in the Palais Mazarin, with the *School* of the Fine Arts, next the Quai Malaquais and the Rue Bonaparte? Even French wits are content to urge only reform on the School authorities, however bitterly they may demand the abolition of the Academy. I was under the impression that Frenchmen of all political colours and shades were proud of the Ecole des Beaux-Arts, and as the proof of a pudding is believed to lie in the eating of it, what better judges of pudding can be found than the citizens of the United States? Young Americans who cross the Atlantic, and who call at the Royal Academy and the Royal Institute of British Architects to say a few kind, cousinly words to Mr. Spiers and to me, *hasten on to Paris to learn.* Native and inherent originality, tempered by French method and refinement, has already sown the seeds of "a style" among the rich and gentler communities of the United States; and in the marvellous revolution which is now developing within the English-speaking nations, under the half-closed eyes of careless England, the French Ecole des Beaux-Arts is silently playing a part so efficacious, that the architects of Greater Britain are likely before long to seek their inspirations, not in London or in the capitals and cathedral towns of Europe, but in the new cities and rural districts of the United States.

The writer of the article is also pleased to say that, "If"—and there is a splendid unconsciousness in his use of the virtuous monosyllable—"If a mode of education is necessary to supplement or supplant the training received in an architect's office," then the Council of the Institute of Architects ought to do, or to have done, something. But will he permit me to express the belief that, while a dominant body like the Royal Academy maintains a sham school of architecture, no institution in this country can succeed in establishing a real one? Hence—and as an individual opinion it must be taken for what it is worth—the Royal Academy is still doing almost incalculable injury to the profession of British architects, both old and young. In this regard the writer of your article has rendered a public service by reminding us that "Professor Cockerell quoted with approval the saying of Philibert de l'Orme, that those who amuse themselves with making pretty drawings only, are those who least understand the real art and science of architecture." Continue, sir, the same strain; strike lustily on that string, and you may yet convert the architectural class of Burlington House into a School of Architecture, or sound its death-knell.

As loyal subjects of the Queen, Mr. Editor, you and I would prefer the former, and that you may get it is the wish of

Your humble servant,
William H. White,
Fellow of the Royal Institute of British Architects.

P.S.—That all British architects should clearly understand that the Royal Academy owes its "Instrument" of institution *principally to Sir William Chambers*, may I beg you to print the following extract from the Minutes of its first meeting held in Pall Mall, on December 14, 1768 :—"His Majesty . . . desired that their [the memorialists] intentions might be more fully explained to him, and that it might be done in writing as soon as was convenient. In obedience to this order, Mr. Chambers drew up a sketch of a plan, which, having shown to as many of the gentlemen concerned as the shortness of the time would permit, and obtained their approbation, he presented to His Majesty on December 7, who perused the whole, was graciously pleased to signify his approbation, and directed that it might be drawn up in form, in order to be signed by him, which Mr. Chambers accordingly did; and on Saturday, December 10, 1768, it was laid before His Majesty, who signified his approbation, and ordered that the plan should be put in execution, signing the instrument with his own hand."—W. H. W.

London: September 28, 1886.

Architectural Federation.

Sir,—Will you allow me to draw the attention of all architects and others who are in favour of Architectural Federation, and who may not have signed the form of declaration, that October 15 is the date fixed by which time all the forms must be returned to me, and that any architect, surveyor, &c., who may not have received a form can have one at once on applying to me.

I may add that this movement now lies in the hands of the members of the profession, and it is for them to declare by their unanimous voice whether or no this proposed registration is to be carried through. It is, therefore, of the utmost importance that every individual member should sign the declaration.—Yours truly,

Edgar Farman,
Hon. Sec., Architectural Federation Committee.

39 King Street, Cheapside, London: Sept. 26, 1886.

The Manchester Stove and Smoke Washing.

Sir,—My attention has been called to an article in a recent number of *The Architect*, wherein it is stated that smoke has been washed from a chimney into a main sewer. Allow me to say that this was done in connection with the Manchester Stove daily during the whole of the time the International Smoke Abatement Exhibition was being held at Manchester in 1882.—Yours faithfully,

G. L. Shorland.

Imperial Buildings, Ludgate Circus, E.C.

P.S.—The Manchester Stoves are made either with or without this smoke washing arrangement.

GENERAL.

Mr. Thomas Woolner, R.A., has offered to give a cast of his bust of Carlyle to the town of Dumfries.

A Bronze Statue has been decided on as a memorial of the late Mr. A. Balfour at Liverpool. The work will be entrusted to Mr. Bruce Joy.

Mr. John Eaton, architect, has been appointed a justice of the peace for the borough of Ashton-under-Lyne.

Mr. Edgar Goff, architect, of Lowestoft, died on the 24th ult., at the age of 39.

A Sum of 10,437*l.* is now available towards the erection of a new building for the Glasgow Athenæum, being two-thirds of the whole amount required. To obtain the necessary funds the institution has been constituted a limited company.

A New Building for the Albion Club, Ramsgate, is being erected on a prominent site facing the sea, from the designs of Messrs. Pugin & Pugin. Mr. Martin, of Ramsgate, is the contractor.

Premises for the Ulster Bank are to be erected in College Green, Dublin. The two houses, Nos. 32 and 33, known for years as the Arcade Hotel and the Arcade Luncheon Bar—Anderson's and Spadaccini's of old—have been obtained as the site.

The Sixty-fourth Session of the Birkbeck Institution will commence on Monday, October 4. The class-list is of the most comprehensive character, and several lecturers of eminence have been engaged.

The Croydon Town Council at their last meeting passed a resolution, by a majority, to destroy the old archway in Church Road, leading to the remains of the old palace of the archbishops.

The Liverpool Corporation have arranged for the delivery of three courses of free lectures. The first course is to be given by Mr. Chas. T. Gatty, F.S.A., who will deliver six lectures in succession on "Art and Antiquities." The special subject dealt with in the first two lectures will be Buddhism, and two lectures each will be devoted to Greek art in Athens and Pompeii.

The Foundation-stone of St. Joseph's New Catholic Church, Greenhill, Swansea, which is being erected from the designs of Messrs. Pugin & Pugin, will be laid by the Bishop of Newport and Menevia, on Saturday next.

A Lake Dwelling is said to have been discovered in the excavations for a gasholder for the Moffat Gas Company. About seven feet below the surface were long pieces of black oak, which had formed portions of trees about three feet in circumference. The planks had apparently been disposed of according to some design, the erection of which they formed part being nearly square. The roughly-split wood bears marks similar to those made by stone or flint axes on black oak found where lake dwellings once existed, such as in the Castle Loch, Lochmaben.

The Architect.

THE WEEK.

The opening of a building having so much that is remarkable about it as is found in the new Constitutional Club is not an everyday event. Inside and outside it is attractive, and what is more, the attractions have been secured by an outlay that is without precedent in clubland. In the first place Mr. Edis has courageously departed from the style that was supposed to be indigenous to Northumberland Avenue. That roadway was assigned to the special care of the Institute of Architects, and forms a commentary on the arguments of people who insist on the advantage of a ruling power in architecture. Mr. Edis has constructed his building of a terra-cotta so admirable in colour that the owners of the adjoining properties should be grateful to him for introducing so much life into the general aspect. The site is triangular, but the difficulty is overcome by an ingenious treatment. What must strike every visitor on entering is the capital arrangement. In spite of the form of the site, the great rooms appear symmetrical. Every detail offers a fresh attraction. There is nothing that is heavy; there are no dark corners, and stuffiness is peremptorily banished. Excellent judgment has been exercised in the lighting by keeping the electric lights low, and making the ornamentation combine with them. In this part of the work Messrs. Verity & Sons have zealously co-operated with the architect. The marble and mosaic by Messrs. Burke & Co. are in chastened colours. In seeking for beauty, it has not been forgotten that a club is a restaurant on a great scale. The kitchen occupies the basement, and here Messrs. Benham have introduced their latest improvements in apparatus. Altogether the building is worth study as an exemplification of what may be called "a new departure" in clubhouses.

Julius Cæsar, according to Plutarch and Shakespeare, left all his walks, his private arbours, and new planted orchards to the Romans and their heirs for ever, and Marc Antony remarked when he read the will: "Here was a Cæsar! When comes such another?" Does not the bestowal of Chantilly by the Duc d'Aumale to the Institute of France suggest an answer to the question? Centuries have to elapse between the appearances of benefactors of their class. If we imagine what Chantilly was to the Duke we can understand the greatness of the gift. The place was historic for centuries before the Princess de Montmorency, who was the owner, married Condé. Of their son, the great Condé, it might be said that he fought, built, and squandered with equal impetuosity. An old madrigal that was much admired in the seventeenth century made him say, "I am prompt, proud, generous, and valiant. Nothing is comparable to my glory. If I have not a crown, it is owing to fortune. I am satisfied with meriting one." The letters of Madame de Sévigne reveal to us in what a princely style he purchased the goodwill of his contemporaries. Fortune, however, was careful to compensate his heirs by marriages with wealthy ladies, and much of the money was expended on Chantilly. But the Revolution brought destruction to most of the costly buildings. The Restoration gave it back to the heirs of the old owners. At last the Duc d'Aumale inherited the estate; then it passed from him, and it was only on the downfall of the Second Empire that he was allowed to regain it. From that time it was the aim of the Duc d'Aumale to make Chantilly a treasure-house that might be unique. Everything in it—pictures, books, statues—was not only costly, but of intrinsic value. From time to time it was related what large sums were given for masterpieces of painting or for rare editions of books. The Duc d'Aumale possesses one of the most cultured intellects in Europe, and his powers appeared to be concentrated in perfecting Chantilly. For years back many of the first artists in France have been engaged on the adornment of the palace. The bequest of such a place is worthy of a king's son, especially as the owner has to suffer the bitterness of exile. At present it is only with bated breath that the gift is acknowledged; but some day hereafter the country may feel it is under an obligation to be grateful.

In addition to the English painters who have won gold medals through their works in the Berlin Exhibition, several other foreign artists have been successful. Professor Victor Tilner, the sculptor, and Professor Rudolf, the painter, both of Vienna, the Belgian painter M. F. Verhas, and the Italian painter M. Auguste Carelli have all received the grand gold medal. It will be seen that while England received three of the medals (Mr. Herkomer, Mr. Ouless, and Sir J. E. Millais), with the grand medal for science to Sir F. Leighton, no other foreign country obtained more than two medals. Germany was awarded seven medals, its representatives being the five painters Frederic Geselschap and Paul Flickel of Berlin, Herrmann Baisch of Carlsruhe, Charles Meyer of Munich, and Eugene Ducker of Dusseldorf, with the Berlin architects Henri Kayser and Charles de Grossheim and Adolphe Heyden. The Berlin sculptors have not gained any of the great medals.

The tower of Eiffel is likely to inspire everyone concerned in the French Exhibition with an ambition to attempt the colossal in all they undertake. That structure may excel every existing example of ironwork in height, but M. Alphand, the director of works, feels that it is open to him to have a piece of iron construction that will beat all in width. Up to the present the iron roof of the St. Pancras Station has held pre-eminence, because it is 240 feet in clear span. But M. Alphand dreams of having a span of about 370 feet for the machinery court of the International Exhibition. One of the most startling projects in engineering history was a timber roof 328 feet wide, which Colonel Emy designed, but which nobody would pay to carry it out. M. Alphand's roof will far surpass it. The estimate for the court is only 20,000*l.*, and that sum does not seem likely to pay for a big roof and walls. It will be doubted by some whether there is much advantage in so wide a span. In the Manchester machinery court the columns will not be more than 50 feet apart, and where engines are placed there cannot be too many supports. But it deserves to be remembered that according to the late Sir Digby Wyatt, who had better opportunities than most men for studying the arrangements of international exhibitions, the proper type of such a building is to be found in one of the great railway termini. He imagined the American men most likely to realise his idea. It will be remarkable if the French anticipate them, and it would be just, for they were the first to open exhibitions of art and industry.

Readers who are old enough to have known the miniature magazine, *Les Guêpes*, which M. Alphonse Karr conducted about 1840, will remember a story he related of his own portrait, which embellished one of the numbers. It appears that M. Celestin Nanteuil, the painter, called on M. Karr, and, finding he was out, made himself at home. A stranger came in afterwards, and also sat waiting. The new-comer said his business was to make a portrait sketch of M. Karr. Finding M. Karr was not coming, he made inquiries about the form of the author's face, the colour of his eyes, the length of his moustache, and so on. He begged M. Nanteuil to put himself into M. Karr's dressing-gown, in order that there might at least be accuracy about the costume, and in this way, from mere description, he produced a portrait. In self defence, M. Karr was compelled to submit himself to another artist. The story is recalled to us by the announcement that M. Carolus Duran, the most fashionable of French portrait-painters, has gone to St. Raphael to paint a likeness of M. Karr. The author of "A Tour round my Garden," and the inventor of many charming flowers, is now a venerable patriarch, with a beard that Rembrandt would like to paint. M. Carolus Duran is an admirable painter of ladies' portraits, but will he be successful with the old horticulturist-essayist? Again, what posture will M. Karr assume? One of his wise maxims was "un portrait est toujours le portrait d'un homme qui pose!" The difficulty is to avoid posing with a photographer or a painter. Why does not M. Karr explain how it can be done?

THE OFFICE OF SUPERVISING ARCHITECT.

WE suppose there are few architects practising in the metropolis who were not glad to read in the report of last Friday's meeting of the Metropolitan Board of Works, that the superintending architect had announced his recovery and had asked permission to withdraw his resignation. Mr. Vulliamy was to have retired in September, but, as his successor had not been appointed, he agreed to hold office until the end of the year in order that the Board might have more time for deliberation. Mr. Vulliamy has exercised the functions of his office in an equitable spirit, and there would be satisfaction if he could act as superintending architect for many years to come. But any of his friends who called upon Mr. Vulliamy on Saturday, in order to offer their congratulations to him, could hardly fail to observe that in his desire to be useful he is running a risk to himself. There is no use in concealing the fact that Mr. Vulliamy has not the appearance of a man in vigorous health. His will, intellect, and sense of duty are as strong as ever, but the hard work of his office has affected him to an extent that is not to be overcome by a few weeks' holiday.

We are disposed to believe that Mr. Vulliamy is sacrificing himself in order to enable the Metropolitan Board to tide over a difficulty. It is evident the members have not been able hitherto to agree in the selection of any of the candidates for the office of supervising architect, and it may therefore be assumed that at the commencement of the new session there is a likelihood of a continuance of the inability. Let time be given, and there may be a nearer approach to unanimity. Mr. Vulliamy's self-sacrificing act gives time to the Board.

It is easy to imagine that there are reasons for a division of opinion in Spring Gardens over the question of the appointment. The importance of the Board grows every year, and an officer in the position of superintending architect has work to do which would tax the powers of a Minister. It may be believed by some of the members that for such a position there could be no better training than is given by taking a share in the business of the Board, and from that point of view the most eligible of candidates would be an architect who has had some years of experience in the general assemblies and committees. As every member of the Board has had, moreover, a longer or shorter term of acquaintance with the business of vestries or district boards, he must know many things about the details of municipal administration which are not to be acquired in any other way.

There may also be members who are of opinion that the architectural department should be able to supply a superintending officer. Much is to be said in favour of the adoption of the principle in public offices, according to which, as Shakespeare says, preferment goes by the old gradation, and each second stands heir to the first. In that way able men are willing to accept subordinate positions, and the whole character of the office is elevated. We know that the Metropolitan Board contains admirers of old-fashioned ways, and it is not unreasonable to suppose that some of them would be glad if one of the staff could be elected.

May we not also imagine members asking the question, Is it necessary to appoint an architect to the office? They could argue that the metropolis differs only in size from provincial cities and towns, and that throughout the country the enforcement of the Building Acts is made part of the duties of the local surveyor or engineer. They could say that questions of taste and art are not recognised in any of the clauses of the Metropolitan Acts, and that it would be well if the interpretation of the Acts was literal and prosaic. They could also say that there is less friction between architects and surveyors in country towns than is found in London, where architects act as surveyors. The Metropolitan Board of Works, moreover, possesses an engineering department on a grand scale, and could readily supply an officer competent to deal with every question that might arise under the Building Acts, and much advantage is supposed to be derivable from a closer connection between the Board's departments of engineering and architecture.

If we assume that views of the kind we have suggested are reasonable, and that they have been taken in Spring Gardens, we can see how difficult is unanimity in dealing with the candidates who offered themselves for election. It would be unfair to describe all the candidates, for under the circumstances an architect should hesitate in acknowledging that he sent in an application. But we can say with confidence that among them were gentlemen who, from their experience and honourable career, would do credit to the office of superintending architect. But if the judges were of opinion that a better officer could be obtained in one or other of the ways we have described, what chance was there for an architect who could only refer to his buildings for proofs of his competency and to his clients for proofs of his honesty? It is well known that the Board was dissatisfied with the candidates, taken as a whole, and by doing so a slur has been cast on all who applied. There is some absurdity in the assumption of so high a standard by the Metropolitan Board, but, unless we are mistaken, the true reason was that the judges thought less of the actual candidates than of those which could appear under different conditions.

There was a proposition about issuing a fresh advertisement, in which less restriction would be placed on age, but the obstacle to a selection could not be removed so easily. Even a compromise does not appear to be feasible, and all that can be done is for Mr. Vulliamy to retain his office, no matter at what suffering to himself.

We hope the Metropolitan Board will consider its position, and will not compel Mr. Vulliamy to sacrifice himself. When the Board sought candidates, it must have been able to anticipate their character. It could not be supposed that one of the Royal Academicians or an ex-president of the Institute would enter into the competition. Architects of standing have applied, and they have been rejected without any intimation of the reason. As we have said, a slur has been cast on them which is not easily or quickly removed. If the Board considered that the ordinary practice of architecture was insufficient to enable a man to hold the post of superintending architect, the advertisement should have been held back. It has been the cause of a good deal of anxiety already, and we apprehend that many have injured their reputations by acting upon it. There is no precedent for so sweeping a rejection.

EUGÈNE DELACROIX AND HIS CRITICS.*

EVERY man who can say with Voltaire, "Ma vie est un combat," is also able to say, "My life is a battle-field." Over the reputation of those who have risen above the crowd friends and enemies are certain to fight with as much fury as Trojans and Greeks across the body of the slain Patroclus. And the contest does not end with life. As it has been said that the people are happy who have no history, so it might be added that the only spirits who can sleep peacefully are those whose fame dies with them. The combatants fall into oblivion, but successors arise who go through the same round of contests with the same fate.

There was no artist in the nineteenth century who excited the wrath of more enemies than Eugene Delacroix, and if he did not find an equal number of champions, those who came to his side struck fiercely for his cause. But the battles are already as shadowy as if they took place among Scottish hills in the seventeenth century. Who cares to read the newspaper articles that were written fifty years ago? M. Maurice Tourneux is, however, a gentleman of the Old Mortality species, and, as a duty, he has done his best to save from darkness some record of the fierce struggles in which so many brave men became exhausted.

Four or five hundred writers were engaged for many a day in the struggle which was to decide whether Delacroix was worthy to be placed among the great painters, and, in spite of all the ink which flowed, the issue is not determined. When a general collection of his works was exhibited last year it was evident that men could be found to resume the combat if the public had not been indifferent.

* *Eugène Delacroix devant ses Contemporains.* Par Maurice Tourneux. Paris: J. Rouam. London: Gilbert Wood & Co.

But there were other reputations of more interest at stake, and so the artist was left to repose for a time. His perturbed spirit merited rest. "For thirty years," he exclaimed, "I have been delivered over to the beasts!" and at that time he had ten more years of criticism before him.

It is remarkable that the first critic who had the courage to hail the appearance of the artist was Adolphe Thiers, who in 1822, when the *Dante and Virgil* was exhibited in the Salon, held a humble position in journalism. He seems to have button-holed artists and drew opinions from them. In the case of Delacroix he avowed that the opinion he expressed was that of Baron Gérard, the King's painter. Another critic, M. Delécluze, would hardly accept the work as a picture, although he recognised the immense power that was seen in the figures of the damned who were struggling to enter the boat conveying the poets. A third critic considered the picture to be the work of two men—one designed and drew the figures, while the second was the colourist. The *Dante and Virgil* is now one of the treasures in Sir Richard Wallace's gallery.

It is evident that the picture must have been talked about in Paris; for when, in 1825, Delacroix exhibited his *Massacre of Scio* and other works, he was not so generally ignored. Stendahl said that the artist's works had at least the interest of being much discussed by the public. It is difficult to say what was Thiers's opinion on the new pictures. He was then connected with a second journal, and is supposed to have written the articles on the galleries in the two, although opposite sides were taken. The *Massacre of Scio* showed there was a change in the painter's style. In 1824 some of Constable's landscapes were exhibited in Paris, and Delacroix was fascinated by them. Henceforth his colouring was modified.

When Delacroix worked it was with a sort of fury, as if he were under the sway of a superior power. The exhibition of 1827 contained no less than twelve pictures by him. The titles will suggest how wide was his range. One was the *Death of Sardanapalus*, which remains among his most popular works; then there was the *Christ in the Garden of Olives*, *Marino Faliero*, *Faust in his Study*, *Milton and his Daughters*, *Battle of Turks and Greeks*, *A Wounded Shepherd of the Campagna*, *English Farm Horses*, *A Young Turk caressing his Horse*, *An Indian Girl*, *A Portrait*, *Still Life*. There are not many artists of our generation who could attempt subjects so wide apart in their nature.

The critics appeared to select the *Sardanapalus* as the best work to dissect. There were many of them who tried to be witty in pointing out its defects. Thus one paper stated how Delacroix had hired two furniture vans to remove the furniture that was seen in the background, that three hearses were required for the figures of the dead, and a couple of omnibuses for the living figures. In another it was said that Delacroix was not awarded a prize, but as a compensation he was allowed the privilege of working two hours daily among the corpses in the Morgue. Artists who think they are hardly treated in the journals of our time might learn to be philosophic if they glanced occasionally over the criticisms when a slashing style found favour. The critics who were above appearing witty were no less ingenious in their severity. In one journal the *Sardanapalus* was characterised as the bizarre product of talents that found pleasure in going astray, and it was not surprising to find a few who believed it to be sublime, while the majority were unanimous in saying it was ridiculous.

In 1831 Delacroix again astonished the frequenters of the Salon. That he painted a subject from Byron's "Corsair" may not have been thought strange, for it was supposed that there was some affinity between the spirits of the painter and the poet. But what was to be said to the selection of Burns's "Tam o' Shanter?" On that question we are left in the dark. M. Tourneux does not bring any criticism of the picture into his book, and the most enthusiastic Scotsman would hardly care to overhaul the Paris newspapers of that year in search of an article. We have not succeeded in discovering a notice of the picture in an English journal of that time.

Delacroix was always glad to find a subject in an English author, and it was one of the peculiarities by which he was distinguished from his contemporaries in France. In 1834 he painted the *Hermit of Copmanhurst*, from Scott's "Ivanhoe," but the jury would not accept it. That rejection was at the time a lucky event for the men who were opposed to Delacroix; they were able to say he was extinguished. One time, said the writer in the *Constitutionnel*, M. Delacroix excited lively admiration as well as lively antipathy; to-day the admiration is chilling and the antipathy is indifference. His last pictures seem to be made specially to increase the double lassitude of friends and enemies. But in the next year the same journal was forced to praise the artist, although the jury had rejected the painter's *Hamlet and the Gravedigger*. It is curious to observe how some of the ablest critics became transformed from enemies into champions. In 1833 Théophile Gautier considered that Delacroix was simply a portraitist, and it was a pity he did not keep to that line. Afterwards he helped to spread the painter's fame over the world. In 1836 Alfred de Musset was restrained in his praise, but the conduct of the jury in treating the *Hamlet* as if it were poison did much towards his conversion. Any man or cause that could command two such pens need not fear a regiment of adversaries. Another version of the same scene in "Hamlet" was produced in 1839 and was hung, but it was still beyond the powers of most of the critics to appreciate such a work.

The criticisms on Delacroix are like a game of see-saw. If one writer believes the painter's works are proofs that he was colour-blind and paralysed, somebody else is certain to recognise them as masterpieces of the highest order. The changes may vary, but there are only two tunes. Few of the critics showed more good sense than Alexandre Dumas. The romancist was catholic in his tastes, and found something gratifying in the works of rival schools. When he admired a work he was not afraid to express his satisfaction with the truthfulness of a boy. In the expedition of Delacroix he saw something of his own way. The painter, said Dumas, takes more time in preparing his palette than in painting the picture; once the pencil is in hand nothing arrests him. There is much of the brilliancy of Indian stuff about his colour; the tissue may be less regular, the design less accurate than in French stuff, but put the two together and you will see how the Eastern has killed the other. It is rare to find so much heartiness, and the explanation probably is that Dumas was only an occasional critic. If he kept at that kind of work even his fine temper would be sure to become soured. The man who criticised the *Pieta* of Delacroix in the *Journal des Artistes* may have been before he took up criticism as kindhearted as Uncle Toby or Mr. Pickwick. But seeing many pictures and reading many books made him talk in this strain of the *Pieta*:—"The idea of the work does not belong to M. Delacroix: it is no more than a maladroit compilation. He has stolen the idea from Michel Angelo, he has taken one part from Lebrun's *Magdalen*, another from David's *Femme aux parfums*, and from himself the remainder. We do not say M. Delacroix is a charlatan, but he is the equivalent of a charlatan. He began by parodying the *Shipwreck of the Medusa*, then he played with the Morgue, with the plague, with the cholera-morbus; they are his pastime. His manner is that of a monkey; in that lies his originality." There are artists who fancy that venom and inanity belong solely to English criticism, but M. Tourneux's book reveals that they flourished in France in the palmy days of Romanticism.

Talking of Romanticism, of which Hugo and Delacroix were the great leaders, it must be regretted that the poet and the painter were not more appreciative of one another. There was much in their works that might be described by the same words. But Delacroix, who went so far afield in quest of subjects, ignored Hugo's poems, and on one occasion he declined to sell a picture to the Duke of Orleans because he knew it was to be offered as a gift to the poet. There is in M. Tourneux's book a report of the remarkable conversation between Hugo and Alfred Stevens, the painter, on the qualities of Delacroix. Victor Hugo was willing to admit that the painter was possessed of many endowments, but the sense of beauty was denied to him. He insisted also that Delacroix did not sufficiently recognise the difficulties offered by the materials he employed, and acted as if it were easy to do everything with colour that can be done with words. Hugo

related that on one occasion he asked the painter what a thing was supposed to be, which was held in the hand of one of his figures. Delacroix replied that he had tried to represent the flash of a sword in smiting. According to Hugo, it was only possible to accomplish a feat of that kind in poetry. M. Taine, on the other hand, says that the great quality of Delacroix lay in his power to do feats of that kind, and by painting expressions and effects which are only momentary, he gives us something unattained by the old masters, and which is required for the completion of art.

It might have been anticipated that the International Exhibition of 1855 would determine the rank of Delacroix among modern artists. His thirty-five pictures were enough to impress foreign visitors. But the old story was retold, and the critics were not to be convinced either that Delacroix was one of the greatest artists or one of the most pretentious. M. Maxime du Camp was quite confident that posterity would either allow the painter's works to drop into oblivion, or assign him a rank among inferior painters of the scene-painter class. Other critics who attempted to say smart things against the painter discovered that their writing was suppressed. The Imperial Government did not care much for Delacroix or for any artist who was not a hanger-on of the Court, but there was an objection to articles which might be supposed to bring the exhibition into disrepute. But, on the whole, criticism appeared to be favourable towards the artist.

M. Tourneux might have taken some notice of the criticisms on Delacroix which were printed in English journals and magazines when a picture by the master was seen in the exhibition of 1862. Foreign opinion often anticipates the judgment of posterity, and French readers might be curious to know what the islanders could think about a painter who seemed born to excite contrary opinions. It was not easy to judge of the powers of Delacroix from his single work, *The Murder of the Bishop of Liege*, but the painting was received with better appreciation than it was likely to receive if hung by itself in Paris.

M. Tourneux's book will revive old recollections, but no one will be guided to an estimate of Eugène Delacroix by what was said long ago. The opinion on his works which was written half a century ago in an English publication will serve as well as another for anyone who is not able to trust his own judgment. The writer said :—"He is the envy and terror of almost the whole French school. He indulges in most unjustifiable *tours de force* with cerulean green and brownish purple tints, &c. His drawing is often faulty, but his compositions are masterly and original. He copies from no one, and in his handling and rapidity of painting throws most of his contemporaries into despair. He is not at all understood by the public, but in every atelier in Paris his name is mentioned as an object either of intense admiration or undisguised astonishment." These sentences suggest all that is to be said for and against a painter who deserves to be represented among the foremost artists of France whenever a companion to the *Hemicycle* is attempted.

THE SUCCESSION OF IDEALS.

An address was delivered on Saturday by Mr. W. M. Conway, Roscoe Professor of Art, at the opening of the session of University College, Liverpool. A nation, he said, had its beginning and end, its rise and fall, else would the whole area of the past be full of it, instead of richly peopled in all variety. Each school of thought had beginning and end, else were the wealth of the past nothing and all its products samesome. A field in spring-time was fairer for its many flowers than it would be carpeted by one gigantic corolla ; and just so the variety and multiplicity of the products of the past were its glory, and that variety and multiplicity arose because all things had both beginning and end, because everything included within itself the seeds of decay as well as of growth ; for the world would be cursed by good if it were not blessed with evil. The student of history whose avenue of access to the past was bordered by those existing objects which bygone men moulded into artistic form, could not fail, sooner or later, to adopt this point of view. The past, apart from its effect upon the present, had a real existence for him, and its power to interest and instruct lay in its endless variety. Works of art were the material expression of their makers' delight. Therefore if the ideal and joy of all generations had been the same, art would have been uniform and production might long ago have ceased. But from the beginning up till now men had changed their ideal from age to age by modifying it from moment to moment. The faith of one nation differed from the faith of another. Enthusiastic preaching founded what infidelity at length destroyed. The fetish of the individual was succeeded by the little divinities of the family, the place, or the clan, and they by the nation's God of battle and victory (Ammon, or Asshur, or another), only in their turn to fade away before the great God of all the nations, the World-God of Truth and justice, till in the fulness of time the Universe-God of Mercy and Love should be revealed. Equally various had been the things men hoped for. Moreover, no two nations, whether contemporary or not, were circumstanced alike. Economic conditions changed. Different countries had different climates, and all the factors of civilisation vary from time to time as well as from place to place. Thus, just as no ideal returned to be the goal towards which a second civilisation tended, neither were the conditions ever twice the same which determined the manner of an ideal's enshrinement. Neither again were social and political conditions ever twice the same, and the spiritual and intellectual ideals of a day were always functions of the actual conditions of life. It was with humanity as it was with the individual. No one was the same at any two moments. What a man strived and hoped and even lied and sinned for at one time might be unattractive, might be hateful to him at another. No conception returned unmodified to the mind. The ideals of youth, of middle life and of age, how they differ one from another ! differed as widely as the ideals of different men. So was it with the individual, so too with the nation, so with the race and the sum of the races. There was nothing that was not new under or above the sun. But bygone ideals were often powerful still. That which mankind as a whole or which nations as a whole had at any time striven after, in so far as they had attained it, entered into the sum of human possession and might become the property of the individual ; nay, if it had one produced a moulding effect upon the race, heredity stamped the sign of it on the babe unborn. Whatever part of any ideal was true and good remained for ever a possession of mankind, though it would often be found on examination, and perhaps it must always be the case, that whatever was fundamentally new in it was not true, and whatever fundamentally true was not new. The great value of all ideals lay not in their novelty, but in their harmonising power. It was the possession of a common ideal, unknown though it was to themselves, that made the varied labours of all the men of one civilisation and day mutually helpful, without any definite intention on their part that it should be so. A new ideal was not necessarily, and was perhaps never, a new discovery. It was merely that out of the infinity of possible virtues one took the lead, that amongst the infinity of possible aims one was chiefly sought unto. The value of any ideal depended at any rate, not upon its novelty, but upon the results it produced. That ideal might assuredly be reckoned the most precious which had given the world the noblest lives, and enshrined itself in the noblest forms. And that ideal was assuredly the most base which had produced a race of self-seeking men, and left behind it no lasting memorials of excellent thought to delight and chasten posterity. Between the ideal of self-sacrifice and the ideal of money-making there was indeed a great gulf fixed. Every ideal worthy of the name managed to get itself enshrined in some form that would endure if men only cared to preserve their heritage from the past. What a multitude of glorious possessions we might have, not if our forefathers had devoted more of their energies to making fine things, but if they and we had devoted less to destroying those already made. The mind failed in attempting to grasp some measure of the loss that the world had suffered, not so much from neglect, which was partly excusable, but from wilful and insane destruction. The temple of Karnak, perhaps the grandest building ever raised, might be standing now in almost perfection of repair, if men had not knocked it over to build miserable dwellings for their transient selves, and so with half the other temples of Ancient Egypt. The polished granite casing of many colours was stripped from the Great Pyramid only a few centuries ago. The smile of the Sphinx was shot away by the playful bullets of the cultured French. The Palaces of Assyria were burnt down. The glorious Parthenon existed long enough in tolerable repair to find itself sent to heaven by gunpowder. Some ten thousand marble statues were burnt into lime in the plains of Olympia alone. Almost every one of the thousands of bronze statues which Ancient Greece produced had been melted down into cannon or other mean articles, and, of course, cupidity swiftly disposed of those made of gold and ivory. All the temples and public buildings of Ancient Rome, with a few minor exceptions, were gone. The indescribable glories of Byzantine could hardly be guessed at ; only a disguised Hagia Sophia remained, a mere trifle from the most wondrous city in ancient Christendom. The monuments of the Middle Ages had fared little better. Some buildings they possessed, but how damaged. Shorn of their

colour on wall and window, robbed of their statuary and their furniture. Some paintings, too, but mostly ruined by ignorant and irreverent restoration. The tables of a room would hold all the wonderful remnants of work in the precious metals which had come down to us from Mediæval hands. And one could go on for hours and the half would not be told. All these things had been destroyed, and the world had not been enriched with better, or so good, to take their place. Nor could aught take their place, be it ever so fine, for they were the shrines of bygone ideals, makable when they were made, and then only. He that destroyed a thing that another once laboured to make murdered a dead man. An honest carpenter might continue the influence of his honesty long after death, if the work he had done were respected by those privileged to use it. If they wilfully destroyed it, the good man's influence was at an end. The major part of the usefulness and power of many lay in the endurance of their work, and that endurance chiefly depended upon the piety of the generations that came after. The work of the dishonest cleared itself speedily enough away, thank God. What should they say, then, of the lost plays of Æschylus and Sophocles, of the Zeus of Pheidias, of Lionardo's equestrian statue of Sforza, and all the infinity of glorious works and deeds which had vanished by the destruction or neglect of men? Are they everlastingly consumed, and was their glory a mere shivering of the air? Who should make answer save for the present moment, and in that for anyone but himself? And yet if some transcendent being from another world were to come and say, "The past is not annihilated, but only past," he could not find it in his heart to deny the vision. Let them for a moment adopt that point of view. The poet's eternal landscape, then, was somewhere, only they cannot behold it, their dim sense of memory reaching thither alone, while sight and feeling were constrained into the present moment, which, like a wave across an infinite ocean, brought them all along together. Noble deeds that none ever recorded, or even saw, they were still there, and (who knew?) they might one day behold and rejoice in them. Noble lives, dimly remembered, they were all there complete, and all the noble works of men with them, in that eternal garden of the larger universe. There each bygone ideal still existed, with its expressions about it, and the heroes that it made. Good, indeed, that it had its day "and ceased to be," else could not others have arisen and added to the glory of the sum of things. So they might destroy what they pleased and leave behind whatever wilderness seemed to them good, to be their record in the face of eternity. The noble works of noble men once formed, they might demolish and so make the desert about them more complete; their noble deeds once done they might forget; but works and deeds were beyond their power to annihilate, they had a larger and higher existence there where the hand of man reached no more back to wither and destroy. Dreaming of such existence, and of such only, was it possible to say to any man, or race, or civilisation, or ideal, "*Esto perpetua?*"

THE CUPOLA OF THE CARLISLE TOWN HALL.

A MEETING of the Carlisle Town Council was held last week to consider what steps should be taken about repairing the town clock and heightening the cupola. The Mayor said that as a great part of the old structure of the clock had been burned, and that it would to a certain extent have to be remodelled, it would be expedient, when it was being done, to heighten the bell of the clock so that the sound would travel over a greater distance. There was no doubt the present position of the bell smothered the sound, and it was not heard as well as it might be. Mr. Oliver, the architect, had very kindly sent him a sketch of the proposed heightening of the tower after inspecting the building, which he now submitted. The recommendation of the plan was that it involved a very trivial outlay, and while raising the tower it interfered as little as possible with the present structure.

Mr. Ferguson said he would vote against any proposition for the heightening of the cupola. He could not see any earthly use it could be. He had taken the trouble to see if the cupola was raised 8 feet how far the clock would be visible. They would not see it an inch further up English Street. It was the same way in Castle Street. On the east side—on Scotch Street—they would see it about the length of half-a-dozen shops. If they raised it 20 feet, and he thought that was what they were going to do, it would be seen further, but if it was only to be raised 8 feet they would not benefit anybody by it. They would destroy one of the few parts about the town hall that was in conformity with the old town hall. They had treated the roof of the place more like a stone yard or a plumber's shop than a town hall. They had also put up on the roof something by the Telephone Company, which he did not know what to compare to. Now they were going to take down the cupola, which had been there since the town hall was built. It was in perfect accordance with the architecture of the town hall. The town hall was one very much admired by competent authorities, and they proposed to put on it another incongruous feature. They were going to put upon it an Early English cupola, but the architect had taken great care not to draw the town hall below the cupola, or they would have observed at once the incongruity. There was no advantage to be got by destroying the present cupola, and he trusted that the Town Council would not sanction the proposition and take care that it is not to be touched or meddled with at all, but that it was to remain as it was at present. He moved as an amendment:—"That the recommendation of the Health Committee that the cupola be heightened be not approved, but that the cupola be repaired and kept in its present condition."

The Mayor said it was not proposed to heighten it so much for the benefit of those at a distance from the clock as for that of the people surrounding it. As time went on alterations would be found necessary in the Town Hall. The time would come when they should have to consider the reconstruction of the Town Hall or build a new one. He considered the extension of the sound of the bell an important part of the improvement. He thought the suggestion of the Health Committee was a good one, and he should vote for its adoption.

Mr. Hardy said that if they put up a new Town Hall the work would involve an enormous amount of expense, for it would comprehend all the offices and the arrangements for the carrying on the business of the committees under one roof. That would involve a large expenditure which the ratepayers would not at present endure. The time might come for such a building, but it would hardly be in our generation.

When the vote was taken, the Mayor declared the resolution was lost by 16 votes to 9. The amendment that the cupola be not heightened was then adopted as a substantive motion.

THE ST. GEORGE'S HALL RELIEFS.

A LETTER has been addressed to the Liverpool Corporation by Mr. T. S. Lee, the sculptor, on the recent decision respecting him.

"You will hardly be surprised," he writes, "that I received the notice of termination of my contract with considerable consternation, and as it seriously affects my career as a sculptor it is requisite that I should carefully examine its validity, and it is with very great respect that I must decline to accept it, upon the following grounds:—I am informed, upon the motion of Sir James Picton, it was resolved to complete St. George's Hall by sculpturing certain panels according to the intention of the architect, and for which designs had been prepared, but were unfortunately destroyed. A competition for this purpose was advertised, with a premium of 200*l.*, in which I was fortunate enough to be successful, and the designs for three panels were approved by the Council. These designs were separate and isolated, and were after consideration, at my suggestion and the approval of the Council, varied so as to form a series. A provisional contract was entered into for the completion of the first as an example, upon the conditions that if the work was not proceeded with 500*l.* should be paid; but if, on the contrary, it was satisfactory, and the Council determined to continue the work, it should be remunerated at 450*l.* for each of the whole series. The first panel was completed, placed in position, and approved. The Council then determined to go on with the series. The design for the second was approved, and the Council directed a second contract to be drawn up, which was accordingly done and was approved by the Council in the form which it now stands. This contract, amongst other portions, stipulates that the said Thomas Stirling Lee shall execute in bas-relief a sculpture for each of the said panels for the sum of 450*l.* for each panel. No. 3 provides that any design beyond those already approved shall be submitted to the Corporation or any committee appointed by them, who shall have power to approve or reject. No. 5 provides that at certain periods, namely, after the fixing of any sculpture in any panel, the Corporation for the time being may terminate the contract. This stipulation, as the Council will see, is one-sided. It gives the Council power at certain periods to terminate the contract, but leaves me no such power. I, however, consented, as it was pointed out to me that, as I was a comparatively young and unknown artist, the Corporation might naturally be anxious not to lay themselves open to the possibility of my forcing upon them careless and incomplete work, whilst I might rely upon such an important Corporation not to infringe upon the spirit of the contract, nor to put an end to it unless it had sound reasons to be dissatisfied with the work. The first panel and design for the second having been approved before the signing of the contract, I maintain that the only question before the Council on August 4

was the model so far complete in accordance with the original design as to fulfil my part of the contract? This was established by one of its members appointed for that purpose. There was no further fact before the Council since the contract was signed, nor, according to my contention, could the Council terminate the contract, until by the contract the second panel was fixed. Upon this it was moved by Mr. Alderman Samuelson, seconded by Mr. Rathbone, that the Council be recommended to arrange for the withdrawal of the notice to determine the contract with Mr. Stirling Lee, and for this purpose to rescind the resolution passed on August 4, 1886, and that the matter be reconsidered when the second panel has been fixed. It was moved as an amendment by Mr. Muspratt, seconded by Mr. Thomas Hughes, 'That the town clerk arrange for the payment, without prejudice, to Mr. Stirling Lee in full discharge of all claims under the contract of the balance which would be due for the two panels if calculated on the basis of 500*l.* each.' On a division there appeared for the amendment four—Mr. Holder, Mr. T. Hughes, Mr. Muspratt, and Mr. Royden, M.P.; against it four—Mr. Bower, Mr. Samuelson, Mr. Yates, and the chairman; and there being an equality of votes, the chairman gave his casting vote against the amendment, and the same was accordingly negatived. It was moved then, as a further amendment, by Mr. Yates, that the contract with Mr. Stirling Lee having been terminated, the town clerk be authorised to arrange, without prejudice, for the payment of the sum of 250*l.* in final settlement of all Mr. Lee's claims in the matter. On a division there appeared for the further amendment, five, against it, three; majority for the further amendment two; and the further amendment having been carried and put as a substantive motion was adopted."

THE LINCOLN SCHOOLS OF SCIENCE AND ART.

THE new building in Monk's Road, Lincoln, for the Schools of Science and Art was formally opened last week by the mayor.

An address on art was delivered on the occasion by Mr. A. G. Webster, who said:—Of all the questions which are raised by the future of public instruction, no one surpasses in importance the teaching of drawing. In Germany, France, Italy, every day fresh and greater sacrifices are imposed by the people on themselves in order to endow the rising generation with this most powerful instrument of the workman. To the economist it represents one of the most essential elements of victory in the struggle for existence; to the teacher it offers the most striking example of the simultaneous culture of the senses and the reasoning faculty. Drawing assists, at one and the same time, the education of the hand, the eye, and the intellect; at once material and intellectual, it is destined to play a great and leading part in that reasonable system of education which the future will give us. It belongs, without doubt, to that broad elementary groundwork of instruction, in regard to which all our children have equal aptitudes and equal rights, and in which it would have found a place long since if, by a singular wrong-headedness, it had not been regarded as a superfluity (or the attribute of a few heaven-sent geniuses), instead of being, as it is really, indispensable to all workmen who aspire to anything beyond mere hewers of wood and drawers of water, and easy of acquirement to children. Some superfine people say, "To what purpose is it that you are vulgarising the fine arts; are we not overrun by a horde of third-rate artists?" Just as truly might they rail against the teaching of writing, as adding to that shoal of authors who now afflict the land. The error consists in thinking that drawing is taught on purpose to produce painters, sculptors, and architects; one becomes no more an artist by representing the appearance (more or less) of an object with pencil or brush than the faculty of using intelligible phrases denotes a Shakespeare. Drawing bears exactly the same relation to art that grammar does to literature. I do not desire to see our elementary schools turned into manufactories of artists; but what I do say is, permit every child to learn to read and write "things," as they learn to read and write the names of those things. The time devoted to this so necessary study has hitherto been ludicrously insufficient, as a rule an hour a week. I believe that in all elementary and grammar schools the time should be divided somewhat in this way:—Three hours to books, one hour to drawing, and one or two to work with tools; this general course to last two or three years (when the aptitudes of a boy would be discovered, and he could follow a special direction). A skilled workman should be on the regular staff of teachers, and superintend the instruction in sawing, planing, turning, &c. The man that is to follow any kind of handicraft, making spades or shoes, waggons or hats, chairs or houses, is a better man from having his hand and eye trained in learning to draw. The commercial value of almost everything that is made is affected more or less by its artistic form; the commonest utensil is more desirable if it is shapely and symmetrical. Even those who are to follow mercantile or professional callings are finding use continually for this power of writing forms, and are often greatly disabled from lack of it. Who is there that does not often need the power of making an intelligible representation with the pencil of something he wishes to have constructed or to describe? The idea that drawing is a mere accomplishment can be entertained by none but the ignorant; nothing is taught the utility of which is more obvious. The notion as to the instruction of children I just mentioned is no chimera; it is now in full work in several towns in America, where it is found that the pupils, although giving only about half the time to books that those in the ordinary schools do, progress just as rapidly in all branches, and in addition learn two of the most essential attributes of men, to use their hands and eyes, the functions of which useful members, through the excessive devotion to mere book education, are in danger of being seriously impaired. If our present system is not modified, when we want a nail knocked in we shall have to send to Germany for some one to do it. I speak somewhat bitterly, from my own experience at school, leaving there with a smattering of two noble languages, pronounced in a way to make the ancients turn in their grave, and what else? I wonder they don't teach children to pronounce German and French with the English values of the letters. In this beautiful building that the liberality of our townsmen has provided I hope that we shall not only successfully teach drawing in its industrial phase, but also gather a circle of earnest students of the beautiful. Some are already far advanced, and now we have a fitting home I hope they may find it to their interest and convenience to work here, for the honour and glory of our city, and as a protest against that great evil of centralisation which is sapping the life of the country to satisfy the insatiable maw of London. All great art has been the out-growth and representation of the life of the time of the artist—Egyptian, Greek, Roman, Mediæval, Renaissance, modern French and English—all else is a mere exotic and plaything. Certainly the great Italians painted scriptural subjects, but the figures are Italian and in Italian dress, and quite right, for the great facts of humanity are external, the rest matters little. The great artists have been frankly in touch with their own times. A picture of an Italian or Spanish subject is, when painted by an Englishman, but the very outside, the husk. He that has eyes to see will find that all round and every day we live in the midst of beauty, more subtle than the picturesqueness of red and yellow pocket-handkerchiefs. That is not to say that one may not study and paint abroad for a time. Indeed, when a man is an advanced student, there is no possibility of his learning to know how little he does know and to remedy his faults except in Paris. But the work by which a man will be remembered after his death must be the presentment of himself. The greatest writing is, to a great extent, autobiographical, and a man is of his own country, and his own town even; one regrets the old municipal life, each town complete in itself; perhaps those days may return. I hope to make a very special feature of modelling. Indeed, I should like every student in the school to have some acquaintance with it, besides teaching it specially to all who are carvers in any material. I should like to see every boy intended for an architect go through a two years' course of study in the School of Art before entering an architect's office. In France, Germany, and Austria no man can call himself an architect until he has gone through a seven years' course, quite three years of which are devoted to School of Art studies. I am sure that a student could prepare himself for the diploma examination of the Royal Institute of Architects very advantageously in our school. I hope also to get together a class in wood-carving. But, to end as I commenced, drawing, without that nothing. People want a royal road to learn dodges and tricks, to make their friends think they can do something, but without drawing all is vanity and Dead Sea apples, sometimes deceptive for a time, but invariably found out at last.

THE GLASGOW INSTITUTE OF MEASURERS.

THE annual meeting of this Institute was held in the Christian Institute on Monday. In the report of the Council submitted to the meeting it was stated that the membership was forty-four. It was also reported that rules and regulations for the measurement of wright, glazier, and plaster works had been drafted, and were about to be submitted to joint committees of the several parties interested. The following gentlemen form the Council for the ensuing year:—President, David Robertson, 205 Hope Street; vice-president, John Densken, 121 West Regent Street; Council, James Howatt, John Shields, Robert Scott, Michael Cunningham, John Morrison, D. S. Wilkie, William Howatt, R. G. Stirling, Robert Reid, and J. H. Ramsay. Auditors, Robert Scott and R. G. Stirling. Secretary and treasurer, William Howatt, 146 Buchanan Street.



E. Meissonier, pinx.

DIDEROT AND
(Collection of M.r le baron

An Etching from "L'Art."

Printed by Sprague & C.o

18th 1886.



Monsin, sc.

S FRIENDS.

ond de Rothschild)

Lane Cannon St EC



SAIGHTEN GRANGE, CH

Drawn By E



"INK-PHOTO." SPRAGUE & Co 22, MARTINS LANE, CANNON ST. LONDON, E.C.

IRE. BEFORE RESTORATION.

RD HODKINSON.



THE CONSTITUTIONAL CL

ROBERT W

Oct. 8th 1886



"INK-PHOTO" SPRAGUE & Co 22, MARTINS LANE, CANNON ST. LONDON E.C.

NORTHUMBERLAND AVENUE.

IS, F.S.A Architect.

ILLUSTRATIONS.

DIDEROT AND HIS FRIENDS.

THE limitations of the art of M. Meissonier have been often descanted upon by critics in all tongues. But there is no modern painter whose work is less likely to be thought antiquated hereafter. When a general exhibition of the artist's works was held in Paris a few years ago, it was a common remark that his earliest pictures have not only preserved their colour, but are as interesting as when they were painted. In subjects like the one we illustrate this week M. Meissonier is at his best. Although he often paints figures in fierce action, such as those in *The Rixe* (which was a birthday present to Her Majesty from the late Prince Consort), yet it is plain that he has a preference for figures in repose. It is also customary for the artist to surround his figures with details that are suggestive of comfort. His *Diderot* is an example. The great writer is here seen surrounded by his friends the encyclopædists, who were co-operating with him in producing the literary revolution of the eighteenth century. What is the work that engrosses the attention? It may be one of Diderot's splendid pieces of criticism, or more likely one of his short stories which are among the classics of the French language.

The etching is also suggestive of the variety of work that is reproduced in *L'Art*.

THE CONSTITUTIONAL CLUB, NORTHUMBERLAND AVENUE.

ON the site of the gardens of old Suffolk House the Constitutional Club has just been completed from the designs of Mr. Robert W. Edis, F.S.A., architect, of Fitzroy Square, and was opened on Monday for the reception of its members.

The new club house differs materially in design and general colour from the gigantic hotels which fill up the greater portion of the avenue. The general treatment of its details with well-modelled ornament, and the warm colouring of the terra-cotta work, with which it is entirely faced, give a play of colour and light and shade rarely found in London street architecture. The style of the building may be called a free rendering of German Renaissance.

The site being wedge-shaped—with its narrow end looking towards the river, having over 200 feet frontage in Northumberland Avenue, and about the same in Northumberland Street, with an extreme width at its widest end, next the Grand Hotel, of about 110 feet—presented much difficulty in the arrangement of the various rooms, and the general planning of the interior. The architect has emphasised the narrow end of the wedge by a circular end with open arched loggia on the first floor and circular turret, thus forming a picturesque termination to the high-pitched roof of the main building.

All the principal rooms are grouped round an octagonal centre hall, which forms an important feature on the ground plan. The main entrance is placed at the northern or wider end of the site, and, in addition, separate entrances are provided for access to the members' bedrooms or chambers above the principal floors, and for tradesmen, in Northumberland Street.

The basement and mezzanine floor over are devoted to the general service-rooms of the club, and contain a kitchen, 50 feet by 30 feet, with all the necessary offices, servants' hall, 46 feet by 21 feet, stillrooms, steward's-rooms, cellars, and boiler and engine rooms for the electric lighting and steam pumps. The ground floor is occupied with a lofty entrance-hall and vestibule, 43 feet by 20 feet, with reception-room, 27 feet by 25 feet, leading from the latter, for use of friends of members.

The large octagonal inner hall, which, together with the outer hall, is lined with delicate white-toned marbles (pavonazzo and veined), is 30 feet in diameter, and off this are the morning-room, 120 feet by 30 feet, with central recessed portion with circular bays, 50 feet by 26 feet; smoking-room, 45 feet by 26 feet, and lavatories, &c., with bath and dressing-rooms on mezzanine.

The service rooms on each floor are arranged in the centre of the building, with hydraulic lifts from kitchen, stillroom, and wine cellar opening into them. These rooms are arranged on each floor so as to communicate direct with all the principal rooms of the club.

On the first floor, which is approached by a well-lighted broad marble staircase, 10 feet 6 inches wide, with balustrade of rich pavonazzo or purple-violet marble, is the general coffee-room, 140 feet long by 30 feet wide, with central portion recessed with circular bays, giving an extreme width at this portion of the room of 52 feet, and finished at the narrow end with an open circular loggia, or large balcony, facing the river; a library, 51 feet by 27 feet, with librarian's room, and separate staircase, and billiard room, 45 feet by 26 feet 6 inches, together with service room, lavatories, &c. The rooms on ground and first floors are 20 feet high, and on the second floor 16 feet.

The second floor is devoted to large general smoking room, 100 feet long by 31 feet wide; billiard-room, 50 feet by 28 feet; card-room, 32 feet by 22 feet; committee and house dining-room, 46 feet by 24 feet; lavatories, service room, and secretarial rooms.

In the third, fourth, and fifth floors are arranged about 80 bedrooms for the use of members, with separate staircases, bathrooms, &c., and accommodation is also provided on these floors, and on the various mezzanine floors facing Northumberland Street for about sixty servants.

The building generally is of fireproof construction throughout, and is provided with every modern convenience, including hydraulic lifts for service and luggage, and an hydraulic elevator to each floor for the use of members. The principal portions of the rooms will be lighted by a novel system of electric lighting, specially designed by the architect, the lamps forming part of the ornamental ceilings, the usual fittings in the shape of hanging electroliers being altogether done away with. Each floor is fitted with high-pressure water mains, and the whole of the rooms throughout are thoroughly ventilated by a system of exhaust tubes fitted at the top of the building, with one of Blackman's air propellers, worked by steam-power from the basement.

The whole of the internal fittings, including the richly decorative plaster ceilings, stoves, and mantels, have been specially designed by Mr. Edis, and the modelling of the whole of the exterior ornamental work has been executed in terra-cotta from models prepared from his designs and under his supervision by Mr. George Frampton, a young sculptor, who has gained various medals in the Royal Academy School.

Mr. Edis is well known as an advocate for the use of terra-cotta in London buildings, as being more suitable to withstand the deleterious atmospheric influences than any ordinary kind of stone, and with the sanction of the Board of Works, has used it entirely in two colours—red and buff, for the facing of this building; and this work has been excellently carried out by Mr. Edwards, of Ruabon, whose terra-cotta is well known for its general hardness, the whole of the work being self-coloured.

The whole of the general works have been carried out from the designs and under the supervision of Mr. Robert W. Edis, the architect, by Mr. Boyce, builder, of Eagle Works, Hackney; the marble work by Messrs. Burke & Co., of Newman Street; the heating, ventilation, and kitchen fittings, hydraulic lifts and mains, and boiler work by Messrs. Benham & Sons, of Wigmore Street; the ornamental plaster ceilings, &c., by Messrs. Jackson & Sons, of Rathbone Place; the electric lighting by Messrs. Verity & Sons, of Covent Garden; the mantels and stoves, &c., for the principal rooms by Messrs. Yates, Haywood & Co. and Messrs. Longden & Co.; and the sanitary fittings and plumbers' work by Messrs. Matthew Hall & Co.; Mr. Holloway acting as the architect's clerk of works, with Mr. Wilkie Edis as assistant. The gasfittings and electric bells and speaking tubes are by Messrs. Strode & Co.

The building has been furnished by Messrs. Maple & Co. and Messrs. Shoolbred & Co., of Tottenham Court Road, the latter firm supplying the carpets, blinds, &c.

It may be mentioned that the club already consists of 5,300 members, of whom 1,500 are town and the remainder country members, with a waiting list of about 1,200 candidates; and that the whole of the works have been well and satisfactorily executed at a cost much within the contract amounts.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 28.—SAIGHTEN GRANGE, CHESHIRE, BEFORE RESTORATION.

GLASGOW ARCHITECTURAL ASSOCIATION.

THE first of this session's series of lectures was delivered last week by Mr. William Shireffs, his subject being "Electric Deposit of Copper as applied to Decoration." Mr. William H. M'Nab, president, occupied the chair. The paper was divided under two heads—historical, and practically descriptive. Explanatory of the latter a large selection of examples was exhibited—figure panels, friezes, pilasters, &c., and a working demonstration of the process as carried out by himself was given by means of a single cell battery, from which a fine impression of a medallion was taken, obtained after an immersion of some five hours. At the close Mr. Shireffs was awarded a vote of thanks.

THE STONEWORK OF MALTA.

THE exhibits in the Malta court of the exhibition at South Kensington having excited some interest, the acting commissioner has published some information on the subject.

I am daily invited, he says, by private proprietors, architects, builders, and others to give an opinion which may be depended and acted upon here on the subject of "the constitution of its stone," its adaptability for building purposes in this country, its powers to resist frost and snow and the severities of an English winter, which, I need not say, finds no parallel in Malta.

Although there is a hard stone as well as a soft stone in Malta, the principal specimens of stonework shown in the Malta court are of soft stone. I instance the pretty façade facing the court, which is constructed in soft stone, the design of which, copied from a gate at Heidelberg (period of the German Renaissance), was sent to Malta, executed there, sent in boxes to this country (which now form the rockwork behind it), and reconstructed here. There are also some very elaborately ornamented fountains and vases, which, from the delicacy and intricacy of the work, are better placed in conservatories in this country, while outside the court, under a shed running parallel with the court, are specimens of balustrades of various kinds and patterns, which are attracting general observation on the part of private proprietors, architects, and builders, owing to their extraordinary cheapness compared with works of a similar character when executed in this country, together with the variety, originality, and beauty of the designs.

Though every class and description of ornamental stonework can be well imported into this country at a much lower rate than can possibly be executed here, from a façade to a balustrade, it is with special reference to these latter, which have engaged the particular attention of the public, with their cheap stone run above and at their base, that I am daily asked:—1. What will be the expense (over and above the prices marked on each as manufactured in Malta) of bringing from Malta and landing in the London docks the balustrades and cornices in question? 2. When they are brought here and used for ornamental building purposes, will they be enabled to resist the severities of an English winter.

Before, then, anything can be done to stimulate a future trade in this class of work between Malta and this country, both these queries, and especially so the last, must be satisfactorily replied to. In answer to the first, I have been informed by experts in Malta that an addition of 60 per cent. is sufficient to cover all cost of freight and transport delivered in the London docks; but, to be quite on the safe side, I should prefer to quote 80 per cent., and even then, with that addition, at the price these balustrades are manufactured in Malta and marked in the court and catalogue—from 6*d*., 7*d*., 1*s*., 1*s*. 9*d*., and in proportionate increase up to 4*s*., with their cornices at 6*d*., 10*d*., and 1*s*. the foot run—they would be, after all expenses paid, incomparably cheaper than any that could be possibly obtained in this country, where both material and wages for skilled labour are so very much in excess of the cost of either in Malta. But of far greater importance than the question of cost of freight and transport is that of the durability of the Malta ornamental stonework; for if, when imported here, it would be found to yield to the severity of the climate, it would be altogether useless to import it. This is the question which, left unreplied to, staggers all would-be purchasers, and it is to its power of endurance when imported here that I have always hitherto hesitated to give a confident reply from want of experience. Now I feel, owing to the kindness of Earl De la Warr, I am in a position to speak with that experience which was wanting previously. While visiting at Buckhurst a short time since, I ascertained that there were no less than sixteen Malta stone vases of various sizes, varying from 4½ feet in height, with a breadth of 2 feet, to 3 feet high with proportionate width, which have been left exposed to the open air during winter and summer for the last fifty years. These vases, which were made in Malta after the designs of Mr. Repton, architect, were on completion sent to this country, and, with the exception of only one out of the sixteen, which was damaged by wet earth having been carelessly put inside it for the purpose of flower-planting during a sharp frost, and was slightly cracked in consequence, are all of them in the most perfect state of preservation, and after half a century's exposure show no damage whatever, and are not more discoloured than would be the case with any specimens of our English stone made subject to the same test of years and exposure. I would specially point out, however, that in the case of no one of these vases is any of the ornamental work on the vases stuck on; all the ornamental designs, vine-leaves, grapes, &c., are cut out in relief from the solid stone, and to their solidity in this respect I attribute to a great degree their permanence after a trial of half a century's duration.

I trust that this clearing up of the difficulties which have hitherto prevented many purchasers from investing in Malta ornamental stonework—viz., those of its endurance of the severities of an English winter—together with the much lower comparative cost of this class of work, whether for garden or house ornamentation (for in Malta the pretty and effective balustrade ornaments are used in the most modest and humble dwellings of the poorer classes), than can possibly be obtained here, will induce private proprietors, architects, and others to invest largely in this ornamental stonework. And if I find that applications will be made to me at the Malta court with a view of dealing to some large extent in this ornamental work, which will greatly benefit one of the chief native industries of the island, while, on the other hand, it would give the architect and builder in this country ornamental material to work with, which he could under no other circumstances obtain at a similar cost, I should under such circumstances communicate with the Government of Malta, that in the first instance, and until the trade was in such good working order that it could stand on its own footing, all orders of importance for works of this class received here should be sent through the Government, when its first-class execution at fair prices will be secured.

THE MASTER OF WORKS OFFICE, GLASGOW.

IT will be remembered that allegations were made a few months ago in the Glasgow Town Council about irregularities in the letting of municipal contracts and the superintendence of works. It was, in consequence, resolved to make an inquiry into the organisation of the Master of Works Office, and a committee, consisting of the Lord Provost and some of the bailies and councillors, were appointed for that purpose. The report has been completed, and is of voluminous extent.

After describing the procedure of the committee at great length, the report states how the committee resolved to ascertain whether the complaints which have been made against the department and certain members of the staff could be substantiated. They accordingly instructed the town clerk to request four gentlemen who were understood to have expressed dissatisfaction with the manner in which the department had been conducted to meet them. To this invitation one, a contractor, returned no reply; another, a member of the Town Council, wrote that he had not expressed dissatisfaction with any of the officials in the department, but had said that he thought the organisation of the office capable of great improvement. Another, an architect in business in Glasgow, wrote stating that he had expressed dissatisfaction in two respects, namely:—(1) On the ground of plans for the Dean of Guild Court being prepared by *employés* in the department, and (2) on the ground of the Master of Works department being employed to carry out works of considerable importance, which he considered highly detrimental to the public interest, as being both extravagant and liable to foster abuses, and that if architects in independent practice were employed the work would be better and less expensively done. Another of the gentlemen, a member of the Town Council, appeared before the committee and referred to matters relating to contracts connected with the Corporation and police departments since 1881, and stated that the subjects he alluded to would be found recorded in the minutes. The committee thereafter met with the two architect assistants in the office referred to in the architect's letter, and heard them as to plans prepared by them for private parties. From their statements, which the committee felt were fully and fairly given, they are satisfied that such work has been done only to a very limited extent.

On June 8 the committee remitted to a sub-committee consisting of the Lord Provost and Councillor Osborne, to meet with any parties who might have any evidence to adduce affecting the administration of the Master of Works department. The sub-committee caused a communication to be sent to the contractor before referred to, who had not acknowledged the committee's previous invitation asking him to meet them. In reply to that letter a letter was received which the sub-committee considered satisfactory. They accordingly directed another

communication to be sent to him, asking specifically whether certain statements had been made to him in connection with a tender he had sent in by one of the officials of the Master of Works department, and also whether he had ever said to any one that such a statement had been made. No notice has been taken of this communication. At the meeting of the sub-committee above referred to, a gentleman attended who stated that he had been engaged in building operations on his own account in Glasgow for twenty-nine years, and had during that time had experience of the Master of Works department; that he had invariably found the officials there civil and obliging, and willing to give him assistance in every way. He had no complaint to make against them. He had never been asked by any of them for any sum of money, nor had it ever been hinted to him by any of them that such a thing would be acceptable.

The committee had another meeting on June 24, when they met with Mr. Whyte and heard his explanation as to the complaint understood to have been made by the contractor previously referred to, and also as to the circumstances under which certain of the works at Shieldhall and the Cattle Market had been altered from those specified in the specifications. In the course of the interview the committee asked Mr. Whyte, "Have you ever derived any personal advantage from any changes made by your authority on specifications?" To which he replied, "Never, and I never received one penny from any contractor who has done any work for the Corporation or any of the municipal departments; nor have I ever, since I was connected with the Dean of Guild Court, received any consideration from anyone in connection with any plans submitted to that Court." Mr. Whyte was then asked, "Have you ever been offered money by any party for any services rendered by you connected with the Dean of Guild Court?" To which he replied, "I have frequently, but I always refused it." Mr. Whyte also stated to the committee that from the alterations which he had made on the specification for the roofing of the Cattle Market, he expected there would be a saving of about 3,000*l.*, and also that there should be a considerable saving to the local authority from the alterations on the Shieldhall contract. He further stated that the alterations were made by him with the sole view of effecting a saving.

From the above it will be seen that the committee have availed themselves of the means at their disposal for endeavouring to ascertain whether the charges previously referred to could be substantiated, and they feel justified in saying they consider nothing has been laid before them to substantiate them. Further, while it is true that Mr. Whyte has erred in allowing departures from specifications to take place without obtaining the consent of the body for whom the work was being done, yet, when that has been said, there is nothing more, and the committee believe that he has allowed these departures, believing them to be in the interest of the public and not with a view to personal advantage, and that in fact he has not derived any personal advantage from them.

As regards the second ground of complaint stated by "Architect" in his letter, all the committee consider it necessary to say is that it has evidently been written in ignorance, and that the experience which the Corporation have had leads to conclusions quite opposed to those on which he grounds his complaint.

In reference to the Belvidere contracts the special committee appointed by the Police Authorities met on July 9 last, and having duly considered the remits to them and relative minutes and documents bearing on the subject, were of opinion that it was unnecessary that the reference to the President of Glasgow Architects regarding the matter specified in Mr. Ramsay's report, proposed in Bailie Shearer's amendment of March 9 last, should be proceeded with; but in respect the matter had been publicly and prominently discussed, they directed the clerk to communicate with the contractor (Mr. Lightbody) with a view to steps being adopted to refer the matter to the President of the Institute of Architects, as proposed in Bailie Shearer's amendment.

The clerk having written accordingly, on July 22, the following reply was received from Mr. Lightbody:—

July 27, 1886.

Sir,—I have your favour of the 22nd inst., with copy of Mr. G. A. Ramsay's report on work done by me in 1875, 1879, 1880, 1881, 1882, and 1884 for the Committee of the Police Board of Glasgow.

As your committee is aware, no complaints were ever made to me about the work, nor was I consulted as to the appointment of Mr. Ramsay, nor afforded an opportunity of giving explanations or being heard on the matters reported on by him.

While it appears to me an outrage on common sense, and a subversion of all rules of trade and business, to propose to open up contracts completed and paid for so many years ago, and which contracts were so completed under the supervision and direction of the committee and its architects, inspectors, and measurers; still, if the request to do so be made, not as a matter of right but as a favour, I have no objections, on condition, however, that a formal reference be made to the gentleman mentioned by you, and that the particular questions on which your committee wish his judgment be articulately stated, and that your committee pay all the expenses of the reference, including my own expenses for time and outlay, my law agent's account, and the expenses of all witnesses I may require to produce for examination before the arbiter.

I need not, at this stage, refer particularly to the matters mentioned by Mr. Ramsay, but his report includes some work not executed by me.—Yours, &c. William Lightbody.

The committee again considered the whole subject, made additional inquiry, and had an interview with Mr. Hannah—who has acted as clerk of works and inspector at Belvidere during the whole time the buildings erected there have been in progress—who explained to the committee the rules which guided him in the passing of work and material, and in the general discharge of his duty, and also described the circumstances connected with the several matters dealt with by Mr. Ramsay in his reports. Mr. Hannah stated also, in the most positive manner, and in reply to direct questions, that he has never at any time received money or any other consideration whatever from contractors or in connection with the execution of work for the city, and that the whole work done at Belvidere is good, sound, tradesmanlike work, and conforms fully to the spirit of the specifications.

The committee having heard the statement of Mr. Hannah and all other available evidence bearing upon his conduct, and the manner in which his duty has been discharged, are of opinion that in two or three minor matters he had erred in judgment in not adhering more rigidly to the letter of the specifications, but that no serious blame can be attributed to him in respect of these. The committee are satisfied that Mr. Hannah has for this long period of years served the Police Board honestly, conscientiously, and with much practical ability, and no evidence whatever has been forthcoming to confirm a charge either of dishonesty or culpable neglect or of want of fitness for his duty. The committee are, therefore, of opinion and report, that Mr. Hannah is entitled to be acknowledged as a faithful and capable public servant.

As regards the proposed reference, the committee deem it unnecessary under the circumstances, and recommend that no further steps be taken in the matter.

With reference to the future organisation of the office, the committee recommend that, under the supervision and direction of Mr. Carrick, the office should be divided into the following departments, for the due conduct of the business of each of which an assistant under him should be responsible:—

1. The Statute Labour, Paving, and Dean of Guild Court work, including the supervision and carrying out of all the provisions in local and public Acts as to streets, sewers, drains, and buildings within the city, to be under Mr. John Whyte.

2. The engineering and surveying work to be under Mr. A. B. M'Donald, C.E.

3. The architectural work of the office, including the supervision of the clerks of works in connection therewith, to be under Mr. David Macbean.

The committee recommend that all the officials in the department be prohibited from doing work for private parties.

The committee further recommend that the salary of Mr. David Macbean be increased from 125*l.* to 150*l.*, and the salary of Mr. Wyllie, also of the Architectural Department, from 80*l.* to 120*l.* The committee are of opinion that the salaries of other officials in the office should also be increased, and recommend that it be remitted to the Statute Labour Committee to consider and report to the police authorities as to what increases should be granted.

That in the matter of contracts the present practice of tenders being issued from and returned to the Master of Works department should be altered in so far that the tenders should be returned in future to the Town Clerk or Clerk of Police, whose duty it will be to hand them to the committee—the City Chamberlain or Treasurer being the custodier of the contracts after their acceptance by the committee.

That all accounts in connection with the expenditure for the various departments coming under cognisance of the Master of Works office shall be under the charge of the chief clerk, who shall see to all such being duly certified by the parties in charge of the work, and, after the same have been certified by the Master of Works, or his assistant, shall be handed to the City chamberlain or the treasurer of police for his further scrutiny and examination.

The following are the principal portions of Mr. Carrick's statement:—

As requested by the committee, I now beg to submit the following information for their consideration, in dealing with the future arrangements of the office. The total number of persons employed, exclusive of Mr. Whyte and myself, is thirty-four; of these, twenty-one form what may be termed the indoor staff, the remaining thirteen being engaged in outside duties. The total amount of salaries payable to the indoor

staff is 2,365*l.* The outdoor staff is composed wholly of skilled practical tradesmen of experience in connection with streets and structural arrangements of the city, the number engaged being thirteen. The total amount of salaries payable to this staff is 1,582*l.* 10*s.*

After detailing the duties of the staff, Mr. Carrick proceeds :—I have endeavoured thus briefly to give the committee an idea of the duties of the staff which, partly under my own direction, and that of my assistant, Mr. Whyte, comprises the department of the Master of Works ; and I embrace the opportunity of expressing my satisfaction with the discharge of their several duties, and confidence in their rectitude. At the last meeting of the committee the question was raised as to the various employés engaged in private professional work, to which strong objections were urged, both on the grounds of expediency and the rumour of its leading to favouritism in the passing of plans through the Dean of Guild Court. It is perfectly true that some of them do private work, but only in their own time, and this they claim as a right, having the implied consent of the town council. As regards the statement that such professional work leads to partiality in the Dean of Guild Court, I can give this my most unqualified contradiction. Plans prepared in the Master of Works office for all the various buildings erected by the town council are subject to a more rigid scrutiny than any others presented to the Court, and it is not likely that the Court would be guilty of any such dereliction of duty, as is insinuated by those who have made such gross imputations, by surreptitiously passing plans prepared by any subordinate in the office. It is for the committee, however, to deal with this question of private work, which I know some of the members of the staff feel compelled to undertake to enable them to support themselves and their families. I have no doubt that the general impression that private work is carried on to an undue extent had its influence in the various applications for increase of salary being rejected. Hitherto Mr. Whyte has undertaken, I may say, the sole oversight of the outdoor department, not only as regards the duties under the Police Act, embracing the Statute Labour Department and Dean of Guild Court business, but also as regards the erection of structures such as the hospitals, baths, and washing-houses, and the extensive works in connection with the Market Trust and Local Authority. The work in connection with these buildings, &c., devolved on Mr. Whyte in some manner owing to my bad health, and during my temporary absences on Parliamentary business, and gradually the conveners of committees took advantage of his services, absorbing a large portion of his time. It has been cause of great pain to me to find that recent circumstances have raised suspicions against Mr. Whyte ; I believe these to have arisen owing to rumours as to Mr. Whyte's accumulation of great wealth, which he could only have realised by dishonest complicity with contractors. I know that such rumours are unfounded. Mr. Whyte's means are not more than could be expected from the thrift and economy which has distinguished him during his long service under myself.

With reference to the future management of the office I would suggest :—1. That the discharge of duties of the engineering, surveying, and architectural departments, including the clerks of works employed at the buildings in course of erection, shall be under my own immediate supervision, or that, in my absence, of my assistant, Mr. M'Donald. The clerks of works to report every morning to the department the progress of the various contracts and the character of the works, and it shall be their duty to see carried out all instructions which may be issued from time to time by the various committees, or myself as their architect. 2. That the duties of Mr. Whyte, as my assistant, shall be restricted to those defined in the Police Act, embracing as these do the Departments of Statute Labour and Paving, the supervision and carrying out of all the provisions as to streets, sewers, drains, and buildings situated within the city, including the Dean of Guild Court, the outdoor inspectors to be under his control, and in his absence the chief clerk to be responsible for the discharge of these duties. 3. That in the matter of contracts, the present practice of tenders being issued from and returned to the Master of Works department, should be altered in so far that the tenders should be returned in future to the clerk, whose duty will be to hand them to the committee ; the treasurer or clerk as heretofore being the custodier of the contracts after their acceptance by the committee. All accounts in connection with the expenditure for the various departments coming under cognisance of the Master of Works office shall be in charge of the chief clerk, who shall see to all such being duly certified by the parties in charge of the work, and, after certification by myself or assistant, hand the same to the treasurer for his further scrutiny and examination.

Tenders have been sent in for the restoration and enclosing of Banbury Cross, the lowest tender amounting to about 140*l.*

ARCHITECTS' FEES IN AMERICA.

THE subjoined schedule of fees has been adopted by the Milwaukee Association of Architects. It will be seen there are some deviations from the established practice in England and America :—

Complete drawings, specifications, &c., for dwellings, 3 per cent. ; superintendence, 2 per cent. For churches and public buildings, 3 per cent. for first 15,000 dols., and 2½ for all over that amount ; superintendence, 2 per cent. For flats, office buildings, &c., 2½ per cent. ; superintendence, 1½ per cent. For warehouses and plain stores (exclusive of fixtures), 3 per cent. ; for drawings, specifications, and superintendence, for special designs for mantels and stationary furniture, and for elaborate interior finish requiring special designs, 10 per cent. In case of the abandonment of the work the charge for partial service will be as follows for dwellings, and in the same proportion for other classes of work :—Preliminary studies, 1 per cent. ; preliminary studies, general drawings, and specifications, 2 per cent. ; preliminary studies, general drawings, specifications, and details, 3 per cent. For alterations and additions, an additional charge to be made for surveys and measurements. An additional charge to be made for alterations or additions in contracts or plans, which will be valued in proportion to the additional time and services employed, necessary travelling expenses to be paid by the client. Time spent by the architect in visiting for professional consultation and in the accompanying travel, whether day or night, will be charged for, whether or not any commission, either for office work or for supervision, is rendered. The architect's payments are successively due as his work is completed in the order of the above classification. Until the actual estimate is received the charges are based upon the estimated cost of the work, and the payments are received as instalments of the entire fee, which is based upon the actual cost. The architect bases his professional charge upon the entire cost to the owner of the building when completed, including all the fixtures necessary to render it fit for occupation, to which he is called upon to give a general supervision. This includes arranging with artists, tradesmen, and others, for stained glass, heating apparatus, and works of a similar class, for which the architect does not furnish the designs, but to which he gives his supervision. The architect is entitled to additional compensation for furniture or other articles designed or purchased by him. If any material or work used in the construction of the building be already upon the ground or come into possession of the owner without expense to him, the value of said material or work is to be added to the sum actually expended upon the building before the architect's commission is computed.

Supervision of Works.—The supervision and superintendence of an architect (as distinguished from the continuous personal superintendence which may be secured by the employment of a clerk of the works) means such inspection by the architect or his deputy, of a building or other work in process of erection, completion, or alteration, as he finds necessary to ascertain whether it is being executed in conformity with his designs and specifications or directions, and to enable him to decide when the successive instalments or payments provided for in the contract or agreement are due and payable. He is to determine in constructive emergencies, to order necessary changes, and to define the true intent and meaning of the drawings and specifications, and he has authority to stop the progress of the work, and order it removal when not in accordance with them.

Clerk of the Works.—On buildings where it is deemed necessary to employ a clerk of the works, the remuneration of said clerk is to be paid by the owner or owners, in addition to any commission or fees due the architect. The selection and dismissal of the clerk of the works are to be subject to the approval of the architect.

Extra Services.—Consultation fees for professional advice are to be paid in proportion to the importance of the question involved, at the discretion of the architect. None of the charges above enumerated cover professional or legal services connected with negotiations for site, disputed party walls, right of light, measurement of work, or services incidental to arrangements consequent upon the failure of contractors during the performance of the work. When such services become necessary they shall be charged for according to the time and trouble involved.

Drawings and Specifications.—Drawings and specifications as instruments of service are the property of the architect.

The Offer of Mr. John M'Kie, of Edinburgh, to carry out the River Cart improvement scheme at Paisley, for 68,000*l.*, has been provisionally accepted ; and a Glasgow firm, Messrs. Morrison & Mason, obtained the contract for the reconstruction of Paisley Station and works in connection, the cost of which is about 100,000*l.*

BUILDING IN GLASGOW.

At the meeting of the Glasgow Dean of Guild Court on Thursday in last week, Dr. W. G. Blackie reviewed the work of the past year. He said :—

During the past year this Court held 24 sittings, and passed 200 linings. The total value of the property in these linings was estimated at 394,540*l.* Of this amount 208,050*l.* are applicable to 42 linings, which included 1,242 dwelling-houses and 52 shops; 43,500*l.* are applicable to public buildings, including the Athenæum and the Young Women's Christian Institute, which take up about one-half of the amount, and some others; 36,900*l.* are applicable to churches, halls, and schools, included in 8 linings; 68,975*l.* are applicable to warehouses, offices, workshops, and other structures connected with business and trade, included in 68 linings; the balance of 37,115*l.* being applicable to alterations on, and additions to, structures already existing. Compared with 1885, these figures show an increase of 18 in the number of linings and 45,525*l.* in the value of the operations, a result which, taken by itself, may fairly be esteemed to be encouraging. But if last year be compared with 1884, when the value of the operations was 697,005*l.*, and 1883, when it was 594,943*l.*, any satisfaction that may arise from comparing it with 1885 becomes somewhat abated until we realise that the total amount in both of the two earlier years was greatly augmented by large public undertakings, a lining having been passed in 1884 for the municipal buildings, which itself amounted to 250,000*l.* The valuation of property passed by the Court is registered under five general headings set forth in the following table, which presents a comparison of the operations of the last five years :—

	Dwelling-houses.	Public Buildings.	Warehouses, Work-shops, &c.	Churches, Halls, Schools.	Alterations and Additions.
1886 .	£208,050	£43,500	£68,975	£36 900	£37,115
1885 .	128,650	45,500	86,055	52,900	35,910
1884 .	101,250	256,850	232,515	57,750	48,640
1883 .	88,650	102,500	291,461	35,500	76,461
1882 .	90,000	—	154 755	62,265	71,670

While there have been considerable fluctuations from year to year, as shown by this table, it is to be observed that there has been a general decrease under all the headings, except the first, indicative, manifestly, of the pressure of the times through which we have been passing. The records of this Court do not apparently supply any special evidence of this pressure being much lightened, much less coming to an end, unless it be found in the figures in the first column. During the period comprised in the table the value of the dwelling-houses and shops which have been passed has more than doubled, an enlivening feature which it may be hoped will go on from year to year, until the space suitable for the erection of dwelling-houses within the municipality is completely occupied. The following table, which shows the number of dwelling-houses passed in each of the last five years, and the number of apartments in each house, will be found interesting :—

	Houses. Apartments.						Total Houses.
	1	2	3	4	5	6	
1886. .	151	620	345	96	28	22	1,262
1885. .	114	425	203	13	6	3	764
1884. .	97	258	196	34	2	—	587
1883. .	41	199	95	27	11	18	410
1882. .	40	287	114	46	8	17	508

It is gratifying to observe that there has been a considerable increase last year all along the line, and that the greatest proportionate increase has been in the larger-sized houses. This fact, however, can hardly be taken as a sure indication of a movement towards remedying the evils of overcrowding. It is, however, so far satisfactory to observe that the operations of last year have not increased the percentage of one-room houses, which averaged 13·32 in the five years 1881–85. A further study of the figures set before you would doubtless suggest sundry other conclusions of an interesting nature, but for the present those which I have indicated may probably be deemed sufficient.

Messrs. G. Barker & Co., the bankers, of Mark Lane, have in the press and will shortly issue (through Effingham Wilson, of the Royal Exchange) an annual dealing with the trade and finance of the year. Report speaks of it as of an instructive and valuable character.

Correspondence

The Royal Academy and Education.

Sir,—I was not amazed at Mr. White's amazement when he read the article on "The Royal Academy and Education." He has been so absorbed by the preliminary stipulations that he is indifferent to anything which suggests what the infant Academy was like when it appeared in Pall Mall. If he has recovered from the effects of his amazement, which I trust were not serious, I would ask him, is there any practical difference between the statement of Reynolds, when he said they could teach students but little beyond the power to distinguish between good and bad works, and the clause of the Instrument which enjoins the delivery of six public lectures by the professor of architecture with the object of fitting the students for an unprejudiced study of books and for a critical examination of structures? Does Mr. White believe that in a course of six lectures more can be done in any branch of art than was suggested by the President? If compared with a school like the existing Ecole des Beaux-Arts, the Royal Academy in the early days when there ought to be fervour among professors, students, and patrons, must appear a very modest sort of institution. But it should not be judged by such a standard, and I therefore take the liberty of proposing a few questions, suggestive of its true character, to Mr. White, and some others on allied subjects :—

1. Is not Mr. White's idea of the Royal Academy School based on the supposition that it was founded to be a sort of comprehensive school, in which elementary work was not excluded? and has he not interpreted the words "for promoting the Arts of Design" in the Instrument rather erroneously, since he once asserted "that the word 'design' possessed a signification much more nearly allied to *dessein*, or drawing, than to 'design,' as it is understood by the modern architect?"

2. Is it not the fact that in the eighteenth century the word "design" bore a different meaning to the word "drawing," and that in the French language the equivalent of "design," considered as a technical word, was not *dessein* at that time?

3. Is it not the fact that in England the word "academy" was used in the eighteenth century to mean a place where artists met to draw from the living model and to discuss questions relating to design, that such an academy was similar to what is now called a "sketching club," and that the members were sometimes called "students?"

4. Is it not the fact that the Royal Academy was intended to be an institution of that kind on a more extended basis, and that Henry Moser, who was a principal agent in the founding of the Royal Academy, did obtain certain anatomical figures, busts, statues, lamps, and other effects, from an academy then existing, on the understanding that the members were to have the privilege of study in another academy under royal patronage without the necessity of paying an annual subscription?

5. Is it not the fact that afterwards some of those members, considering themselves to be as able artists as the majority of the Royal Academicians, declined to submit the probationary drawings which were required from all who wished to have access to the life and antique schools, lectures, and other privileges, unless they were elected Academicians?

6. Is it not the fact that certain of the members did comply with the conditions, and that in consequence the Academy contained more than one class of students?

7. Is it not the fact that the President in his discourse at the opening of the Academy recognised the distinction when he recommended certain regulations to be adopted for teaching the "young students?"

8. Is it not the fact that in the earliest engraving of the life school of the Academy the greater number of the students are shown to be men of mature age?

9. Is it not the fact that, owing to the aid afforded by the experience of the elder students, the conveniences of the schools, and the cheapness of education, the system of pupilage among painters fell into desuetude soon after the establishment of the Royal Academy, and may now be said to be abolished?

10. Is it not the fact that, in consequence, many evils have befallen the art of painting in England?

11. Is it not the fact that Dr. Waagen, the Director of the Royal Gallery of Berlin, who might be supposed to be impartial, advocated a return to that system when he stated before a Parliamentary Committee that Academies of Art as a means of teaching were injurious, and advised the English Government to imitate the action of the Prussian Government, which produced satisfactory results, and arrange with distinguished artists for opening studios into which pupils could be admitted?

12. Is it not the fact that if the Royal Academy set up a school of architecture on a large scale the system of pupilage would be abolished in architecture as well as in painting, and that much danger to the art would thereupon arise?

13. Is it not the fact that Mr. White, by advocating such a school, and by his persistent praise of men who never studied under architects such as Perrault, Lescot, Wren, and others, is aiding a scheme that would transform his profession without any advantage to the present or future members, or to the public?

14. Is it not the fact that in France the organisation for teaching artists, of which Mr. White is the eulogist, was established without any care for their benefit?

15. Is not the policy of Colbert, who created the organisation, explained by the statement of President Henault, who said:—"La protection signalée que Colbert accorda aux arts et aux sciences n'étoit pas en lui l'effet seul du goût et des connoissances; ce n'étoit pas par sentiment qu'il aimoit les artistes et les savans?"

16. Is it not a consequence of the French system, which was intended to create artists who might be instruments to assist in the glorification of the rulers of the country, that a great many men every year issue from the Ecole des Beaux-Arts who, from their peculiar education, are incompetent to undertake the ordinary duties of an architect, and, being without an official position, suffer much misery?

17. Is it not a consequence of the training of artists for State purposes in France that the condition in general of architecture in that country is far below the condition in England?

18. Is it not a fact that one architect informed the Congress of Architects assembled at Nice in 1884, and as an illustration of the character of provincial architects, that in his part of the country the profession has become so degraded that his friends were afraid to wound his feelings by calling him an architect, and preferred to call him an engineer?

19. Is it not the fact that at the same congress another architect called attention to the deplorable animosities that prevail among architects in consequence of the organisation of the French school—how Prix de Rome men look down on those who obtained only diplomas, and so on, and how the ill-feeling has unhappily extended among those who have not been students of the school?

20. Is it not the fact that the profession of architecture is at present sufficiently divided in England, and that there is no need to introduce an organisation which would further promote disunion?

21. Is it not the fact that in spite of the existence of a process for preparing Government architects in France, so little esteem is entertained for the profession that the civil code makes no distinction between architects and contractors, and every architect is responsible equally with the contractor for the stability of a building during a certain number of years, and in other ways is put on a level with him?

22. Is it not the fact that the Ecole des Beaux-Arts has failed as an educational institution, since candidates for the chief prizes have to prepare themselves outside the school?

23. Is it the fact that Mr. White's American cousins are better judges of the worth of the teaching in that school than the artists who train the successful pupils?

24. Is it not the fact that the said cousins, when they are competent to enter the school, do so in order to be able to boast of the distinction rather than for the purposes of education?

25. Is it not the fact that, while Free Trade prevails, students will naturally seek the teacher from whom they can obtain most knowledge?

26. Is it not contrary to experience, and to what is called common sense, to say with Mr. White, "While a dominant body like the Royal Academy maintains a sham school of architecture no institution in this country can succeed in establishing a real one?"

27. Is it not the fact that the Academy does not insist on attendance in its school as a qualification for membership, and that there is no just reason or impediment to prevent each of the architectural societies from opening schools if teachers and students can be found?

I have a good many other queries to put to Mr. White in respect of his letter, but I must not strain his faculty of amazement overmuch at a time.—Yours obediently,

The Writer of the Article on "The Royal Academy and Education."

CHURCH BUILDING AND RESTORATION.

Droitwich.—The memorial-stone has been laid of the new Wesleyan chapel in Newtown, which is being erected by Messrs. Reade & Sons, from the designs of Mr. George Smith. The chapel will be in Early English style, with a small wooden spire on the north gable. It will be built of red brick, with dressings of white brick and Bath stone. The chapel will be 50 feet by 30 feet, and will seat 350 persons. At the rear there will be a schoolroom, 40 feet by 20 feet.

Edgbaston.—The church of St. Bartholomew, Edgbaston, known as Old Edgbaston Church, is at present undergoing restoration and enlargement. The alterations have been designed by Mr. J. A. Chatwin, of Birmingham, and are being executed by Mr. J. Collins, of Tewkesbury.

Edinburgh.—New halls erected in Wellington Street, Ferry Road, in connection with North Leith parish church, have been opened. The new buildings, which have cost about 3,000*l.*, were designed by Mr. Hippolyte J. Blanc, Edinburgh, in the Gothic style.

Farnworth.—The new church of St. Peter has been opened. The church has been built by Messrs. Coope Bros., from the designs of Mr. R. K. Freeman, of Bolton.

Little Comberton.—The parish church has been reopened after restoration, carried out at a cost of about 1,600*l.* The work has been done by Mr. T. Collins, of Tewkesbury, from the designs of Mr. White, F.S.A.

Southowran Bank.—The corner-stone of a new mission church has been laid. The building will seat about 200 people. It will be simple in character, but substantially built, exposed as it is to the full force of the west winds. The architect is Mr. W. S. Barber, of Halifax, and the works are being carried out by Messrs. J. Charnock & Sons, contractors, Pellon Lane, Halifax.

York.—The memorial-stones of a Wesleyan chapel have been laid. The building is being built from the designs of Mr. Charles Bell, F.R.I.B.A., of London, and is to accommodate 650 persons, and will have a school and classrooms, &c., attached.

SCHOOL BUILDINGS.

Eccleshill.—A new Board school has been opened at Eccleshill, near Bradford. The contract amounted to 2,500*l.*, and accommodation is provided for 330 children. The building, which is Gothic in style, has been erected from designs prepared by Messrs. W. & J. B. Bailey, architects, Bradford.

Glasgow.—Additional buildings erected at the Crookston Street public schools have been opened. Additional accommodation has been provided for 629 pupils, and the cost has been about 7,770*l.* Mr. John Gordon, of Glasgow, is the architect.

Rutherglen.—A new Board school has been opened at Rutherglen. The school, which is square in form, is a large two-storey building, with frontages measuring 65 feet, and extensive playgrounds. The area occupied for the building is 494 square yards. The cost has been about 4,000*l.*, and the work was carried out from the plans of Mr. J. J. Craig.

NEW BUILDINGS.

Heavitree.—The new asylum for pauper lunatics, erected by the Town Council of Exeter, has been opened. The building was erected by Mr. H. Phillips, of Exeter, from the designs of Mr. R. Stark Wilkinson.

Port Glasgow.—A new library has been built from funds bequeathed by the late Mr. J. Moffat, merchant, of Port Glasgow. Early French Renaissance was adopted for the style of the building by the architects, Messrs. Wilson & Stewart, of Glasgow and Greenock.

Topsham.—The corner-stone of a new vestry hall at Topsham has been laid. The building is being erected from the designs of Mr. E. Harbottle, of Exeter.

GENERAL.

A Portrait of the Bishop of Gloucester, painted by Mr. Frank Holl, R.A., was formally presented to the bishop on Thursday last week.

The Manchester Art Museum is now located in Ancoats Old Hall, and a "house-warming" was held on Thursday to mark the event.

Mr. Andrew Cunningham, the late deputy town clerk of Glasgow, has, among other bequests, left a sum of 5,000*l.* to complete the tower of the Glasgow University.

Plans have been prepared by Mr. Demaine, of York, for the restoration of the church tower at Market Weighton, and a restoration committee has been appointed.

Herr Bartels, of Berlin, the "Councillor of Architecture," who acted as German Commissioner at the Philadelphia Exhibition in 1876, has been appointed as German Consul in Bombay. He is the first architect who has accepted a position in the German Consular Service.

Mr. James Hunter, of Glenapp, whose name has been associated with the development of the iron manufacture in Scotland for the last half century, died in Edinburgh on Tuesday.

The Architect.

THE WEEK.

An opportunity will soon be given to discover whether English connoisseurs can appreciate the works of Mr. Watts, R.A. A Mr. Rickards died lately in Manchester, and as he believed in the painter he acquired pictures by Mr. Watts which are supposed to be worth at least 10,000*l*. In his will Mr. Rickards orders that the pictures are in the first place to be offered to the nation for purchase, and then to the Manchester Corporation. If they are not purchased they are to be sent to London for sale. The National Gallery will some day possess the works which Mr. Watts has promised, but Manchester may not be able to share in the gift. The city could hardly find a better way of laying out a few thousands than in the purchase of Mr. Rickards's collection.

The Manchester Ship Canal has given rise to a project for making Paris a port, and enabling it to be as independent of Rouen as Manchester expects to be of Liverpool. But there is a vast difference in the cost of the two works. It is estimated that the canalisation of the Seine, with other works in connection, would cost about 4,500,000*l*. There are only two places in which it would be necessary to deviate from the course of the river. It is also supposed that vessels drawing nearly 20 feet of water could reach the capital, and the sight of them would be a novelty well worth paying for. The project has been supported by an admiral, who has presented a memorial on the subject to the Minister of Public Works. If a concession is obtained it is supposed there would be little difficulty in obtaining the capital.

The new Governmental bureau for collecting and publishing labour statistics is not idle. It is expected that in April or May next a very bulky and elaborate volume will be published, containing information relating to rates of wages which have been paid during the last fifty or sixty years. In order to obtain an exact record of the present rates of wages, with details about hours of labour, slackness or abundance of employment, about 60,000 blank schedules to be filled up are being sent to the principal employers of labour throughout the country. A work on the statistics of trades' unions is to be undertaken, which it is hoped will be of value not only to working men and the public generally, but even to members of trades' unions, who have little opportunity to become acquainted with the work of any of the unions except their own.

The British Consul-General, writing from Frankfort to the Foreign Office on the 7th ult., reports that in consequence of the erection of numerous Government and municipal buildings in the city, there was a greater activity in the building trade than has been felt for years. This remark does not apply to private buildings, in spite of the increase in the population. It appears from the census of 1885 that the population has increased at the rate of 12·38 per cent. as against the returns for 1880, while the number of houses occupied has only increased at the rate of 8·27 per cent.—a circumstance accounted for by the fact that the immigrants belonged chiefly to the middle-class, and gave no occasion for erecting new buildings. The import of English roof-slates has assumed greater dimensions. The export from England amounted to 211,186 double cwts. in 1884; it has risen during last year to 326,776 double cwts., as the importers were anxious to complete their stock previous to the new tariff coming into force. The total import of foreign slates amounted in 1885 to 668,000 double cwts., against 518,847 double cwts. in the preceding year. The business with England in stained and ornamental concave glass has not yet improved. It is not very likely that firms in Germany, concerned in this branch of industry, will succeed in keeping the American trade in future, as France and England are using their utmost exertions to fill the American markets, in consequence of which no orders were received from thence.

There is no statue in Paris better known than the equestrian figure of *Joan of Arc*, which stands in the Place des Pyramides, and faces the street where the Tuileries was once to be seen. It is a popular statue, especially with the representatives of Women's Rights, who generally after a meeting place a wreath or two with an inscription on the pedestal. The sculptor of this fine work is M. Frémiet. He is represented about the city by other works of a very different class. What can be more humorous, while recognising the dignity that should belong to sculpture, than his marble figure of the young faun who is initiating the two little bear cubs into the delights that abide in a piece of honeycomb? It is in the Luxembourg Museum, and in the gardens some of his work is also to be seen, in the fountains. The Gardens of the Trocadéro have groups of animals on a colossal scale by the sculptor. M. Frémiet now proposes to open a studio where amateurs as well as artists can practice sculpture. The variety of work produced by the teacher is a guarantee of the range of the instruction that will be imparted.

Edward Godwin was so distinct a personality in the little world of art that a void is left by his death which is not easily filled. Although he was neither painter nor sculptor, yet so well had he mastered their relationship with architecture that he might be said to belong to all three branches of art, and in that sense he resembled the Renaissance artists. As became a man who had made a speciality of Gothic, he was an archæologist, but not in the usual sense of that word. To his mind the past was something more than a mouldering skeleton. It lived for him, and buildings were only a background for figures. It was an easy transition when Edward Godwin passed from the architecture of the fourteenth century to the poems of Chaucer, and when he passed from a study of Shakespeare's characters to the buildings in which they were supposed to live. He was learned without having a particle of the Dryasdust about him. As an architect he was less fortunate than his friend Burges in obtaining opportunities to prove his powers, and his best designs are to be found only on paper. There is enough of them to show that he could impart grace to small as well as large works. Like all men, he was not without his weaknesses. Edward Godwin assumed an air of superiority at times, but he found many who willingly recognised his right to it. We have often thought that his removal to London did not help him as an artist. He found here too many distractions. If he had remained in Bristol he must have been more successful as an architect, and that means an enrichment of English architecture. Many of his friends believed that he might have been the first architect in England, and when it is known that Scott, Street, and Burges willingly recognised his great powers, it cannot be said that his friends were in error.

In Switzerland the employer is not relieved from liability if injury to a workman arises from the act of a fellow-workman. There is a difference between the responsibility for the condition of machinery, plant, and permanent appliances of the work, and for specific acts or defaults of workmen. But the liability of the employer is reduced if part of the fault falls on the injured workman; more especially if the latter has acted against the factory rules, or if he has discovered a default in the machinery, which was the cause of the accident, without having informed the employer himself or one in authority over him, except the injured man could prove that the employers or the superintendent were already cognisant of the faulty and dangerous condition of such machinery.

The site of the exhibition which is to be opened in Venice on April 25, 1887, is in the public garden at the end of the Quai des Esclavons. The building will have an area of about 6,000 yards, and it will be occupied by painting, sculpture in marble, bronze, and wood, mosaics, glass, and all kind of work that can be considered as related to art. The modern plan of eking out the interest by means of concerts, games, fireworks, &c., is also to be adopted; and as the exhibition is to remain open for six months, a great many people are likely to select Venice as the region for next year's holiday.

THE FURNITURE OF LOUIS XIV.*

IT is not unreasonable to believe that Carlyle's first and most characteristic book, "Sartor Resartus," was inspired by seeing the influence exercised by dandyism of the Beau Brummell sort about half a century ago. The maxim, "the tailor maketh the man," was accepted as a rule of faith in those days, and Carlyle, as a philosopher, was able to develop the important truths which are contained in the words, and to show the relation between the wise saw and the modern instances. It was only in the later years of his life that he gave much attention to his own coats and waistcoats. Dress in general was to him a subject of indifference, unless in its transcendental aspects. Had he appeared a little later in the world he might have discovered a worthier subject of speculation, and we should have an unrhymed epic of Furniture and the Man. An age to which Chippendale and spindle-shanked tables have become worthy of worship likewise deserves to have its poet and mystic.

For there is little which can be said or chanted about dress which cannot be made to serve for furniture if we give the word a wide meaning. Robes which were fashioned to excite envy among the grand dames of an imperial court may be seen doing duty in a show of waxworks on one of the Paris boulevards; but not far from them the hideous bath in which Marat met his death is also visible, and to the spectator who cares to meditate on the changes which all things undergo, it is hard to say whether the costumes worn by the fine ladies or the tub in which the unhappy horseleech sought a little rest will be the more fruitful of thought.

What would Carlyle have said if he could have beheld the two massive volumes which contain the list of the furniture of Louis XIV., and which seem like an inventory that was drawn up by Fate, acting as a broker, prior to the great catastrophe of 1789, when not only the furniture which filled palaces was dispersed, but the whole system of his predecessors, which Louis himself had perfected? When on one occasion he forgot the lessons of deportment, and chased the Marquis de Louvois round a room with a pair of tongs, the Grand Monarque was only a figure in a stately perruque of sanscullotism as it was to appear soon afterwards, with the great nobles of France fleeing before it. In like manner, when the catalogue of the treasures of the palaces was prepared by his command, Louis was getting ready a model register, which Republican stewards were to examine and utilise, and if necessary could imitate.

There were kings with larger realms and more subjects than Louis XIV.; kings with more servants, statesmen, and slaves; but we doubt if any monarch ever lived who possessed so many articles of furniture as he could claim. He might also claim the distinction of exceeding all kings, ancient and modern, in the number of his flatterers in prose and rhyme. Where he could store so much furniture is a problem which mathematicians might take up. One of the poets of that age was disgusted when he contemplated the Louvre and thought of its tenant. "When I see this palace that all the world admires," he said, "far from admiring it, I sigh to see it so limited. What! Prescribe to my prince a place so restricted? For majesty like his all the earth is too little." That may appear fulsome stuff if applied to King Louis, who was a little man when apart from his robes and trappings, but it is quite a reasonable sort of remonstrance if we fancy that it came from one of the furniture officials. Substitute "mobilier" for "prince" and "majesté," then the poem becomes quite a sensible production, especially if compared with works of its class.

It will be asked, Why did Louis order an inventory? and the answer must be, For the same reason that David took a census of his people. The French king was always thinking of his royal self, and he patronised artists, dined with dramatists, listened to praises of his genius in the Academy, made wars, and counted pieces of bijouterie with the same object. He not only believed what the poets told him—that he was king of kings, the wisest and most beautiful of men—but he wished to convince the world of the surprising facts. Louis, therefore, when writing the commission to his faithful and trusty councillor, the Seigneur Gédéon du Metz, frankly informed everybody to whom the presents might come that "there is nothing which is more suggestive of the magnificence of great princes than superb palaces and precious furniture." Hence, having given peace to his people, reformed abuses, and established good order, it was His Majesty's intention to complete the Louvre and to fill it with very rich furniture of all sorts which might be in keeping with the grandeur and majesty of that admirable edifice. The document was dated December 31, 1663. Louis was twenty-five at the time he proposed to exchange war for bric-à-brac, and as he lived until 1713 there were many opportunities during the fifty years of bringing a considerable number of objects to the palace. It is to be apprehended that the King occasionally was unable to pay for all his purchases.

As we have said, the inventory fills two thick quarto volumes of type. Everything was arranged in classes. First we have the works in gold and silver. They begin with the altar plate of gold that was given to the Crown by Cardinal Richelieu, consisting of a cross, two chandeliers, a chalice with paten, two cruets for wine and water, a ciborium, a stoup for holy water with sprinkler, a figure of the Blessed Virgin, a figure of St. Louis, and a pax. The plate was, moreover, enriched with 9,013 diamonds, 355 rubies, and 29 pearls. This formed a present worthy of a king's acceptance. The cross, by itself, was enriched with 792 diamonds. There were sixty-four works in gold, some being of a secular character. The church plate of silver numbered 132 articles. There were also 210 examples of silver-gilt work. It suggests the position which artists held in the eyes of the officers who made the inventory, when we find that it is rare to have any mention of the designers of the objects. Several of the great artists of the Renaissance must have modelled the plate, but they were commonly ignored in the registry. It is cases of this kind which reveal the insincerity of the admiration for art which was supposed to distinguish Louis XIV. and his Court. As it was said that the King imparted honour to the throne, so the beauty possessed by works of art may have been believed to be due to his ownership. Out of His Majesty's palace they would become hideous.

The objects of silver (*argent blanc*) are enumerated up to No. 1,192, when there is a break. The work was probably continued in other manuscript records which have not come down to us. This is the more to be regretted, since the goldsmiths' work that was the pride of the monarchy only exists in name. The King wished to enjoy the luxury of war. His poets told him he was invincible, that the gods were in fear of him, and that it was better for a country to have all the Olympians for enemies than His Sacred Majesty. He was said to be more than Alexander the Great, and, as it was necessary to keep up the reputation for truth of the forty venerable Academicians who prayed that Heaven might allow them to write and think, and protect the French language with the power displayed by the King in war, to war the King often went. In spite of the wonderful victories which Racine and Boileau were employed to record, there was the commonplace difficulty of sending money to feed the soldiers. The silver plate had to go to the melting-pot. The reader on looking over the inventory will find asterisks against the numbers on almost every page. They stand for the marks which were affixed by the keepers as the different pieces left their possession to be transformed into coin.

But the royal service did not suffer much by the removal of pieces of plate, and Madame Sevigné recorded the event as if the King needed no condolence. M. Guiffrey, the editor, is somewhat shocked when he has to describe the ostentatious prodigality that reigned in the household, and of which the number and weight of the dishes, flagons, goblets, and other utensils for the table are evidence. He evidently was in doubt about giving such information. Then there were the utensils for other kinds of service. Macaulay tells us how the King took his emetics in state and vomited majestically in the presence of the *grandes* and *petites entrées*. On those interesting occasions the privileged persons were able to observe that all the apparatus called into use must be of gold or silver. The royal boluses, clysters, and alteratives were compounded only in vessels of silver.

* *Inventaire Général du Mobilier de la Couronne sous Louis XIV.* (1663-1715). *Publié pour la première fois.* Par Jules Guiffrey. Paris: J. Rouam. London: Gilbert Wood & Co.

Several of the objects in the glass cases of the Louvre, and especially in the Gallery of Apollo, at one time formed part of the collection of Louis XIV. M. Guiffrey does not, however, identify them. He leaves that task to the reader. But his volumes would have vastly increased in value if he had made some effort towards connecting the national collection with the King's. If a reader were possessed of time the identification would be a pleasing exercise in archæology, but we are afraid few will venture on it.

The part relating to tapestry is of importance for several reasons. It is evidence that the Gobelins factory was at that time able to undertake the most difficult classes of weaving. The King's collection contained 334 works, forming 2,600 pieces, besides 140 pieces that are not easily classified. Now it is found by the inventory that the Gobelins was represented by 822 pieces, or 101 works—that is, nearly one-third of the entire number. It is worth noting also that England supplied several works. An elaborate pictorial work of the story of Vulcan is said to have been wrought at Mortlake from a cartoon by Raphael. Tapestry might be supposed to endure the vicissitudes of more than two centuries. It is evident that several of the more important works in the inventory have disappeared. There would be no advantage in destroying pieces of tapestry, and they could not be applied to other purposes. A search might lead to the discovery of some, and this forms another opportunity for amateurs of an investigating turn.

The part relating to pictures is disappointing ; indeed, in its vagueness it bears a close resemblance to the catalogues of auctions in which pictures are sold of doubtful authenticity. Apparently Louis XIV. did not care much for a picture unless it represented himself. There are several portraits of Court beauties and other dames, all of which are probably in the retirement of the garrets of Versailles. The indifference of the compilers to artists is again exhibited in this part of their work. Can we suppose the fine gentleman of the time admired a picture without asking the name of the painter? The same neglect is seen in the list of statues and busts. The only name that appears is that of Bernini, who in those days was greatly esteemed in the French Court.

The collection of arms contained 350 objects, and therefore corresponded with the position of so famous a warrior. The porcelain follows in the inventory, and then the chandeliers and girandoles of crystal, which amount to 232 pieces. The latter was a class of work that was in vogue at the time. Some of the light-holders—such as the one for the throne-room at Versailles—were of large dimensions and elaborate in execution.

The list of cabinets is enough to excite the envy of a collector. It is often possible to imagine what the furniture was from the matter-of-fact description of the inventory maker. Thus one cabinet of ebony was known as the "Cabinet de la Paix." It was said to be "all covered with jasper, lapis lazuli, and agates," but the words refer to the spaces where ornament of another kind was not found. The lower part was ornamented with a portico, having a niche containing a statue of Louis XIV. as Mars. Above were the arms of France supported by angels, and at the sides were four figures of heroes in high relief. The upper part had also a niche with a figure of Peace. There were also figures emblematic of the principal rivers of the world. A companion cabinet was adorned with the figure of the Queen, and Virtues were substituted for heroes. Another cabinet is described as an example of marquetry ; the "fond" was of ivory, with leaves and flowers of divers colours in wood. There were eight ivory Corinthian columns in front, the shafts were stained to look like jasper, and the capitals and vases were of gilt copper. The cornice of the attic was carried by twelve caryatides of gilt copper. Above were the arms of His Majesty, accompanied by two figures of Fame, with sundry other ornaments of gilt copper. The cabinet was carried by a marquetry base enriched by metal work. But what must have been the quality of cabinets which the clerk was forced to describe as "grandissime"? On one was a figure of Louis as Apollo in a chariot drawn by four horses ; below were seventeen figures in relief, all being in gilt bronze. There were two columns of avanturine (not the imitation stuff) with Corinthian capitals, and several other precious stones were utilised in the composition. The inventory of cabinets, and similar pieces of furniture, fills fifty pages of print.

To judge from the descriptions, several of the beds seem to have been temples dedicated to Somnus, and many buildings of the sort may have had less painting, sculpture, embroidery, and tapestry about them. It must have been a relief to escape from a stuffy "lit extraordinaire" to a "lit de sangle," that is, a bed suspended by straps of the hammock class. The barges on the canal at Versailles were likewise crowded with rich materials. The "brigantin" had a style of its own, the "chaloupe verte" was fitted up in green, the "chaloupe jaune" in yellow, the "chaloupe bleu" in blue, and there were other vessels in violet, red, green, and white. One majestic canal boat must have had as much furniture as a man-of-war.

The furniture is so endless that the inventory becomes exhausting. It is unique among State documents. Historians and poets have been satisfied to use their imagination in describing the luxury of palaces, but here we have a detailed statement which appears to be as accurate as any composition of the kind by a duly licensed appraiser. The inventories of the contents of English palaces, which have been published, appear absurd by the side of the two volumes. It was a common practice among the writers about the Court of Louis XIV. to say there was no use in writing a history of their time, for the deeds being unprecedented, posterity would suppose truth to be fable. If any of these gentlemen described the contents of the King's palaces the account would be treated as if it resembled the descriptions in the "Arabian Nights." M. Guiffrey's two volumes contain evidence that cannot be impugned in respect of the luxury which surrounded Louis. But costly as the furniture may have been, it did not cause the bankruptcy of the King. As he told his little successor—a boy of five years—Louis loved war overmuch ; he loved it even more than furniture, and any one of his marshals was more expensive than a hundred Boulles and his assistant *ébénistes*. It must, however, have been the palmy days of the furniture trade. The King not only was lavish in his expenditure, but every loyal noble and gentleman felt it was his duty to imitate his Sovereign. But in spite of its costliness, most of the work of the time has fallen into disrepute.

The volumes which M. Guiffrey has edited are published under the auspices of the "Société d'encouragement pour la propagation des livres d'art," and without such aid they could hardly appear. The work can appeal to amateurs, and for them every entry will have interest. Many of the words employed are now obsolete, but care is taken to give explanations of them.

THE ARCHITECTURAL ASSOCIATION.

LAST Friday evening the annual conversazione of the Association was held at 9 Conduit Street, the rooms of the Royal Institute of British Architects having been placed at the disposal of the members to supplement their usual accommodation. A large gathering of members and their friends were assembled, and the evening's entertainment was most successful. As Mr. J. A. Gotch, the president, through an accident, was unable to attend, Mr. John Slater received the visitors. The proceedings were purely of a social character, and during the evening a varied programme of music was executed by the band of the 2nd Life Guards, conducted by Trumpet-Major J. J. Barrett. Much interest was afforded by the introduction of a concert as part of the entertainment. During the interval between the two parts of the concert Mr. Cole A. Adams gave some dramatic sketches of an amusing character, very similar to Mr. Corney Grain's in style. Mr. Adams went in rapid review through various phases of the drama, his illustrations being taken from the modern stage ; farce, comedy, &c., transpontine drama, and the impressions left on the mind of a playgoer who was unacquainted with the French language were admirably rendered.

The concert comprised the following programme :—Mr. F. R. Kinkee gave a pianoforte solo, "Rondo Piacevole," by Sterndale Bennett. Songs followed :—"The Eyes of Heaven" (M. Valerii White) and "My Love is Come" (Marzials), by Mr. Harold Savery ; "The Last Milestone" (Pontet), by Miss Edith Touzeau ; "I'm a Roamer" (Mendelssohn), by Mr. W. H. Brereton ; and "The Angel Guardian" (Austin), by Miss Mary Morgan. The second part began by a solo on the pianoforte,

"March à la Fantasia" (F. R. Kinkee), by Mr. F. R. Kinkee; after which "Only Once More" (Moir) was sung by Mr. Harold Savery; "The Harp that Once" (Moore), by Miss Edith Touzeau; "The Leathern Bottle" (old song), by Mr. W. H. Brereton; and "Old Fashions" (Milton Wellings), by Miss Mary Morgan—Mrs. Dyke being the accompanist. Messrs. Kirkman & Son kindly lent one of their concert steel grand pianofortes for the evening. The singers had most generously given their services for the entertainment of the members, practitioners in another sphere of art. The ladies and gentlemen who represented the art musical are singers of note; Miss Mary Morgan quite lately has added to her reputation at the Gloucester Festival.

Among the works exhibited in the different rooms were a number of water-colour drawings by Mr. R. Phené Spiers, being illustrations principally from the Loire, with one of Winchelsea and a scene in Holland. Mr. Sydney Vacher had several cases of rare ivories, casts, &c. Photographs were spread about the library, of views taken during the annual excursion of the Association, during the visit to Oxford, and the results from two days in France, the photographs being by Mr. J. L. Robinson. The prize drawings executed by the members formed a large array on the walls of the Institute hall.

The following is the Prize-list:—

A.A. Travelling Studentship.—First prize and medal, R. W. Paul; second prize of 5*l.*, T. E. Key.

A.A. Medal.—10*l.* 10*s.*, W. A. Webb; hon. mention, H. P. B. Downing, W. F. Kelsey, W. H. Raffles, H. H. Gordon.

Essay Prize.—10*l.* 10*s.*, H. E. Mellett; extra medal suggested by judges, T. L. Worthington; hon. mention, A. B. Mitchell, T. E. Key, H. Wilson.

A. Union Company's Prize.—First prize 5*l.*, H. J. White; second prize 2*l.* 10*s.*, J. M. Brooks.

Elementary Class of Design.—Section I. First prize 2*l.* 2*s.*, H. S. Wood; second prize 1*l.* 1*s.*, H. G. Lidstone; hon. mention, L. Jacob. *Section II.* First prize 2*l.* 2*s.*, A. B. Yeates; second prize 1*l.* 1*s.*, H. S. Wood; hon. mention, B. M. Southall.

Elementary Class of Construction.—First prize 3*l.* 3*s.*, B. M. Southall; second prize 2*l.* 2*s.*, T. C. Agutter.

Class of Design.—First prize 3*l.* 3*s.*, R. A. Rix; second prize 2*l.* 2*s.*, E. F. L. Seaman.

Class of Colour Decoration.—3*l.* 3*s.*, and with it Mr. S. Vacher's prize, H. Wilson.

Class of Construction.—First prize 3*l.* 3*s.*, C. C. Winmill; second prize 2*l.* 2*s*, R. A. Rix.

Advanced Class of Construction.—Prize of 3*l.* 3*s.*, J. Hudson.

Class for Study of Quantities and Specifications.—First prize 3*l.* 3*s.*, E. J. Cooper; second prize 2*l.* 2*s.*, J. Hudson; hon. mention, B. Potter.

Sketch Book Title Page.—First prize 5*l.* 5*s.*, G. G. Woodward; second prize 4*l.* 4*s.*, S. Vacher; third prize 3*l.* 3*s.*, J. Oakeshott.

Lectures in connection with Classes of Design.—First prize 3*l.* 3*s.*, B. M. Southall.

Lectures in connection with Classes of Construction.—First prize 3*l.* 3*s.*, T. C. Agutter; second prize 2*l.* 2*s.*, W. D. Gravell; third prize 1*l.* 1*s.*, B. F. Fletcher.

A number of high-class firms responded to the invitation of the hon. secretaries to send specimens of artistic work for exhibition, and it will be conceded that an interesting little exhibition of works of art was got together. To give a slight sketch of the exhibits:—

Messrs. Doulton & Co. sent many most handsome examples of their Lambeth pottery. As is well known, these beautiful objects are all the work of artists: each is a work of original design of which no duplicate is made. Two charming vases were the work respectively of Miss Barlow and Miss Florence Barlow. Miss Barlow, we believe, has been longer connected with this firm than any others on the artistic staff. On the vase is a spirited scene of animal life, the horses being depicted by incision, while in Miss Florence Barlow's the animals are painted. A vase of Lambeth *faïence* was a lovely work of the potter's art. Another of what is called Silicon mosaic, having an effective circle ornament for the groundwork, appears to be a novelty. In addition to whatever artistic merit may be bestowed on this Silicon by means of design, a peculiarity is observed in the absence of any glaze, which, under certain circumstances of lighting and position, is a decided advantage to the eye of the beholder. Mr. George Tinworth's well-known work was represented by a panel containing the word "Genesis." Grouped about each of the letters of the word, which served to suggest compartments in the panel, were carved scenes from the life of Adam and Eve. Many other ornamental objects of great interest were to be seen, and among the designs the apple blossom on a soft green ground was second to none. The enamel-painting by means, we believe, of coloured clays on stoneware body, is newly introduced.

Messrs. Jeffreys & Co. on this occasion contributed a goodly show of wall-papers of their newest designs, including specimens of embossed leather papers, flocks, hand-painted and inexpensive machine-printed papers. The names of the designers are familiar, several of them members of the Association, viz., Messrs. Lewis F. Day, J. D. Sedding, Sydney Vacher, Walter Crane, Brightwen Binyon, E. Swinfen Harris, G. E. Fox, F. Vincent Hunt, A. Silver, &c. A bright lively paper amongst the machine-printed papers, "The House that Jack Built," would not escape attention as a new nursery paper designed by Mr. Walter Crane. The "Golden Age," an embossed leather paper, may already have been seen by some at the Edinburgh or Liverpool Exhibitions. This is designed by Mr. Walter Crane. The hand of Mr. Lewis F. Day would be readily traced in a boldly treated design for staircase decoration.

Messrs. H. Scott, Richmond & Co.'s name appeared over a handsome collection of silks, tapestries, wall-papers, &c. These, which were all designed by Mr. H. H. Mott, the senior partner in the firm, included a reproduction of an old fabric—late sixteenth-century work—gold on a soft olive ground; a specimen of work in grey-blue and old red, done for a well-known firm of architects, to go behind an old tapestry; a remarkable hanging, all cotton, with chintz flowers on silver-grey ground; a handsomely-designed fabric in wool; a reproduction, but slightly modified, of a rich old brocade, in which the colours are all hand-sewn; a special yellow in silk damask; a rose du Barri; and a rich combination in dove-green and silver. One cretonne was shown, and some interest attached to the design, as it was mainly taken from an Indian tent in Mr. Mott's possession. A fragment of an old Italian silk formed the basis of a clever reproduction of old work, in which it would be difficult to point out the missing details of the original design that have been restored in harmony with the lines suggested by the existing fragment. A variety of wall-papers were arranged on the wall above the tapestries. The designs are copyright, and the papers themselves are becoming popular.

Messrs. Laing, Wharton & Down spared evidently no pains to add considerable interest to the proceedings of the evening by their exhibition of electric lighting. The lamp fittings, &c., designed by Mr. Benson, were particularly noticed as quite a new departure from the usual hammered work. They have taken the fancy of the Prince of Wales, who has had them introduced at Marlborough House.

Messrs. Morris & Co. contributed a selection from their tapestries and wall-papers, and among them the thistle, chrysanthemum, and the wild tulip papers, one of the features in this latter pretty design appearing to be the effect sought by a careful arrangement of spots. There was a specimen of a richly-worked embossed velvet, the pattern being probably unique. An example of a carpet showed, perhaps, the nearest approach in rugs to old Oriental work that could be now met with. A woollen fabric, designed in low tones on blue ground, was a peacock tapestry, those aristocratic birds being prominent in the work. Several other interesting specimens completed the collection shown.

Messrs. Hart & Co., metal workers, had sent a nice collection of domestic and ecclesiastical metal work, and though their work is too well known to need describing, they were able to show articles of much artistic merit which were probably new to many. Among these was furniture for a writing-table, with candlesticks, &c., worked in metal, a feature of which was the delicate grey filagree inlaid in the ornamental brass work. Also there were handsome bronze or rather gun-metal candlesticks. This material, gun-metal, was shown also in contrast with ornamental wrought-iron work, the effect of the two together being rather admired now. Messrs. Hart & Co. have had a customer for it in the Prince of Wales, for Sandringham.

Messrs. Longden & Co. had examples of ornamental work mostly in regard of fireplaces and fireplace fittings, bronze and other ornamental fire-dogs, samples of brass *repoussé* work, &c. Dr. Salviati & Co. sent a collection of their wares specially selected for the occasion. Mr. Alfred Newman showed among the articles he sent quaint specimens of wrought-iron work after old work. Mr. Wm. de Morgan, among his samples of pottery, sent some fine vases, &c., a peacock tile panel, and specimens of ornamental tile work. Messrs. Shuffrey & Co., chimneypieces, &c., in marble, wood, &c. Messrs. Jackson & Sons, an extensive display of their decorative work in fibrous plaster, of which they manufacture friezes, cornices, ceilings, &c.—a material so light that it admits of ornamental treatment, which would be dangerous to attempt in such heavy substances as ordinary plaster. Messrs. Verity & Sons brought for display a nice assortment of art metal work and electric lighting appliances.

Messrs. Knowles & Essex had a large collection of artistic wall-papers, including examples of raised-flock decoration, frosted gold, crystal damask, &c.

Messrs. Wm. Woollams & Co. sent a large selection of non-arsenical wall papers, special designs by various artists, and handsome samples of Tergorine—a kind of imitation leather—the designs being effected by embossing, lacquering, painting, &c.

Mr. Montagu H. Scott took part in the electric exhibition, and showed in action some table lights. These consist of a primary battery within an ornamental metal casing, the whole occupying no more standing space than an ordinary small table lamp, and giving light for several hours without replenishing. Mr. Scott has in hand also a cellar lamp, a particularity of which is it lights up at once on being taken in the hand, and is self-extinguishing when put down, but this extinction of the light can be prevented as long as necessary if wanted.

Messrs. Farmer & Brindley showed handsome marbles and inlaid marble work, together with a most extensive collection of very old wood-carving, ecclesiastical and domestic, the result evidently of many years' collecting here and abroad.

COMPETITIONS IN FRANCE.

IT is often supposed that in France competitions are managed on a more equitable principle than in England. The French have not as many opportunities for venting grievances as we have in London, and, in consequence, the knowledge of strange transactions is confined to those who perpetrated them and those who suffered by them. But from time to time there are revelations, and if we may judge from letters which appear in the last number of *La Construction Moderne*, the town of Bordeaux has been lately the scene of as odd a way of arriving at the best design as will be found in the annals of English competitions. It is difficult to understand why architects of the standing of MM. Garnier, Sedille, and Pascal, whose names are associated with the affair, do not protest against the conduct of the authorities towards them. They were appointed as judges, but the selection of the designs in the first competition took place in their absence. English Town councils do not all believe in the advantage of assessors—but when one is appointed he is allowed to go through the process of examination of all the designs, although his recommendation may not be accepted. The French judges can be ignored in the most important part of the inquiry, and apparently they have too much respect for authority to whisper a remonstrance. The two letters we give will more clearly reveal the competitive system of France.

First comes a letter from a correspondent of the journal. He writes :—"The judgment in the Bordeaux competition has been given in the second trial, as you will see. The jury who were charged with the examination of the plans for the transformation of the lecture-room of the old Faculty of Letters in the Rue Monbazon into an assembly-room for the Municipal Council, met at the Hôtel de Ville on September 29, at nine o'clock in the morning, and proceeded to examine the four designs forming the second stage of the competition. With the jurors were associated MM. Charles Garnier, member of the Institut and director of the Academy of Fine Arts; Paul Sedille, vice-president of the Societé Centrale des Architectes; and Pascal, architect of the Bibliothèque Nationale. The classification was as follows :—

"No. 1. 'Virtus,' by MM. Moulinié and Bergerot.

"No. 2. 'Subjove,' by MM. Larregien and Courrégelongue.

"No. 3. *Ex æquo*, 'Minerve,' by M. Bontemps; and 'Honos alit artes,' by M. Lacombe.

"An exhibition of the designs will shortly be held in one of the rooms of the Hôtel de Ville.

"The eminent architects who desired to join the local jury for this adjudication had not seen the sketches of the twenty-one competitors, and it is a fault on the part of the municipality to have refrained from asking their aid in the first stage of the competition, for the jury of Bordeaux had made a selection which would not be ratified by such high and independent personages. The four prizemen are :—

"1. M. Moulinié, an employé by M. Charles Durand, a member of the jury.

"2. M. Larregien, patronised by M. Olagnier, a member of the jury.

"3. M. Bontemps, an employé of M. Valleton, a member of the jury.

"4. M. Lacombe, an employé of M. Charles Durand, a member of the jury. *Quod erat demonstrandum.*"

M. Duprat, an architect, has addressed the following letter to the mayor and municipal councillors of Bordeaux :—

"You have instituted a public competition between the architects of Bordeaux for the construction of the buildings of the old Faculté des Lettres into a hall for the meetings of the Municipal Council. This competition had two stages, the first of sketches, which was closed on March 31, 1886. Although limited to the department of Gironde, twenty-one competitors presented themselves.

"Contrary to custom, there was no public exhibition of these designs. Judgment was, however, given. There was no clause in the programme indicating so novel a procedure, I believe.

"A second competition for a school in the Rue Belcier has been instituted, and the judgment given under similar circumstances. But about it I need say but little, since many architects in addition to myself took no share in it.

"Is it not extraordinary that in the competition for the Council Chamber the competitors were not admitted to examine the collection of projects? It appears the Municipal Council has not seen them. The public, who will have to pay for the work, has not seen them. Men who are interested in buildings, and who go far to see designs, the students of the school of design—everybody in fact—have not seen them. What was there to conceal? According to the jury, the competition of sketches was remarkable. If so, why were not the people of Bordeaux allowed the advantage of profiting by such a collection of studies in the art of construction? An exhibition of architecture is always interesting. By it people are taught how to read a plan, and how to judge, and it sometimes helps to form their taste.

"But what is still more grave in this competition is the composition of the jury. The masters and friends of certain competitors would naturally select their sketches. Is that loyal to all? It is far from my thought to have any suspicion of unfairness, but it is certain that a design which is worked out under the direction and inspiration of a master will always appear to him to be clearer and better conceived than a work which comes before him abruptly, and of which he has not had the leisure to study the detail, and which, moreover, may exemplify some other principles than his own. Strange to say, the second competition could not be decided without the aid of architects who were strangers to Bordeaux! It is due to yourselves, Messieurs, to put a stop to every unworthy suspicion and unfriendly rumour by setting aside the first judgment, by recalling the sketches of the first competition, by holding an exhibition of them, and by delivering an impartial and unassailable judgment.

"It is only a sentiment of justice which obliges me to write this letter, and I declare that, if I happened to be successful, I should renounce my reward in favour of the poor of Bordeaux."

RUNIC CROSSES.

AN address was delivered by Professor Boyd Dawkins at the opening meeting of the Lancashire and Cheshire Antiquarian Society on the study of ancient art, referring particularly to early Christian art as exhibited in the ornamentation of Runic crosses. That ornamentation, he said, had always been believed to be due to the early Irish missionaries. The illuminations of the Irish missals and the ornamentation on the crosses were of the same character, and hitherto most people had believed that both were the work of the early Irish missionaries. Indeed, many of his friends had regarded him as heretical because he had expressed the opinion that the Irish missionaries had very little to do with either. That opinion he held very strongly, and he thought his opinion could be shown to be the right one. The ornamentation on Runic crosses could be clearly divided into two parts. One portion of it was, he believed, directly traceable to the ancient Etruscans, whilst the other portion was equally clearly traceable to the ancient Germans. The invasions of the Germans and the consequent fusion of the peoples led to the combination of the two portions, and he held that all the early Irish missionaries did was to foster and diffuse the art.

TESSERÆ.

Salisbury Cathedral.

J. Fergusson.

BESIDES the ornamental disposition of masses, any one building may be so ornamentally arranged as to produce the best possible architectural effect without ornament, or with only the smallest possible amount of applied decoration. The Gothic architects were the great masters in this department of art. Take, for instance, Salisbury Cathedral. The windows are without mullions, the buttresses without pinnacles, and with very few mouldings, while the walls are singularly plain; yet with all this the nave, the transepts, and the choir are so pleasingly arranged as to produce the best effect; and if you come to look closely into it you will find that the problem being given of producing a vaulted hall of a certain height to cover a given area of floor space, it would be hardly possible to do it at less expense. The buttresses, for instance, on which the external effect mainly depends, are the most economical way of disposing of the quantity of materials required for the purpose, and the intersecting transepts the cheapest conceivable mode of roofing a great area of floor space, and at the same time of making a small building look large internally as well as externally. The Italian architects, who neglected these expedients, used in consequence three or four times the quantity of material which the Gothic architects employed. In St.

Paul's, for instance, one of the most mechanically perfect of modern buildings, the area of the solids as compared with the voids is 1 to 6, St. Peter's as 1 to 4, St. Isaac's and other churches about the same; while at Salisbury, and in most early Mediæval buildings, it is as 1 to 8, and in later Gothic buildings it generally may be quoted as 1 in 10, and in some in even a lower proportion than that.

Blue Lias Lime in Mortar.

Sir C. W. Pasley, R.E.

Blue lias lime will not make good mortar if mixed with more than 2 cubic feet of sand to one of lime. This opinion first formed by me from analogy, and in consideration of the blue lias approaching very nearly to a water cement, proved on due inquiry to be borne out by, and exactly conformable to, the practice of the masons of Lyme Regis. But Captain Savage of the Royal Engineers, who was employed professionally some years ago in improving the cobb or pier of that little seaport, which was done by tide work, and in which no other kind of lime was used, assured me that he found that a smaller proportion of sand than two to one made still better mortar. We have since ascertained by repeated experiments at Chatham, that 1 cubic foot of blue lias lime from the kiln weighing 47 lbs., mixed with 2 cubic feet of sand, and about three-quarters of a cubic foot of water, made mortar fit for use, but which could not have borne more sand without becoming too short. The average quantity produced was 2 cubic feet and one-fifth, which, contrary to the result obtained with the purer limes, occupied more space than the sand alone originally did. We found also that blue lias lime from the kiln, like all the other limes that we experimented upon, filled only about two-thirds of its original measure, when reduced by pounding to the state of quicklime powder; but 1 cubic foot of blue lias lime, when slaked, only dilated into 1 cubic foot and a third of slaked lime powder, not including about one-eighteenth part of a cubic foot of core, which we threw away. Hence it expands less by slaking than either chalk lime or Halling lime.

Laminæ of Slates.

A. Ure.

It deserves to be noticed that blocks of slate may lose their property of divisibility into thin laminæ. This happens from long exposure to the air, after they have been quarried. The workmen say, then, that they have lost their waters. For this reason the number of splitters ought to be always proportioned to the number of block-hewers. Frost renders the blocks more fissile; but a supervening thaw renders them quite refractory. A new frost restores the faculty of splitting, though not to the same degree, and the workmen, therefore, avail themselves of it without delay. A succession of frosts and thaws renders the quarried blocks quite intractable.

Spanish Cathedrals.

F. Y. Hurlstone.

There are some arrangements in respect to the Spanish Gothic cathedrals which mark them as distinct from the cathedrals of this country, France, or Germany. The great altar is in nearly every instance isolated, the side aisles passing round it, and is placed east of the crucero or transept. The choir, or coro, is on the opposite side of the transept, and is also isolated. Immediately over the crucero, or intersection of the nave and transept, is the cimborio, a compromise between a Gothic octagonal tower and a dome, often of exceeding beauty. The trascoro is the back or outer side of the coro, relieved throughout with chapels. There is generally no gate or opening for entrance to the coro anywhere but by the transept, so that upon entering the western or principal entrance to the cathedral, you have before you the back of the coro, which shuts out of sight the high altar, which for effect would be much better seen upon entering. The rejas, or brass or iron gates and railings which enclose the choirs, altars, and chapel, are of extraordinary and peculiar beauty, and are characteristic of Spanish cathedrals. It was in the great time a branch of art of itself, and the rejeros, or ornamental iron-workers, justly figure in the lists of illustrious artists. The most celebrated were Villapando, Dominge de Cespedes, and Anenas of Cuença. Those rejas are of wrought-iron or brass, with forms and figures of the most exquisite designs. In the Spanish cathedrals, the number of sacristies is a remarkable feature. Besides the principal one for the ordinary service of the church, many of the larger chapels have their own attached. The Spanish cathedrals have also a segrario, or chapel, where the sacrament is administered and the host kept; often a separate building, like the baptistery was with the Italians. The cathedral has also almost always attached to it the parish church, which sometimes performs the double office of segrario. This of itself, as at Seville, is frequently of imposing dimensions. The retable, the structure which fills the space of the high altar in Spain, is usually of three or four ranges of architecture one above the other, with columns, entablatures, and other parts ornamented with statues, bas-reliefs and paintings, the finest works of the school. The cathedrals of Spain have also some distinguishing characteristics amongst themselves in the different provinces. Thus, those of Catalonia, for instance, besides the remarkable shortness of the nave and aisles in proportion to the width, giving the church a compressed look, have always the principal entrance reached by a lofty flight of steps, of circular form, as the cathedrals of Barcelona and Gerona.

Professor Cockerell, R.A.

T. L. Donaldson.

Throughout his whole life architecture was to Mr. Cockerell what Coleridge describes poetry to have been to himself. "Poetry," he said, "has been to me an exceeding great reward. It has soothed my afflictions; it has multiplied and refined my enjoyments; it has endeared solitude, and has given me the habit of wishing to discover the good and beautiful in all that meets and surrounds me." So was architecture Cockerell's passion and delight. He followed it not from mere mercenary considerations; he spared not himself to revise, correct, and chasten each vivid idea as it presented itself to his fancy, and which he appropriated to his work on hand; he was never weary if he could improve, and, anxious for novelty, he occasionally transgressed the severe principles of the antique. In fact, if fault could be attributed to a man of such genius, he was, perhaps, often too fastidious, and occasionally ready to retouch and to adopt a supposed improvement where possibly the original thought was simpler, wiser. In him the young architect found an encouraging monitor, and one of kindred feeling—ever ready to assist and discover latent talent. And perhaps one of the most remarkable traits in his character was that, with all his prepossession for the chaste and simple sublimity of Greek art, he could bow, as before a superior and supreme spirit, to the genius of Wren, whose noble productions are at such variance with the supposed canons of antiquity.

The Travellers' Club and the Pandolfini Palace.

Sir M. D. Wyatt.

In the designs for the Travellers' Club, which were submitted in limited competition, Barry first revealed his resources in planning and that refined perception of just proportion, both in detail and general distribution, in which he has scarcely ever been rivalled. The garden front is, so far as my knowledge extends, an absolutely original conception, and as such may, I consider, take its place in the history of art. The Pall Mall front has been frequently characterised by superficial observers as a copy or reproduction, with slight modifications, from Raphael's Pandolfini Palace at Florence. One moment's comparison of the two elevations will suffice to entirely dispel the idea. The Pandolfini Palace has only in common with the Travellers' Club-house the accidents of being two-storeyed, having rusticated angles, and a doorway at the extreme right-hand side of the ground floor. In every other respect the dissimilarities are most striking. The proportions of the windows are about one-third narrower in the Travellers' than they are in the Pandolfini; in the former they are Ionic on the first floor and Doric on the ground, while in the latter they are Corinthian on the first floor, and have simply returned architraves and no order on the ground floor. The four windows of the first floor of the Florentine façade are surmounted with alternately angular and segmental pediments, and united by panels in the interspaces and horizontal members, while the five of the Pall Mall building are precisely uniform, and the wall is entirely free from panelling, and the running through of any of the members forming or decorating the fenestration above the cill level. One of the leading features of the Pandolfini is its deep plain frieze, adorned only with a very simple classic-looking inscription; while in the entablature of the Travellers' Club the frieze is reduced to so small a proportion, and is so highly carved, as in fact to do duty rather as an enriched member of the cornice than as a distinctive frieze at all.

Malling Keep.

J. H. Parker.

Having thus ascertained, by the best possible authority, that Malling was the usual place of residence of Bishop Gundulph, the next question naturally is, are there any remains of his house? Fortunately there are: it is perfect except the roof and the parapet. He lived, according to the fashion of his age, in a massive Norman keep, very much upon the same plan (though smaller and earlier) with the White Tower, which he built for the king. This house, castle, keep, or tower, for it may be called by any of these names, I believe to be the very earliest Norman keep we have remaining anywhere, either in England or Normandy. It is probably the earliest building that Gundulph erected on his first arrival in England; it was necessary for him to build a secure place for himself to live in, and the character of this building is certainly earlier than that

of any of the others. A bold theorist might venture to assert that Gundulph was the inventor of the Norman keep, and it would be difficult to disprove the theory by referring to one of earlier character, or known to be of earlier date. It is certain that in the Bayeux tapestry, some of William's castles are distinctly represented as consisting of earthworks and wooden palisades only, and that at Dol the soldiers are ordered to dig a castle (*fossare castellum*). That this form of castle was of Norman origin there is no question. It goes by the name of a Norman keep or donjon all over Europe, and continued to be used or copied for several centuries as the place of security in the last resort. This form of castle or keep was used both in Scotland and in Ireland, and even in Italy, as late as the sixteenth century, so that it continued in use for five centuries. This one at Malling I believe to be the earliest now in existence, and it is built entirely of rubble or rough stone, with scarcely any ashlar work about it. There are rows of putlog holes for throwing out wooden galleries. These galleries are called by the French *hourds*, a word evidently borrowed from the English "hoards," or boards, which we still retain in "hoarding," a term still in every-day use in the streets of London, and it is not a French word. So many of our technical words come from the French or the Normans, that it is interesting to find an example the other way.

Strength of Buckled Plates.

W. Humber.

A 3-foot square buckled plate of ordinary Staffordshire iron, ¼ of an inch thick, with a fillet 2 inches wide, and the total curvature amounting to 1¾ inches, supported only all round, requires 9 tons weight, diffused over about half the surface at the crown to produce failure, and double this, or 18 tons, to cripple it if it be firmly bolted or rivetted down all round its edge. A similar plate of soft puddled-steel will bear nearly double the weight, or 35 tons per square yard. The buckled plates used in the construction of New Westminster Bridge, each averaging 7 feet by 3 feet, and being a ¼ of an inch thick, were proved by lowering upon the crown of each a block of granite weighing 17 tons, which did not produce injury; the plates have a curvature of 3½ inches. In bridge flooring the plates should only be subjected to one-sixth of the crippling load.

Egyptian Architecture.

Sir J. G. Wilkinson.

I can fully appreciate the merits of Egyptian architecture but I can see its faults; and though I admire the vastness o conception, the knowledge of constructiveness, the skill they showed in sculpturing as well as in transporting granite, I must allow that the Egyptians were deficient in real taste; and while it is the exception to find any object of Greek workmanship deficient in grace and beauty, it is the exception in Egypt to find it possess those high recommendations. There is little that we can adopt from the Egyptians, either as tasteful in itself or adapted to the style of our monuments. The curve of the cornice, which is broad in its character, the simple shaft of one of the old Egyptian columns, with its graceful shallow grooves (the prototype of the Greek Doric), and a few devices—as the papyrus, the lotus, and some others—are of a pure and elegant form, but the general character of Egyptian architecture is remarkable rather for solidity than beauty; and though the Egyptians deserve credit for being the first to lay down the principle of variety in the juxtaposition of columns with different capitals, and in avoiding the monotony of repetition of form and ornament throughout a building, we can neither imitate their columns, the style of their buildings, nor the character of their sculpture.

The Entasis of Greek Columns.

F. C. Penrose.

The entasis of the columns is the most wonderful and beautiful of all the curves. It is so delicate that its existence was for some time doubted; and yet I found it by careful measurements, in a manner which was suggested to me by Professor Willis, which I will here describe. A fine harp wire was strained from the top to the bottom as tight as it would bear, close to the edge of such flutes as preserved a sufficient number of points with the original surface, and by means of a rule with a vernier I was enabled to measure from the flute to the wire with the greatest accuracy to about half one-thousandth foot. I took such measures in several columns of the Parthenon, which I found to be wonderfully true and identical. I measured also the entasis of columns from the Erechtheum, Propylæa (both orders), temple of Theseus, and Jupiter Olympus. In those of the Parthenon, Erechtheum, and Propylæa I find the correspondence with hyperbolic arcs which I have calculated so exact, that the mean of from fourteen to twenty measurements in each column differs from the calculated curve less than one-thousandth foot, and none of them, where the surface was to be depended upon, differs by so much as one five-hundredth. The entasis of Jupiter Olympus gives also a very true hyperbolic arc. The columns of Theseus are so much worn in their outer edges that I was obliged to content myself with measures within the flutes, which never give such regular curves as the fillets, although the flutes are worked with a nicety far exceeding that found in any other style of architecture. Still, a mean from four different sections within the flutes gives a very accurate hyperbolic arc, although no one is a perfectly regular curve. These hyperbolas are all chosen with their axes, multiples, or aliquot parts of the attic foot. The Greek architects acted with great judgment and knowledge of the nature of the curve they were employing, as it is the only one of the conic sections which can produce variety in such delicate curvature as they have chosen for their entasis.

Gothic Capitals.

F. A. Paley.

Gothic capitals may be divided into two kinds, moulded and floriated. The upper member or abacus is common to both, and is the relic of the rude impost which first surmounted the stone post, from which it was transferred through the medium of the Classic to the Christian styles. This seems, in fact, to be the primary and essential, and, as it were, *practical* member, the others being only decorative adjuncts. The lowest member, called the *neck* or *astragal*, is also common to both kinds, but in floriated capitals foliage covers the intermediate space, which is otherwise occupied by the overhanging and undercut member called the *bell*, with its accompanying mouldings. In the Transition-Norman and Early English, the foliage, as is well known, is arranged vertically; in the Decorated it twines horizontally, or rather transversely, round the capital. In Perpendicular, floriated capitals are particularly rare; more frequently small leaves, or *paterœ*, are set like studs at intervals round the shaft above the neck, as in Great St. Mary's Church, Cambridge. But the vine and the strawberry leaf is sometimes seen, very differently worked, however, from the deep overhanging foliage of the earlier styles, being only a shallow kind of surface ornament.

Architecture and Craftsmanship.

R. Thissen.

If art is to have a great future it will be necessary that in its highest manifestations it does not keep aloof from contact with trade and workmen, and that all branches of art be combined again on the basis of architecture, as has been the case in all great and productive periods. From thence they sprang, and thither they will have to revert. By the separation of art from the artisan it has lost the solid basis of the people's sympathies, and it has almost sunk to be a toy for the amusement of the rich. The trades from the same cause became tributary to manufacture, by which they have descended to mere mechanism, which cannot compete to any advantage with the machine-powers of the capitalist. Art has again to proclaim the people to the people, and to become the life of their life. The necessity for architecture to combine with sculpture is evident from a comparison between the monuments with which public places and markets were adorned in the Middle Ages, and our modern monuments. While formerly art-wrought fountains and huge pyramidal cathedral steeples were erected—where, amidst the beauteous foliage of Gothic art, or on projecting pedestals, historical or allegorical figures were placed, which corresponded to every thought and feeling—the monuments of the present time are all manufactured after the same pattern, and are only remarkable for monotony, poverty, and want of character. The people cannot help being indifferent to them. Look at the hundreds of monuments erected to princes, statesmen, generals, and other celebrities throughout Germany. In all we observe the same poverty of idea and form. Although most of them are supposed to be derived from antique forms, they are neither Greek nor German, neither Heathen nor Christian. They belong neither to the past nor to the present, and have none of those qualities which are worth transmitting to futurity.

Expansion of Concrete.

G. Robertson.

Some experiments on the expansion of concrete proved to me that it varies a little with the season of the year. In hot summer weather the expansion of a cubic foot in twenty-four hours after mixing was as much as one-thirtieth of its bulk, usually one thirty-second; but in frosty weather it rarely exceeded one forty-eighth. The force exerted in the expansion was always sufficient to burst the box in which the concrete had been deposited; the amount might even be measured by the distance the nails were drawn out. Whenever the expansion exceeded one-thirtieth of the bulk I considered the concrete too rich in lime, and that there was more than would, when slaked, fill up the interstices of the sand and flints, and coat each grain with a thin pellicle of lime. More than this is not required, for too thick a coating of lime causes weakness, and not strength.

NOTES AND COMMENTS.

The *envois* of the students of the Villa Medici in Rome are on view in the Ecole des Beaux-Arts. Among the paintings, most interest is excited by the picture by M. Fournier, *The Last Chant of Velleda*. The prophetess who incited the rebellion of the Bataves against their Roman conquerors in A.D. 70 is seen surrounded by prisoners from Gaul in a dungeon of the Mamertine, and is encouraging them to die bravely. With upraised arm she invokes the vengeance of the Gods on their oppressors. Velleda did for a time aid the Romans when she found they were too powerful for her countrymen, but she was afterwards brought to Rome and exhibited in a procession. She serves well as a model Frenchwoman in the present state of affairs. M. Puech's plaster figure of the *Seine*—a shapely model in relief—deserves to be commissioned by the city authorities. M. Deglane has a fine restoration of the Palatine Palace. There are the usual number of copies from existing works in Rome.

The new picture and sculpture galleries of the Luxembourg having been re-arranged, the Parisians can now enjoy one of the most delightful galleries in Europe. In London if a stranger has a wish to see typical specimens of modern English art where is he to go? In Paris a stranger need only visit the Luxembourg, and there he can see what is best in contemporary painting and sculpture. It is not only a kind of guarantee of immortality that is acquired by an artist when his work is selected to adorn the Museum, the market value of his future works is also enhanced. Painters and sculptors are therefore willing to sacrifice a good deal in order to acquire the distinction. The prices paid by the Municipality of Paris for works are known, but what the French Government pays is kept secret. The reason is that the announcement would not serve the artists. Two cases have been made known. The *Decadence of the Romans*, by Couture, which is generally considered to be the noblest picture in the Gallery, was bought for less than 500*l.*, although it is full of figures nearly life-size. The little picture of *The Battle of Solferino* was sold by M. Meissonier for 1,000*l.*, which was hardly one-fourth its market value. If it were necessary to dispose of the contents of the galleries—which it is to be hoped may never be the case—it would be found that there was no investment of the French Government which could equal that of modern paintings. Since 1818, when purchases of that kind were approved, the total expenditure has been about 136,000*l.* For that sum all the provincial museums of France have been enriched with more or less paintings, and many have been added to the Louvre. But there is not a picture-dealer who would not gladly give more than the original outlay for those pictures alone which are retained in the Luxembourg.

The commemoration of Domesday will commence on Monday, the 25th inst., and last until the following Friday. On the first day, at 3 P.M., the committee and those who take part in the proceedings will pay a preliminary visit to the Public Record Office, in Fetter Lane, when the Domesday Book and MSS. relating to it will be exhibited by the authorities in whose custody they are preserved, and a paper on the book will be read by Mr. Hubert Hall, F.R.Hist.S. At 8 o'clock the same evening there will be read a popular lecture on the same subject by Canon Isaac Taylor, M.A., LL.D., at the rooms of the Society of Arts, in John Street, Adelphi. This lecture will be open to the public without charge. On Tuesday, at 3 P.M., a similar visit will be paid to the British Museum, when the MSS. relating to Domesday Book deposited there will be exhibited by the head of the Manuscript Department; and at 8 P.M. in the evening, either Mr. Charles I. Elton, M.P., Q.C., F.S.A., or some other member, will read a paper in the hall of Lincoln's Inn, the use of which has been kindly granted by the Benchers. On Wednesday there will be another gathering in Lincoln's Inn hall, at 4.30 P.M., when papers on Domesday land measures, &c., will be read by Canon Isaac Taylor and Mr. J. Horace Round, M.A. On Thursday the friends of the celebration will meet again in Lincoln's Inn hall, at 4.30 P.M., when Mr. J. Horace Round will read a paper on "The Danegeld and Finance of Domesday;" and Mr. Walter de Gray Birch, F.S.A., of the British Museum, will read another paper on "The Materials now Available for Re-editing Domesday Book." On Friday, at 4.30 P.M., the final meeting will take place in Lincoln's Inn hall, when sundry papers on local and topographical subjects will be read by Sir Henry Barkly, K.C.B., and by Messrs. H. E. Malden, M.A., and Frederick E. Sawyer, F.S.A.

Water-colour painting is less popular in France than in England. One of the few of the artists who have been fortunate in gaining a high position is Madame Madeline Lemaire. A flower piece from her hand is necessary in every collection that is supposed to be representative of modern French art. Madame Lemaire, as becomes an artist who is successful, lives near the Parc Monceau, and a few days since her house was the scene of a crime that must be classed among the mysteries of Paris. During the absence of the lady in the country the house was entered. Whether it was for the purpose of carrying away some of the valuable objects remains uncertain. What the police did observe was that nearly all the articles in the rooms were broken or defaced, and that the house was on fire, spirits having been introduced into each of the rooms for that purpose. It is hardly necessary to say that the house contained much pottery, enamels, and *bric-à-brac* of many kinds. That thieves should wantonly destroy the things they were unable to carry off does not tally with experience, and it is possible the criminals may have belonged to a different class. It is rather remarkable that the only room which escaped was the artist's atelier.

The Town Council of Northampton have narrowly escaped the performance of an act that might be called liberal. The Town Hall needs enlargement, and a plan is necessary to show how the space can be utilised for a new or enlarged council chamber, offices for the town clerk, including a new or enlarged fireproof room, offices for the water department, police station, additional committee-rooms, galleries to increase the accommodation in the large hall, improved accommodation for fire engines. In a generous mood, the Town Hall, Fire Engine, and General Purposes committee proposed to ask the local architects to compete, on the condition that the author of the best plan should have the carrying out of the work, the author of the second best receiving 20*l.*, and the remaining townsmen 10*l.* each. But one member when he heard the proposal remarked that some of the 10*l.* plans might not be worth twopence. With that view others agreed, and the subject was accordingly postponed. It is not complimentary to the Northampton architects to estimate their designs at so low a figure, but town councillors have a lofty idea of what architecture should be.

The hill of Montmartre continues to excite apprehension among the inhabitants of the streets around its base. In spite of the number of schools, science has not made its way among all classes, and it is generally believed that the mass of masonry in the new church is forcing the hill outwards. In order to make assurance doubly sure, the authorities have ordered the construction of a retaining wall of a size that will give confidence to the most timid people. At present twenty-four wells are being excavated on the eastern side of the hill. They will be filled with béton, which will serve as a foundation for massive piers, that will be connected by vaulting. But all this work takes time, and little will be visible before the end of the year. The houses are not of much value in the district, and the majority of them have a tumble-down appearance that is not suggestive of construction that will be able to sustain a movement of earth. The streets incline with much rapidity, and there is a flight of steps leading from one street that is almost as good a test of strength as a turn in the Alps. When the new church is completed there will be a strange contrast between its solidity and the ramshackle tenements that are around. The district is so remote from the centres of Paris life, it is difficult to suppose a time when a speculative builder will secure the ground to erect a better class of houses.



"INK-PHOTO." SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

COMMERCE.

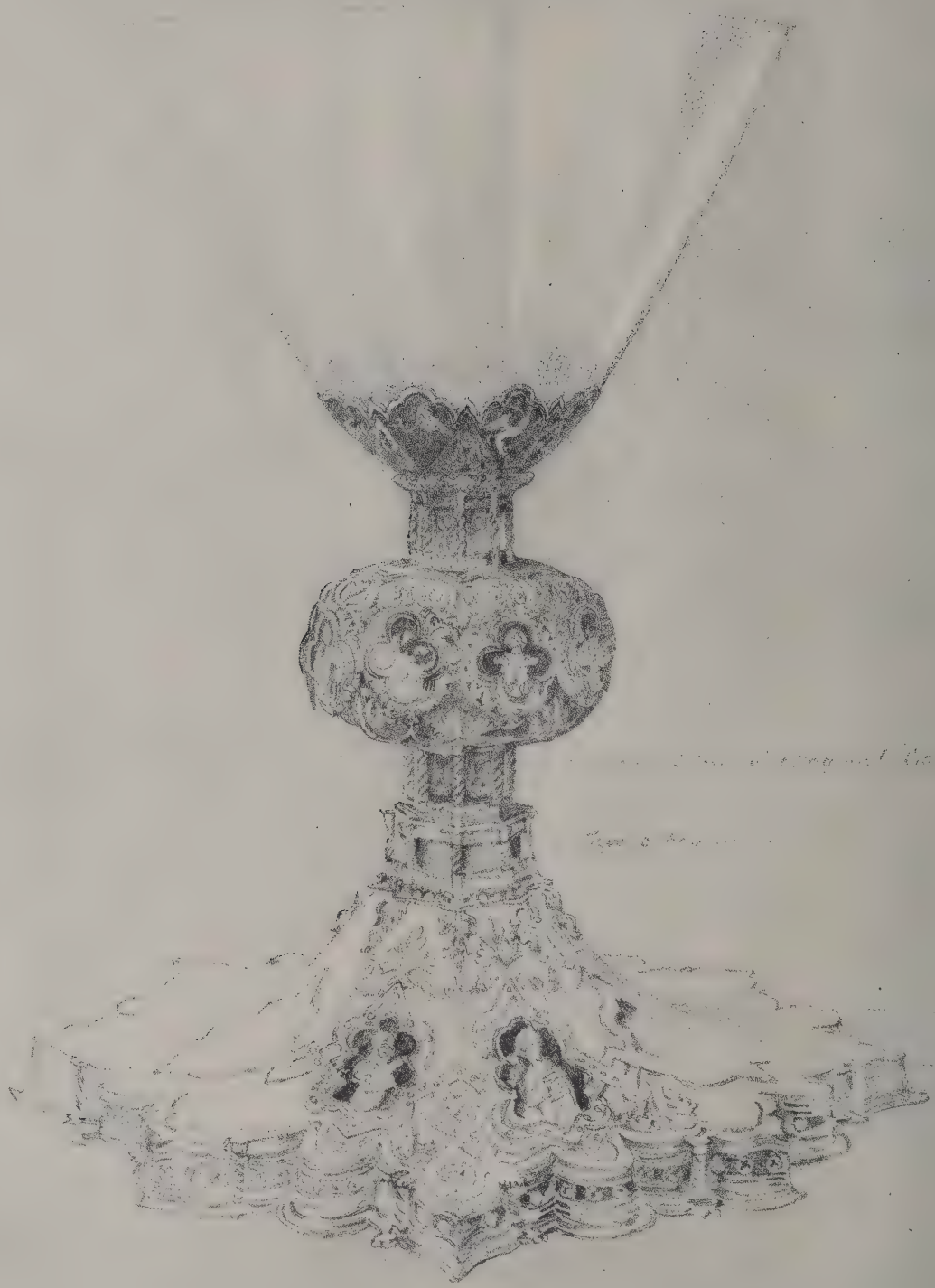
By M. FRANÇOIS EHRMANN.



"INK PHOTO" SPRAGUE & Co 26 MARTINS LANE CANNON ST. LONDON E.C.

NAVIGATION.

By M. FRANÇOIS EHRMANN.



DRAWN BY GERALD HORSLEY.

"INK-PHOTO," S.re RAGUE & Co 28, MARTINS LANE, CANNON ST, LONDON E.C



DRAWN BY GERALD HORSLEY.

"INK-PHOTO" SPRAGUE & Co 22, MARTINS LANE, CANNON ST LONDON E.C.

ILLUSTRATIONS.

COMMERCE AND NAVIGATION.

THE two decorative figures we give this week are taken from the cartoons prepared by M. Ehrmann for the French section of the Amsterdam Exhibition. They are too important in character to be passed over without being placed on record. They have the characteristics of M. Ehrmann's work—vigorous drawing, a happy arrangement for filling space, and an ideal character that approaches the sculpturesque.

THE PUBLIC HALL, BECKENHAM.

THIS illustration is taken from a drawing exhibited this year at the Royal Academy, by the architect, Mr. George Vigers, 4 Frederick Place, Old Jewry.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NOS. 29 & 30.—CHALICES FROM THE MUSEUM, PERUGIA.

OPEN-AIR LANDSCAPE PAINTING.

A WRITER in the *Nottingham Guardian* having stated that a landscape by Mr. Andrew McCallum was an aggressive picture, the painter has given the following explanation of his method :—

After a long and varied experience I am convinced that it is not for a painter to argue with his critics. It is for him to paint and for them to criticise. I am little used to the pen, and my works must speak and plead for me. However, the very kindly and discerning critic in your impression of the 17th ult. speaks of my *Golden October* painting as "an aggressive picture." Indeed, it is so. It seems very aggressive to me, and it must to a still greater degree seem so to the public, who do not, like myself, spend their days in woods and forests, striving to "catch Nature round a corner," and endeavouring with all my powers of mind and body to place upon canvas her fleeting humours and beauties. I know—how well I know!—after thirty years' incessant labour, labour alike of soul and body, how impossible it is to give a worthy rendering of that which is impossible to the finite mind; but I leave my works to speak for me, how I have to that end given all the powers with which I have been endowed. The landscape-painter must be a student from his cradle to his grave, and to the youth of my native town of Nottingham I leave my reputation as a faithful and diligent student of Nature. To them I explain how, in my endeavour to make pictorial art in landscape a power, I came to paint such an "aggressive picture" as *Golden October*. A work I also exhibit on the walls of your Castle Museum is, perhaps, of all other pictures in that splendid collection, the most antagonistic to it in point of treatment. I have no preferences or prejudices. Nature to me is a mistress, a most imperious one, whom I am bound to serve without argument, and in this instance I followed her without question. A many years' study, I might say truly, life work, in forest and autumnal scenes, had taught me that there was one effect that I had not yet secured, nor had any one secured it on canvas, and that one, indeed, the most glorious of the year. There is a moment when the evanescent hues of autumn have reached their deepest and most gorgeous colouring, when nature seems, as it were, to exhaust her dying energies in one blush of loveliness, that if not transferred to canvas in a few hours, will not be transferred at all. Many a time I have marked my subject and have mentally noted down every particular, and have mixed every tint of colour, and have made every arrangement for starting work early on the morrow; when the frosty night has loosened the leaves, and they have fallen off in showers at my feet at the first touch of the golden sunshine; or the blast has come and swept the leaves away, leaving only dark and wintry boughs. Thus I was tempted, nay, well nigh driven, to adopt the quickest method of accomplishing that I had in view.

I challenge any painter to draw the foreshortened leaves of the flaming beech with the brush, those smooth glistening surfaces catching the sunlight, and where it can be seen through the leaves, giving a colour that no paint can equal in brightness. Then the grey-reflected light on the mirror-like surface, their sharp edges and sharper points coming towards you, no dull hog hair-brush or brighter sable can touch. It must be done with the knife. One momentary flick of rightly mixed colour, rightly and knowingly laid on, and the effect is gained at "once and for ever." I am afraid to speak of the exaltation of mind the lover of nature feels in presence of such a scene as I am imagining. The absorbing passion for painting such an autumn picture, in the actual presence of Nature, of course, is for the moment a kind of madness, a joy not to be told in words. Nor must we forget the deep dark shadows full of transparency and of tender form, discerned but dimly, but needing portrayal; and over and across them the gold beech boughs waving and dancing, flinging cross lights and shadows over the ground, must find a place in any true picture. The picture is before me, and I regard my lovely subject with reverent eyes; and fixing on its strongest part, with one sweep I lay in my darkest tones, surrounding them with half tints of thicker colour, and always careful not to destroy their breadth. Thus I get it ready for the glorious branch that seems as though it were on fire before my eyes. The local colouring of ruddy life, or some streak of golden sunlight on a dying bough, must be dashed in, and in it goes, rapidly, fully, and freely—here putting on the sharp shadows on the neighbouring leaves, and there touching the half-tints with grey, and flicking on the highest lights in almost as short a time as it takes to write it. There, too, stands the plumy and shining bracken defying translation almost. What joy is there like the feeling of mastery over one's materials? We are engaged in a race and struggle against time, and the brush means defeat. The good knife leaps lovingly up the stalks to their tips, and runs down the frond, dallies a moment with the drooping tips, and in a moment charms everything into its proper place and shape, and the knife has done in a minute what the brush could not do in a day. The boles of the trees, if small and thin, we treat in the selfsame way, and lay with loving finger into the wet, full, dark, and absorbing ground, the mosses and lichens on the delicate birch. If it be a beech in shadow it needs a low-toned treatment in much smoother colour; but if it be a mighty oak in the foreground, we model it with the knife in white, and let it take weeks to dry and harden; but when complete it is delicious to paint upon, and strong and pure and lasting. Such impasto is imperishable, and if walked upon would take no more harm than an oilcloth for the floor.

This pursuit of truth in Nature has been and is a life's passion with me. It is my highest joy to effect something that all people can read and understand. I am afraid, however, my work appeals to those who have most knowledge of the subjects I depict, and can appreciate the life work there is in it. Nature, to be won, must be boldly won. In the rigours of winter she must yet be sought face to face; in the mists and blasts of autumn she must be pursued; and amidst the deluge of spring and the sweltering heat of summer, the artist who means to conquer must throw pleasure behind him and prepare for a life of severe toil. His joy must be in the work he achieves. I know there is a kind of landscape art that is begotten of a sketch and born in a studio; but this is not the kind of art I have pursued or shall pursue. Steady, calm, and resolute work, face to face with the object depicted, is what I reckon to be the only true method of interpreting Nature, and the only one I can follow.

I fully admit *Golden October* is an exception to the ordinary rules of landscape art; and my only apology for it is its truth. To make the landscape a living reality, as far as it is possible for it to be made a reality by means of oil painting, has been my object, and I am ready to stand the fire of criticism. I take the prime object of landscape painting to be a bringing some touch or aspect of Nature into our homes and galleries. Rules are only valuable when they conduce to this end, and when previously formed rules are impossible to effect it, it is plainly the call of the painter to think for himself, and make a new rule if necessary. The knife is no new instrument. Rembrandt wielded it with magical effect, and the flat impasto of the great artists of the Renaissance had a further development in their nimbi about the crown of the Virgin, and in the arrangement of ornament. I have applied it in this instance to the leaf and the blade, and to the rugged oak. An intense study of Nature, pursued under almost every condition of sky and climates—in the valley of the Nile, and amidst the scenery of Greece and Italy and France—has proved to me that mere flat painting is purposeless to reveal the effect of intense sunlight. Why should not the painter inherit some of the powers of the sculptor and modeller? Shall Nature make the rule, or shall the rule make Nature? As an humble student of Nature I have thrown in my lot with her. She tells me the plan I have pursued is the one of truth and faithful interpretation; and as in the picture of snow and ice I have found that it demands perfect flatness and softness to render it truthfully, so I have found that to portray such a scene as that of *Golden October*, it demands a method exactly the reverse.

I end this letter as I began by saying that I know that I am in error in attempting to reply even to favourable criticism; but having given my life to the pursuit of truth in Nature as a landscape painter, and having had the good fortune to find purchasers of my works in those whose knowledge and culture have made them the best judges of my efforts to attain it, I feel that I am but giving back a little to those art workers in the good old town of Nottingham, wherein I first drew breath and first felt the command laid upon me to work for the glory of true art, by telling them how, at a late period in my career, I

felt a new command to accomplish the portrayal of one aspect of ever beautiful and changeful Nature, by an unaccustomed, though not new, method of interpretation of her beauties. I ask them to give me this one point of credence, that I could not and would not have departed from accepted rules and traditions, had not a life's effort to accomplish this one aspect of Nature faithfully proved to me that other methods than those I have followed were impossible. There are and may be rules consecrated by tradition, and accepted by the schools, for other branches of the art of painting; but the landscape painter is always a rule to himself. The more humbly and the more heartily he strives to approach the pictorial representation of the beauties, the terrors, and the sublimities which Providence presents to his vision, the more nearly will he approach to the high ideal of his calling as a maker and teacher of men. And it is in the hope that this one picture will be a cause of thought to others of a younger generation, that I have dared to exhibit it upon the walls of the Castle Museum. Its approval or condemnation are equally acceptable to me. I have fought my fight almost with Nature. I have pursued her only, when to have avoided her were fame and power; but I would not desert her for mere rules and regulations, and this one aspect of her thousand beauties I respectfully submit as the only true and possible one.

INIGO JONES.

THE fourth number of the quarterly magazine, "The Century Guild Hobby Horse," which appears this month, is interesting for illustrations and writing. There are reproductions of a broadsheet by William Blake and of two cartoons for stained glass by Dante Rossetti, who also saw visions. The editor, Mr. Mackmurdo, continues his papers on the National Gallery. The longest essay in the number is by Mr. Herbert P. Horne, and is entitled "A Study of Inigo Jones." The extract will suggest its character as well as that of the magazine and Guild. The Guild "seeks to emphasise the unity of art;" the "Hobby Horse" deals chiefly with "the practical application of art to life."

Though much of Gothic detail and ways of building remained in the early part of King James's reign, mingled with strange distortions of Classic forms, the spirit of Gothic had for ever passed away. The Elizabethans were perpetually striving to regain this departed temper, and recreate the old Gothic under the semblance of Ionic pilasters and egregious arabesques. That was impossible, for Gothic was as much the unconscious expression of the Middle Ages as were the temples of Athens of the ancient Greek souls. Jones instinctively knew this. He knew also that architecture to him must ever be the effort of an individual, not the outcome of an age, and his art must therefore be eminently traditional or Classic. Now the great law of Classic, or traditional architecture, is the predominance of the horizontal over the vertical lines; while that of Gothic, or spontaneous architecture, is the ascendancy of the vertical over the horizontal. For Classic, with its lines stretching over the earth, was the architecture of enjoyment; Gothic, with its spires and thousand pinnacles, the architecture of aspiration. But men—nor was Jones excepted of them—had lost the zest of Mediæval days, and had found that, with all its vices, there was still something in the philosophy of Epicurus that was just and worthy. No example, I think, of his work shows Jones's acceptance of these things more clearly than the church of St. Catherine Cree in Leadenhall Street. The old church where Holbein was buried, and which seemed "to bee a very olde thing, since the building whereof the high streete hath beene so often raysed by pauementes, that now men are faine to descende into the saide church by diuers steppes, seuen in number," was, it is said, pulled down in 1628, and the present church finished in 1630. But there are many things which incline me to place the rebuilding several years earlier, perhaps anterior even to 1613; especially the three circular pediments and the fantastical parapet that originally surmounted the south front, and which were replaced by the present plain parapet between 1733 and 1838. At the same time a square turret, which Jones had designed, and the old Perpendicular windows, were destroyed, and the present bell-cot and belfry windows worked into the Gothic tower of 1504. A plain parapet also, in all parts of the church, took the place of Jones's strange device, of which a mere fragment may yet be traced on the west front, between the tower and the end of the nave. Inigo Jones, in rebuilding this church, though he retains the general arrangement of the Gothic architects, their arcade and clerestory, together with much of their detail, as their vaulting, their cusps, and their mullions, yet nowhere does he violate the Classic spirit, nowhere are the horizontal lines broken, because he felt that his life was not spent in reaching after the aspirations of Mediævalism, but after a new morality, the sensuous disciple of art: therefore thus much he took from the Gothic builders, thus much and no more.

But to turn from the reasons of his perfected work to the work itself. Of this there is, perhaps, no finer example than the Banqueting House at Whitehall, now the Chapel Royal, so long as we remember these two things—that the plinths in the balustrade were to have carried statues, and that the present building is, comparatively speaking, but an insignificant portion of the palace as first planned by Jones, one of the two side blocks, in fact, separated from each other by a central and larger block exceeding them in height by another storey, the three forming together the east side of the great central court, which measured 740 by 378 feet. Of the whole palace, there are the drawings on rollers at Worcester College, probably by Webb, the unsatisfactory plates of Kent, and the still more unsatisfactory series of Colin Campbell, together with some few odd drawings in the Soane Museum and elsewhere. But as all these designs contain errors of taste which any real study of the portion erected would not allow us for a moment to ascribe to Jones, I am inclined to think, with Walpole, that these various plates and drawings are a cento from his sketches, and done from no finished design. Much, however, remains to us of the palace that would have exceeded all palaces, even the Escurial, the building that might have held the Titians, the Mantegnas, the Raphaels, and all the pictures and sculpture of Charles: its front of a thousand feet of columns and statues, its seven courts, chief amongst which was the surprising circular or Persian court, with its many orders and caryatides crowned with a crown of statues. But let us not search too nearly into this unsubstantial fabric; rather let it be

> A wilderness of building, sinking far
> And self-withdrawn into a wondrous depth,

divining it, perchance, in our minds, as at times haply one might dare to call back from the Ivory Gate visions of the tomb of Julius or of the unwritten soul of Keats.

The present Banqueting House was commenced in 1619, six months after the old building had been destroyed by fire, and it was finished within two years, the master mason being Nicholas Stone, the sculptor of the shrouded figure of Donne in the choir of St. Paul's.

From a "base of rustique" rises the first order, which is Ionic, the capitals and entablature of which first tell of the growing richness of the order above, which the architect intended to close magnificently in the statues of the gods standing against the heavens. In the second, or "compound order," an entasis in the columns and pilasters, fuller than that of the lower order, brings additional life into the work and leads the eye up, through the band of ornament in the frieze and capitals, to the pedestals for the statues, each statue repeating a capital beneath it; while the growth of the whole is aided throughout by most subtle relations of proportion both of the chief parts and of the details. The gradually increased richness of this elevation is as organic and reasonable as the growth of a plant whose lines become less restrained until they at length burst into a crown of flowers; and yet, with all its luxuriance, it is as broad and simple as the most Classic of buildings, and the reason is simple, for none of the surfaces are broken, and all the ornament is, theoretically, in shadow.

It is well also to notice the manner in which the capitals have been thought of as masses, and the volutes and leaves as minor masses; and the superb art with which these masses are echoed along the frieze, in the wreaths and masks, exquisitely connecting capital after capital, weaving them into a decorative whole. This band of sculpture has a beauty and fitness akin to the best Florentine work, and equalled by no architectural carving that I know of in London. Certainly it is above all comparison with the florid wreaths that Wren finely placed on his halls and churches.

Here, lastly, as in everything he did, is particularly marked Jones's orthodox use of the Classic orders, the result of his long study of Palladio and Vitruvius.

In contrast to this palace of Whitehall, before we pass on to something more nearly connected with it, let us stop to see how our master treated an ordinary street of houses. The whole of the south side of Great Queen Street, Lincoln's Inn Fields, was originally built from the designs of Jones, tradition says, at the expense of the Jesuits, and was to have formed one side of a square which, like the greater part of his essays in architecture, was never completed; and as the north side was not built until nearly a century later, this tradition may not unreasonably be accepted. Of this series of houses, only two, Nos. 55 and 56, or, what is more probable, one house divided into two, remains. The character of the cut brickwork between the first and second floor windows of No. 55 would seem to date it anterior to his second visit to Italy, and also that form of capital so peculiar to him, and which is presently made perfect at Whitehall, is here exaggerated in a manner suggestive of an early period. But how prodigal of effect is the cornice, broad, delicate, and yet so bold: broad in its treatment, exquisitely delicate in its mouldings, and bold, beyond imitation, in the light and shade thrown by the eaves. With what advantage might the builders of our new London study this little example of our master's art, for this could unerringly show them, if

indeed anything were able, that coarseness is not boldness, neither is meanness delicacy.

Francis Bacon, Lord Verulam, had at length, in 1622, given up York House in the Strand to George Villiers, first Duke of Buckingham. Villiers was assassinated in 1628. It was during this interval of six years that he borrowed the stone collected for the repairs at Old St. Paul's, and employed Jones to design the Water Gate still remaining on the Thames Embankment near Charing Cross, as a first step towards the rebuilding of York House. Campbell says it was erected in 1626, and there is no reason to suppose that this is incorrect. In Hollar's drawing in the Pepysian Library the river surrounds, on the three sides, a plain plinth supporting the gate, which plinth extends in front of the bases of the columns so as to form a platform, from which a broad flight of steps, equal in width to the space between the two outer columns of the river front, leads to the water. We now not only look down upon it, as it stands in a hole away from the river, but the plinth and steps, if they still exist, are completely buried ; so that we see it shorn of its proper height, and deprived of the reason of its existence. The felicity of its proportions has long been praised ; not so its simplicity and the largeness of scale on which it is conceived ; yet the quality which is here most worthy of our study is, I think, the sense of fitness which it reveals.

Of the palace that Jones had hoped to raise behind it, all that a diligent search could discover was a drawing at Oxford for an enriched and panelled ceiling, decorated with gold and blue, and bearing the motto of Buckingham, "FIDEI CORTICVLA CRVX," inscribed on the frieze. There is nothing on the drawing definitely to tell us that it was intended for York House, but as the same motto is cut on the frieze at the back of the water-gate, this seems sufficient ground for the supposition. Dallaway speaks of a painted ceiling like that at Whitehall, though I can find no other mention of such. But this comparatively slight relic is sufficient to show us the palatial character of building to which this grand rugged gate was intended as a foil. Magnificently would the fine sense of texture obtained by the contrast of the severe Tuscan pillars and the strange elongated keystones with the great masses of rusticated work have told against the delicate breadth and richness of a frontispiece, like that of the Banqueting House. Here, too, as at Whitehall, we find his accustomed concentration and reserved use of ornament; the decorative placing of the escallop shells finely preparing the eye for the masterly masses of carved work above. Nor must we forget that the low side walls yet mark the original height of the walls of the garden terrace up to which the river once flowed. In those days who would might have rowed quietly up to the gate, and standing on the steps have seen through its repeated archway John of Bologna's *Cain and Abel* in the garden beyond, and would not have been surprised if, having passed into that enchanted plot, he should have found Francis Bacon walking there.

Yet these are but exterior examples : of his interiors, however, not so large a number have escaped the hand of the last two centuries. Somerset House, Shaftesbury House, Physicians' College, "my lo Matrauers his house at loatsbury," Sir Peter Killigrew's "in y^e^ black fryers," no longer exist; whilst the houses in Lincoln's Inn Fields and Covent Garden have been too frequently patched and altered, especially inside, to give any adequate idea of their first state. But Ashburnham House remains, hemmed in by the cloisters and conventional buildings of the canons of Westminster. Here is the same restraint, the same breadth with boldness, the same simplicity with richness, but altered to the new conditions of light, and coupled with a certain picturesqueness proper to interior effects —a picturesqueness, however, very different from that unreasonable bringing together of what is wholly unlooked for which characterises our modern houses. That is the picturesqueness of fashion which passes, this is the picturesqueness of mind which endures, for throughout the continued change of effect which is seen by ascending its largely planned staircase, everywhere beneath the apparent confusion are the order and repetition which are the first part of architecture. But the relief work with which our master here enchants his ceilings, cornices, and walls, chiefly attracts the eye by its difference from the ornament which our modern architects scatter over their buildings. We have already noticed the felicity of the decoration on the frieze of the Banqueting House at Whitehall. As that for stone, so this for plaster is equally admirable : the design on the broad ribs of the ceiling of the drawing-room is as fine and delicate as Florentine work. The upper wreath of the cupola over the staircase has all the forms and decorative placement of Luca della Robbia's bands of Italian fruits and flowers, while the lower wreath with the same charm of light and shade might have been gathered from our own English gardens. But besides this Italian exquisiteness, they have a strength and directness which is altogether of England, yet without a taint of her vulgarity or her coarseness, and upon the whole is set the seal of the times of Charles I.

There is yet another little work of his, weather worn, mutilated and forgotten, still remaining within a few yards of the busiest part of Tottenham Court Road, which is worthy of a brief notice. In 1634 had died his "ancient poor friend," George Chapman, "silently glanced that, like a thunderbolt, looked to have shook and struck the firmament." He died on May 12, and was buried in the yard on the south side of the church of St. Giles in the Fields, that was presently to hold the ashes of Andrew Marvell. "Soon after," says Anthony a Wood, "was a monument erected over his grave, built after the way of the old Romans by the care and charge of his most beloved friend Inigo Jones; whereon is this engraven, 'Georgius Chapmannus, poeta Homericus, Philosophus verus (etsi Christianus poeta) plusquam celebris, etc.'" The little monument still stands on the south side of the modern church of St. Giles ; but a new slab has been let into it, bearing a different inscription from that which Wood gives.

St. Paul's, Covent Garden, though commenced in 1631, was not finished till 1638, being consecrated by Juxon on September 27 in that year. It seems to have been the last of his works, certainly the last of any importance.

THE PRESERVATION OF OUR RUINED BUILDINGS.

A LETTER appeared in the *Times* of Wednesday from Mr. E. P. Loftus Brock, F.S.A., honorary secretary of the British Archæological Association, on the subject of restoration, in which he says :—

The discussion which was begun by Canon Venables in your columns, having for its subject a title very similar to that which forms the heading of this letter, seems likely to be continued merely as a subject of difference of procedure relative to one important building, and no more.

I think that this is matter for regret, since it is likely to divert attention from what is a large subject, one that has great need of consideration, and which must receive attention before many more years pass away, namely, the care and protection of the ancient ruined buildings of our land. Most of your readers are now returning from vacation, during which not a little of the most pleasurable and instructive of these times of rest have been devoted to what is becoming year by year a special feature of such times—visits to all the ruined buildings in the various localities of their temporary residence. They probably have, therefore, many varied experiences of continuous decay, want of care, necessity for speedy attention, and many such ; all of which would indicate the pressing need of more notice being taken of the whole subject and of the benefit of its discussion. With your permission, therefore, I venture to make some observations and some few practical suggestions in the hope that, attention being given more generally to our ruins, these valuable records of the past may be handed down to future generations in as good a condition as the state of the case admits.

These ruins are no longer objects of indifference as they were a generation or two ago. On the contrary, they are of extreme interest on the part of the community at large, and were it possible to publish statistics of the number of visits paid to them it would clearly show the great amount of regard which is evinced by the people at large in their inspection. The number of visitors at Netley, Fountains, Tintern, and Valle Crucis Abbeys, and many others which are doubtless well known to a goodly number of your readers, are illustrations in point. In many of these cases a charge is made for admission, and the income thus obtained is sufficient to pay for the presence of a caretaker and for purposes of repair. Here is at once a suggestion which may at once be acted upon by any proprietor, who in these hard times of agricultural depression may well be concerned at the suggestion that it is his duty, as the owner of property of interest to all, to incur now an outlay in upholding his ruin lest it should become lost to posterity. In almost every case the attractive nature of the ruin might be made more so by excavation, to reveal the portions that may be buried beneath the accumulated earth of centuries. Still, it is only in certain positions and under certain circumstances that an owner can make his ruin be self-supporting. That there are very many cases in which it may, may be readily conceded ; and I make the above remarks in the hope that more owners will adventure it. Still, there are a great number of cases where the modest sum charged for inspection is altogether inadequate to meet the needs of the case. An unfortunate instance exists at Bignor, Sussex, where some of the very finest Roman pavements are gradually perishing for want of a little more outlay for covering. I can bear abundant witness of the great interest taken by the farmer owning the site, and also by the pressing need of the work. If this is so where interest is actually shown, what can be expected when no interest exists on the part of the present owner, and when no income is derived? Visitors may come, to the annoyance and disturbance, more or less, of the owner, and visitors may go ; but how is the ruin to be upheld? And if not upheld by this genera-

tion, can it be expected to be handed down to posterity except in a lessened degree? It is seldom, however, that no interest exists, for homely and illiterate as the owner or tenant may be, yet it is often matter of pleasurable gratification to witness the interest taken in the "old, ancient place;" but no money is at hand to arrest decay. The same remark applies with respect to many corporate bodies, whose funds are devoted to specific purposes which may with difficulty be applied to the upholding of ancient works of art.

Little Leighs Priory is owned by a London hospital. Its brick chimneys, loosened for want of pointing for many a year, will come down with a run before very long. Lawhaden Castle is owned by an Ecclesiastical Commission. It is a mass of tangled undergrowth, and sadly needs attention. These are but two examples which come to my mind, neither better nor worse than others, but they are typical ones out of a very long list that could be swelled to any extent. I refer to them, not in any spirit of fault-finding—although, perhaps, in such cases the owners ought to spend a little money in taking care of their property—but only to indicate the state of things that exists with a view to a remedy.

My experience of owners when they have been possessed of means is, however, far from discouraging, rather the reverse; and on behalf of the British Archæological Association I have had not infrequently to make friendly suggestions which have been acted upon. Thus, for instance, we found during our congress at Tenby that Carew Castle was in considerable danger from the usual causes—want of attention to the loose portions of the masonry, the inroads of frost, &c. Representation was made to the present descendant of the ancient owners, who cordially responded, and the castle is now safe, Mr. Cobb, whose careful works uphold his own castles at Pembroke and Manorbeer, kindly undertaking the oversight. Our works in this respect are doubtless no more, if no less, than those of other antiquarian societies, and I refer to this particular instance, not only because it is a very fair example of the mode in which such works should be carried out, but also to indicate what may be done in obtaining practical and permanent results from such meetings as that to which I have referred. Still I think that antiquarian societies may, all of them, turn their meetings to better account if such objects as this, the preservation of antiquities when in want of attention, are kept in mind.

The promoters of such meetings are then almost always in friendly correspondence with the owners, and a few words of advice spoken with tact and judgment may not be taken as offensive, or as from busybodies, and will get listened to at some convenient season.

While I gratefully admit that individual effort on the part of owners is doing much in this present time, whereas formerly it hardly did anything, while it can yet do much more as it becomes interested either through public opinion or any other cause, yet it will but touch a certain number of our ancient monuments. It may exist for a lifetime, and may not exist when pressing need arises. It will not and cannot be expected to be steady and continuous, while the requirements of the buildings are just those that need such attention.

I have now made some suggestions relative to individual works on the part of the proprietors, but that which concerns the whole of our ancient buildings is a far larger matter. It is that they should all be put under the care of the nation through its Government, and that the cost should be borne by the nation. That the latter proposition is but just will, I hope, be readily assented to, for it is the nation that would benefit by the due preservation of its national antiquities, which would thus be handed down as intact as possible to generations yet to come. The subject, pressing as it is, is, however, far too large to be dealt with, with any chance of success, so far as the case of every individual antiquity is concerned, and private owners must go on ruthlessly to demolish their property, as has been the case within the last week or two at Colchester, where a fine Norman building has been in the hands of the destroyers. There is, however, a step towards it that may be taken to meet many cases. The machinery is actually in existence. The Ancient Monuments Bill, 1882, one of the wisest Acts that have ever been framed, provides briefly as follows:—The owner of any ancient monument to which the Act applies may constitute the Commissioners of Works the guardians of such monument. The owner shall, save as is provided in the Act, have the same estate and right as if the Commissioners had not the guardianship. The Commissioners to undertake the work and the cost of maintenance. Her Majesty may from time to time, by order in Council, declare any monument of like character to those in the schedule to be deemed an ancient monument.

Now these provisions unfortunately at present only relate to one class of monuments known as prehistoric, and only a certain number of them, which are scheduled in the Bill. They may be made, however, as applicable to a ruined castle or monastery, a Roman villa, or a Saxon earthwork. It but requires an addition to the Bill to include all the other classes, and the Act becomes a part of the law of the land.

It will be noted that the Bill's action is purely voluntary, and so it had better remain. Even when an ancient monument is taken over, it does not cease to be private property. Now, if the Act be altered, and if in addition an easy process for increasing the monuments scheduled be framed, any owner could then place the monument, whatever its nature, under the care of the Act. It would then be safe for all time, and the cost of upholding would be spared to the owner. As the Act now stands, an owner may offer a standing stone or an ancient British pit dwelling, but if an owner be desirous of offering a Norman keep or a ruined abbey the offer could not be listened to.

This suggestion will help to meet many cases if carried out, and carried out, I venture to predict, it will be. Still it will only meet certain out of many classes of cases. There is another of which Canon Venables's letter stands as a permanent reminder. Kirkstall Abbey is a huge ruined and roofless church subject to the gales of every season and the frosts of every winter. The great mass of its tower fell many years ago, doubtless then for want of attention, as did the tower of Whitby Abbey more recently. The remainder, thus deprived of its abutment, still stands. Is it likely that it can stand permanently? There are also other parts of the fabric in need of repair. On this account I hope it is made hard for any modern maid of the mill to seek the interior during a stormy night, or she will run some chance of losing more than her senses, as did her prototype. Now this abbey is of a class of ruin too large, in almost every case, to be kept standing by individual ownership. Why are they not acquired by some corporate body and surrounded by a people's park? The spirited and far-seeing action of the Rochester Corporation in obtaining Rochester Castle, that of Nottingham in securing the Castle, and that of Birmingham in acquiring Aston Hall, are all cases in point. The buildings are in security, the localities derive not only the benefit for the townspeople on the spot, but strangers are naturally attracted to these localities to inspect.

With regard to ruins generally, it will really be found that the actual need of many ruins is not that of large outlay. Continuous care and very moderate expenditure are often more desirable. I need not add much to Canon Venables's specification, except to urge more than he has done the importance of careful pointing to the walls to exclude wet as often the most pressing work to be done, the pulling out of roots where likely to spread unduly, and the exclusion of wet from the tops of walls and any vaults with gas tar. This is better than cement, for it does not so readily crack or scale off if laid on where the walls are dry and vegetation is removed from all places where it would do mischief. I do not advocate that our ruins should be made unpicturesque—far from it—but only the doing of such works as are most pressing to avoid decay. Much ivy may remain if judgment be used. Some weak walls are pulled to pieces by ivy, but if left to themselves they would suffer the like fate from frost; but if ivy cover them they may stand a chance of avoiding the former. Ivy will not penetrate a solid wall, nor will it one that is fairly well pointed. Whether, therefore, to strip, to point, or let the ivy cover the weak wall must be a matter of individual judgment on the spot.

THE BIRMINGHAM SCHOOL BOARD.

At the last meeting of the Birmingham School Board the Sites and Buildings Committee reported that each of the five architects invited by the Board to send in competitive plans for the schools to be erected in the Soho Road had complied with the invitation, and had submitted designs. The committee had carefully examined these plans, and found generally that they fulfilled the conditions which had been issued. The names of the competing architects were not attached to any of the drawings, but each sheet was marked with a word or motto. The seals of the envelopes which contained the names of the architects had not been broken, and the committee were of opinion that the set of plans marked "Slow Steps Upward" was the best sent in, and recommended that these plans be accepted, subject to the approval of the Education Department. The committee also reported that negotiations had been entered into with the owners of the land in Inkermann Street, Vauxhall, and recommended that an area of 4,300 square yards of land, having frontages of about 45 yards to Inkermann Street and 46 yards to Alma Crescent be purchased, at a price of 1,827*l.* 10*s.* and costs, being at the rate of 8*s.* 6*d.* per square yard.

Mr. Kenrick, in moving the adoption of the committee's recommendation with reference to plans of the Soho Road School, said that the committee had been saved a good deal of trouble in superintending the competition by having a list of regulations for the erection of schools passed by the Board some time ago. The committee, however, gave certain other instructions, one of which related to a matter that had lately excited considerable attention, and in which the committee had taken a line that would free them of the censure passed in the

case of another building. The buildings were to be constructed either in red or in other brick, and terra-cotta or stone might be introduced in the elevation. In the event of the lowest tender upon the accepted plans being higher than 10*l.* a head, the Board would not be bound to accept the plans. All the competing architects had done their utmost to produce a building thoroughly efficient in internal arrangement and handsome in external appearance, and the committee had been very much pleased with the competition. There was more than one plan which merited very high commendation. He thought, moreover, that all the members of the Board would be better satisfied now that a competition had been held. He did not mean to say that the Board would be thereby induced to pursue the system further. When the schools were up they would know more about the results of competition. The plans, in the opinion of the committee, were of course the best; but it must be understood that many things might happen before the schools were erected, and he would not go so far as to say that schools erected by one of the other architects might not turn out as well, for the committee had had only the plans before them, not having taken professional opinion, and having been guided solely by their own knowledge and experience.

The Rev. E. F. M. MacCarthy seconded the motion, and was especially glad to do so, because the accepted plans had approved themselves primarily on educational grounds. It was enormously important in the erection of the schools—important in a way which teachers only knew—that the arrangements in even the minutest details should be of the best possible kind. The author of the plans seemed to have had a finer educational instinct than his competitors. Every classroom had its own exit to the playground without passing through the central hall, an arrangement which enabled the children to get the full benefit of the play-time, and also to assemble and disperse quickly.

The motion was agreed to, and the Chairman, on breaking the seal of the envelope, read out the name of the successful firm of architects as Messrs. Thomason & Whitwell, Cannon Street, Birmingham.

Several members asking that the other envelopes should be opened, the Chairman pointed out that these might be needed in case the contractor's lowest tender was at the rate of more than 10*l.* a head.

USK CHURCH, MONMOUTHSHIRE.

By S. W. Williams, F.R.I.B.A.

THE priory church of St. Mary at Usk illustrates the growth of some of our larger parish churches, from the original Norman building of moderate size down to the end of the Perpendicular period, when it probably attained its largest dimensions before the dissolution of the monasteries in the time of Henry VIII.

This priory of Benedictine nuns was founded by Earl Richard de Clare, the well-known Strongbow, Earl of Pembroke and Lord of Striguil, whose uncle, Walter de Clare, was the founder of Tintern Abbey; and it appears, from an entry in the valuation of its revenues made at the time of the dissolu- of the priory, about 1535, that one pound was to be expended annually "upon Sherethursday in almes to pray for the founders, viz., Sir Richard de Clare, Sir Gilbert his son, Earles of the Marches," and for other descendants and benefactors.

The date of the foundation of the priory can, therefore, be fixed approximately about the early part of the twelfth century, say 1135 or thereabouts. The architecture of the original Norman church, of which there are still considerable remains, most certainly dates from a much earlier period; and I think the cruciform church may have been built about the middle of the eleventh century, or at any rate soon after the Norman Conquest. Of the early Norman church there remain the south wall of the nave, with its massive south-western buttress of early type, which distinctly marks the length of the original nave, a portion of the west wall of the north transept, and the very fine central tower carried upon four massive piers, with its circular angle stair-turret approached from the north transept. Externally can be traced the water-tables of the roofs of the choir, north and south transepts.

The groining over what is now the chancel, in the interior of the tower, is carried upon angle corbels, and is of distinctly early Norman type. The tower itself is built in three stages, and is, I believe, of the same period as the nave and transepts to the top of the corbel-table; the battlements are modern.

I am of opinion that the early cruciform Norman church was the original parish church of Usk; that upon the founding of the priory by Earl Richard about 1135, considerable additions were then made, so as to accommodate the parishioners as well as the conventual establishment; the north aisle was also built at that period for use as a parish church, and the original Norman nave was lengthened about 10 feet or so, as shown on a plan by the dotted lines and lighter shading, indicating Early English or Transitional Norman work.

On the plan which is now in the church, showing the alterations made in 1844, a buttress is shown, which appears to have been taken down when the nave was further lengthened at that time, and which, I think, marks the limit of the west wall of the nave before the latest alterations were made. This buttress is in line with the west wall of the north aisle. It will be seen that the arcade is of the same period as the north aisle, and that when it was built the north and west walls of the early Norman church were taken down; but, doubtless, the transepts and choir were retained; the east wall of the north aisle was at the same period pierced for a doorway giving access to the north transept, which then, as now, was probably used as a vestry. At the same time, I believe, the doorway now blocked up in the south wall of the nave was opened, to give access from the church to the conventual buildings and cloisters; in the original Norman church the entrance would be by a west doorway, probably of very rich design, as at Chepstow Church. The arcade, which is of Transitional Norman, or very Early English type, consists of four obtusely pointed arches, carried on circular piers and responds, with moulded caps and plain splayed bases.

The pillar that is the first from the east end is different from the others in having four slender attached shafts, and I think that this difference was intended to mark the line of the chancel of the parish church, and that probably the door at the north-eastern angle of the aisle was the priests' door. If we assume that a screen extended the entire length of the arcade, it will be seen that the north aisle then becomes a separate church for the parishioners of Usk, as was the case at Leominster Priory Church.

The next important addition made was in the Perpendicular period; and from the character of the work I think the additions of this period, which consist of the north and west porches, the insertion of three windows in the north wall and the same number in the south wall, were probably made about the latter end of the fifteenth century, and are of a type common in this district. It appears to me that this was about the time when the later alterations were made, a period of great church restoration throughout Monmouthshire and part of Glamorganshire, and that the work was done by the same men who built the beautiful Perpendicular churches of Somersetshire.

The later additions and windows introduced in 1844 are, unfortunately, but inferior copies in point of detail of the older and much richer Perpendicular work, and this is especially noticeable in the tracery of the new west window. It seems unfortunate that the builders in 1844 were unable to restore and rebuild the transepts and choir, instead of lengthening the nave westwards, which has destroyed the original proportions of this fine old church; and it is to be hoped that if any further enlargement or restoration be attempted that it should in that case result in rebuilding the choir and transepts.

No doubt excavations in the Priory grounds would lay bare the original foundations of the missing portions of the early Norman church.

WIRE NETTING.

A COMPANY has been formed to purchase the patent rights and privileges, &c., &c., of Messrs. W. F. Dennis & Co. for an improved system of manufacturing hexagonal wire netting, under the name of the Dennis Patent Continuous Wire Netting Company, Limited. Mr. Latimer Clark, C.E., who is so well known as a man of practical experience, has pronounced most favourably on this system. Speaking of the very ingenious wire-netting machine invented and patented by Mr. W. F. Dennis, he says Mr. Dennis has made an entirely new departure in this branch of manufacture, which enables him to produce wire netting more cheaply and rapidly than heretofore, and also, when desirable, to make wire netting of hard iron or steel wire, which is scarcely possible with the old form of machine. In the ordinary wire-netting machine one-half of the wire is wound on bobbins, but the other half, or every alternate wire, has to be coiled into small spirals, and carried in tubes, or "spools," which are rotated round the wires coming off the bobbins. These tubes carry but a very small quantity of wire, and this wire must of necessity be of a soft description. The expense of coiling the wire into spirals, the waste of material, and the constant stoppages of the machine required to insert fresh spirals and to make the joints, are a cause of great delay and serious cost, and these disadvantages are inherent in the present system. Great difficulty is also experienced in equalising the tension between the bobbin wires and those drawn from the tubes. In Mr. Dennis's machines these evils are entirely obviated by an arrangement which enables him to draw the whole of the wire direct from bobbins, on which they are wound in long lengths, and which assume naturally an equal tension. As these bobbins contain a sufficient quantity of wire to keep the machine running con-

tinuously the whole day, the constant stoppages inseparable from the use of the old type of machine (from 100 to 300 stoppages per day) are entirely obviated, and the production of netting is proportionately increased, while the uniformity of tension enables a superior quality of netting to be manufactured. By the use of hard bright wire the machine produces a rigid description of netting not yet in the market, but which has long been a desideratum, and which will doubtless be much appreciated by the general public.

With the many advantages the above machine possesses, Mr. Clark considers it cannot fail to have a very important effect on the whole of the wire-netting trade.

Correspondence

The Royal Academy and Education.

Sir,—Your discursive contributor has certainly added to my amazement by the twenty-seven questions which he has put to me personally in your last issue. Indeed, I think it a little hard that I should be expected to supply you with twenty-seven readable paragraphs merely to gratify the *amour propre* or allay the self-reproaches of an anonymous writer, whose article on "The Royal Academy and Education" seems to have attracted little notice from architects prior to the appearance of the letter which you were good enough to print from me on the 1st instant.

He has, however, raised two or three dogmatic questions which, if I do not answer them with a distinct negative, may be regarded by many as possible truths, and so injure the good cause which others besides myself have at heart. I have more than once thought, it is true, that the Academicians might be justified in interpreting certain terms of their famous "Instrument," drafted by Sir William Chambers—namely, the "Arts of Design"—as intending merely the arts of delineation, not invention, particularly as in the last century the word "design" (or *dessein*) did not bear the developed meaning which it bears at the present day. But there exists at the Royal Academy the original "diploma" of the Academicians drafted by King George III. himself, in which he wrote, with his own royal hand, "We have thought fit to establish . . . for the purposes of cultivating and improving the Arts of Painting, Sculpture, and Architecture . . . the Royal Academy of Arts." Need you and I, therefore, waste any more ink over this point?

The writer of your article asks:—"(17) Is it not a consequence of the training of artists for State purposes in France that the condition in general of architecture in that country is far below the condition in England?" And again—"(21) Is it not the fact that, in spite of the existence of a process for preparing Government architects in France, so little esteem is entertained for the profession that the civil code makes no distinction between architects and contractors, and every architect is responsible equally with the contractor for the stability of a building during a certain number of years, and in other ways is put on a level with him?" Now, sir, we are treading uncertain ground, and it may be as well to begin by stating that the condition of architecture in France and England cannot possibly be compared. The architect in Paris, and, indeed, in all the great Continental cities, practises architecture pure and simple. He is absolutely what in this country is called, with some affectation, an art-architect. The prosperity of the profession in England cannot be ascribed to profits realised from such a kind of practice, and if, here, wealth accumulates, it is due principally to the inclusion of surveying, valuing, house and estate agency, and similar branches of business, which in France are not generally included among the functions of an architect. The Parisian is, however, often compensated in other ways—within his legitimate artistic sphere—which do not obtain in England, for he will be generally employed on the same building for years after it has been completed, in order to keep it in repair, add to it, or embellish it. He is, moreover, the master of the several contractors he employs, and their social as well as artistic superior. In France the master artificer still exists, and the general contractor is still unknown. Hence the French architect is, as of old, the sole "master of the work," and responsible for it during ten years after he has delivered it up to his client. His responsibility, indeed, is very great and various. When I was practising in Paris, between 1860 and 1870, a well-known architect having stated in writing to his client that a certain building would cost so much, exceeded that amount, and was condemned by a court of law to pay the difference with costs. The Parisian architect, practising architecture pure and simple, is paid less, has more defined responsibility and larger powers, and a much greater amount of work to do for his "five per cent." than his *confrère*, the English art architect. The Parisian, moreover, is better trained and more highly respected than the Londoner; nor do I see how the State injures him or the condition of architecture by its fostering care of distinguished students. On the other hand, I must leave your contributor to sketch the relative condition of the mass of English art architects, toiling manfully over their drawing-boards, and of the eminent contractor whom they sometimes employ.

The writer of your article asks:—"26. Is it not contrary to experience, and to what is called common sense, to say with Mr. White, 'While a dominant body like the Royal Academy maintains a sham school of architecture, no institution in this country can succeed in establishing a real one'?" Sir, such windmills as that of Burlington House are not to be tilted at without first calculating the consequences. If the Royal Academy is still injuring, from a professional point of view, both sculptors and architects, let us not forget that the injury is inflicted with the personal approbation and sanction of the Queen's Most Excellent Majesty. Surely no institution, particularly one of which the Queen is a gracious benefactor, can loyally set up anything in opposition to a body whose active head and "great prime mover" is the sovereign in Her Majesty's personal capacity.

And now, Mr. Editor, if your discursive contributor thinks otherwise, and proposes to ask me any more questions, I must beg him to wait for my answers until next September, which is my only month of leisure in the year.—I am, Sir, your humble servant, William H. White.

London: October 13, 1886.

Damp Spots and Water-Colour Drawings.

Sir,—May I ask, through your queries column, if there is any means of eradicating or of preventing the growth of damp spots on a water-colour drawing?—Yours, &c.

Morley Street, Manchester: October 12, 1886. Collector.

GENERAL.

The Pictures for exhibition in the galleries of the Institute of Painters in Oil Colours will be received on Wednesday, November 3.

The Fine Art Jury at the Edinburgh Exhibition began their work on Thursday in last week. Sir John Millais, R.A., was, however, unable to attend.

The late Alderman Boothroyd, of Hanley, has bequeathed a sum of 5,500*l.* to the local school of art.

The Winter Exhibition of the Birmingham Art Circle opened on Wednesday.

The new Roman Catholic Church, at Chiswick, was formally opened on Wednesday. The building is Italian in style. On the exterior the walls are faced with red brick. It consists of a nave and two aisles, and deserves notice as an example of an effective but cheap church. Mr. John Kelly, of Leeds, was the architect.

Keymer Junction Station, on the Brighton Railway, between Burgess Hill and Hayward's Heath, which was opened for traffic early in September, gave way on Wednesday, carrying with it about 40 feet of the platform.

Messrs. Campbell, Smith & Campbell have supplied the whole of the stained and leaded glass that is seen in the Constitutional Club. By an oversight their names were omitted in the description given last week.

The Richmond (Surrey) Select Vestry are applying to the Local Government Board for sanction to borrow 100,000*l.* for sewerage works and purchase of land.

The Question of erecting the proposed Public Buildings at Newcastle-under-Lyme has been relegated by the outgoing town councillors to their successors.

Mr. T. Lockerbie, a brassfounder, of Glasgow, who died lately in London, has left 30,000*l.* for the building of almshouses in Edinburgh. It is proposed to erect cottages at a cost of 400*l.* each.

Mr. J. W. Dod, a merchant, of Bristol, has offered 5,000*l.* towards the completion of the western tower of Bristol Cathedral.

Terra-cotta has been definitely decided on for facing the proposed Birmingham Assize Courts.

Referring to our description and illustration of the Constitutional Club in last week's issue, we omitted to mention that about 1,000 feet super of Hayward's patent "Semi-prism" pavement lights, supplied by Messrs. Hayward Brothers & Eckstein, of Union Street, Borough, S.E., have been fixed some 3 feet wide all along the front. This firm recently fitted their pavement lights to the whole of the Hotel Métropole, and we understand they are now proceeding with those required for the Northumberland Avenue Hotel.

The Architect.

THE WEEK.

The project for the Jubilee Church House has so far advanced that the Committee are instructed "to select a site in a convenient position; to choose an architect of the highest standing; to arrange that the building shall contain one large hall capable of holding 3,000 persons, two smaller halls, some half-dozen (more or less) smaller rooms to serve the purpose of committee-rooms, an office and chambers for a secretary, with clerks'-rooms adjoining, and accommodation for providing light refreshments." As yet, nothing is said about the means that will be adopted for the selection of an architect, nor is it certain what is meant by "highest standing." Is it social position that is desiderated, or artistic power? The design for the building should undoubtedly be sought by competition. It is not an every-day subject, and could hardly fail to excite interest in every architect's office in the country. The importance belonging to the work would spur young and old to put forth all their power, and we are confident the committee would have many admirable designs offered to them. On the other hand, if there is any suspicion of favouritism attached to the selection of an architect, we are afraid that the enthusiasm in the memorial will be abated.

An interesting discovery has been made at No. 23 Arlington Street. That and some adjoining houses are being demolished to allow of an extension of the Bath Hotel, of which Mr. E. J. Tarver is architect. Sir Robert Walpole once lived in No. 23, and it was there his son Horace was born. On removing some woodwork a distemper painting was found of *Hercules and Omphale.* According to Mr. Tarver, the figures are of life size, and are represented in the grotto on Mount Tmolus, beyond which a landscape is seen. Hercules sits to the spectator's right, holding a distaff, from which he twines a thread in the direction of Omphale, who is clad in the lion's skin and leans on the club, which she holds in exchange for the distaff. It is hardly possible that, if the picture had been painted by an artist of any eminence, the owners would have covered it in a way that seemed likely to last as long as the house existed. We consider it is no more than an example of the wall-painting that was quite common in London houses of the early eighteenth century. There were a good many foreign artists in England at that time, and, as they painted decorative work with facility and for very small pay, many of them were employed on landscapes and classical scenes—the latter being only adaptations of engravings.

Can anyone explain the reason which induces competition committees to steadily oppose the exhibition of designs? So many cases have occurred lately that it may now be said to be an exception when designs are shown. The latest case is the Infectious Hospital in Liverpool. The Architectural Society of the city, and many of the competing architects, have vainly requested the Council to exhibit the designs. The conduct of the competition has, of course, been straightforward, but the unsuccessful competitors cannot help feeling dissatisfied unless they are able to discover why they were defeated. When designs are seen together it is often possible for an architect to derive a hint from some of them, and which may be of use in other cases. A committee is rendering a service to many people by an exhibition, and if for no other reason one ought to be held in every competition. Unless competitors stipulate for an exhibition they may give up the hope that an opportunity will be given to follow out the process of selection.

The Royal Commission has at last been appointed to inquire into the harbour accommodation, the arterial drainage, and the railway system in Ireland. The members are Sir Joseph Allport, Mr. James Abernethy, C.E., Mr. J. Wolfe Barry, C.E., and Mr. J. Todhunter Pim. Railways are well enough represented by Sir Joseph Allport, who has acted as a manager for many years, and Mr. Barry. Mr. Abernethy has a reputation as a harbour engineer, and he has even reported on one of the Irish harbours. Mr. Pim is a statist, and will represent commerce. But it is remarkable that no one on the Commission can be considered as an expert in drainage, although the districts specified in the Commission—viz., the Shannon, Barrow, and Bann—have swallowed up enormous sums of money without any advantage to the country, because works were carried out on the reports of engineers who were without sufficient knowledge of the conditions of the districts. Unless another engineering specialist is appointed the report can hardly fail to be misleading in one department, which by many in Ireland is considered to be the most important.

The arrival of a new Lord Lieutenant is of late made the occasion of exhibiting the grievances of the Royal Dublin Society. The Society has done good work for a century and a half. It has, at the same time, fostered agriculture and art. But it had to succumb to the centralising spirit which reigns in South Kensington. As yet the advantages are not apparent. Irish farming continues to be in a backward state, and the art schools have not produced a sculptor that will serve as successor to John Henry Foley. By great pressure the Government were obliged to grant money for the erection of a museum which is in progress. But no provision appears to be made for the erection of a building to contain the library which belonged to the Dublin Society. The address which was presented to the Lord Lieutenant on Saturday implores His Excellency to help the Society in its difficulty, since the temporary provision which it has been possible to make for the national library has become so insufficient as seriously to cramp the usefulness of that which is, perhaps, the most directly useful of the group of institutions.

There is an end to the proposal for erecting statues of kings on Blackfriars Bridge. Few except the favoured sculptors will regret the fiasco, for the subjects selected by Corporate wisdom had as little to do with the people who would gaze on them as any mythological abstractions. If wiser counsels had prevailed there is no doubt that four valuable commissions would be now in the hands of sculptors, and the Coalbrookdale Company could show what is possible in bronze casting when conducted under favourable conditions. What is now proposed is to place clusters of lamps on the pedestals. If of good design they will be better than nothing. In designing the bridge nobody seemed to care whether the blocks were occupied or empty, for the engineer's power of ornamentation could not go beyond the parapet.

There was much local satisfaction when it was found that the field known as Ravenscourt Park, in Hammersmith, was to become metropolitan property, and to serve as a public park. The sum of 50,000*l.* was to be paid, and the price could not be considered too low for ground that is intersected by a railway viaduct. The Metropolitan Board of Works intended to bring in a Bill authorising the purchase, but now the trustees of the property announce that they can obtain a larger sum from a private purchaser. So much eagerness prevails to secure the place that the Metropolitan Board can hardly help paying the trustees any sum they may fix. But the arrangement must be determined without delay, or it will be too late to give the notices that are requisite for a Bill.

The French Minister of War has somehow excited the opposition of many French newspapers, but, as an equivalent, he has gained the approval of painters. At his desire, the Ministry of Fine Arts has given commissions to thirteen of the principal painters of military scenes for pictures which are to be placed in the regimental salles d'honneur. Among the artists are MM. Protais, Detaille, Berne-Bellecour, Le Blant, Lewis-Brown, and Morot. The scenes depicted will be generally modern battles, such as Sebastopol, Solferino, and those in Algiers. But Hohenlinden, Marengo, and Moscow are not forgotten. We are glad to find that as yet nothing is said about Waterloo. General Boulanger also proposes to have a history of the different regiments prepared, which will be illustrated by photographs of the large paintings.

THE BARONY CHURCH COMPETITION.

IT was natural for architects to suppose at first that the principle of professional assessorships in competitions was henceforth to insure equitable decisions. They forgot that the great law of compensation could not be evaded, and that the new conditions of selection would bring new causes for complaint. It was also forgotten that everything which arises in the Institute seems doomed to be a failure.

Mr. John Honeyman, of Glasgow, was a zealous member of the Council of the Institute at the time when the new scheme for competitions was prepared; indeed, it could be said of him that every meeting he attended involved a sacrifice of time and money that was exceptional in the history of the Council. Mr. Honeyman was sanguine enough to believe that what he had aided in doing was to be the means of reforming all the abuses of competition throughout the country. His letter which appears in another page reveals that he has become a victim on the first trial he made of the new machinery, although it was of the most regular form.

It is needless to say to our readers that Mr. Honeyman has deservedly enjoyed the esteem of his countrymen, and that for many years the commissions for the principal Presbyterian churches in the West of Scotland have been placed in his hands. His clients were satisfied. It was not, therefore, extravagant to suppose that when the Barony Church in Glasgow was to be rebuilt Mr. Honeyman would be asked, as a matter of course, to undertake the work. But new ideas have forced their way into the Presbyterian curia, and, like the rest of the world, they are converted to a belief in the virtues of competition.

A limited competition was arranged, and Mr. Honeyman was asked to take part in it. We say deliberately that he should have declined. Practice is as indispensable to success in competition as in dancing on the tight-rope, and it is one of the exceptional events in the history of such struggles to find a man carrying off the prize in his first attempt. There are many dodges, legitimate and otherwise, which are only to be derived from experience, and by comparing one's unsuccessful work with the prize-winner. Now Mr. Honeyman, although he was willing to approve of the competitive system for others, and to support it as a judge, had steadily declined to become a competitor himself, and since he was successful, his career was often selected to point the moral of opponents of competition.

Mr. Honeyman was so much of a novice in competitive contests, that when he was told the Barony Church was to cost 13,000*l.* he acted as if the commission had been put into his hands, and prepared a set of designs that could be carried out for that sum. That we need hardly say was an infraction of the golden rules which lead to success. It is needless to add that Mr. Honeyman stood almost alone; the majority of the unsuccessful, as well as the successful, competitors had acted on the principle that is as effectual in competitions as in drapers' shops, namely, that judges and committees are liable to be tempted, and when they see a fine thing will make a sacrifice to secure it. If that mode of doing business is unknown in Glasgow, Mr. Honeyman had only to recall the history of the most important of the modern competitions in Scotland. How did Sir Gilbert Scott contrive to carry off the Edinburgh Cathedral from native competitors? He displayed drawings in what might be called the subjunctive mood of design, and the pictures were too much for northern caution to resist. The trustees set aside the report of their adviser, and crippled their resources to erect the building with the lofty steeple which is now to be seen.

When, therefore, we find Mr. Honeyman asking, "Could the designs submitted in this competition by Messrs. Burnet & Sons, Messrs. Landless & Clifford, Mr. J. B. Wilson, and Mr. John Hutchison be carried into execution, with spires and every other feature and detail exhibited on any of the drawings to the committee, for the stipulated sum of 13,000*l.* or not?" he is simply revealing his own inexperience as a competitor.

We believe that Mr. Honeyman, when he acted as judge in the Hawick competition, began his duties by setting aside every drawing that was supposed to be without relation to the sum that was named. He gave dissatisfaction by so novel a course, and we imagine a larger sum has had to be expended than was anticipated. Such trifling affairs as competitions cannot escape the eyes of Nemesis. Mr. Honeyman now suffers because he interpreted the Glasgow conditions as he did the Hawick. The fact is, that in competitions as in theology there is an esoteric as well as an exoteric meaning for words, and the safe man is one who has been successful in making out what was intended rather than what is written. With a rigorous interpretation of formulas a modern Presbyterian church becomes an impossibility.

It is sad to find that Mr. Honeyman entered on a competition with so little acquaintance with the equipment that is necessary in such encounters for anyone who is eager to be victorious, and that he persists in an endeavour to force the committee and judge to explain matters which are tacitly accepted as fitted for concealment. He begins a long correspondence by asserting that up to the present there has been no competition at all, because in the successful design the condition of cost was disregarded. "Every member of the committee will, I think, see and acknowledge," says Mr. Honeyman, "that they have seen and been impressed by a design by Messrs. Burnet, which would cost about 18,000*l.*, when they have only seen a design by me costing about 12,000*l.*, and that they have not the least idea what kind of a design I could produce for 18,000*l.*, or how it might have affected their judgment." But why did not Mr. Honeyman endeavour to discover the inclination of the committee and act upon it? He tells us he was acquainted with the clergyman. Now a thirteen-thousand pound church is manifestly inadequate to display the orators who are selected to hold forth in the Barony Church. There is money in the congregation, and if one of the select competitors sent in a design to cost 28,000*l.*, the pastor of the church would be sure to set his heart on such a shrine for himself, and the design might therefore win. We admit the risk, but it is generally by risking much that big competitions are gained.

There is another point which suggests that Mr. Honeyman is outstepped by the age. Evidently he believes that architecture, like doctrine, should be orthodox. He writes to the secretary of the committee saying, "I have the very greatest respect for Mr. Pearson's judgment as a Gothic architect, and would never think of questioning his decision as to the relative artistic merits of the designs submitted to him, but in the present instance that was not the only consideration—there was special adaptation of the building as a place of worship for Presbyterians." What would become of assessors if a restriction like that suggested was enforced? By virtue of their appointment assessors must be held to know everything and to be infallible, otherwise the old system would be preferable. May we not even suppose that one of the causes through which Mr. Honeyman failed was the orthodoxy in his arrangements? Every day there seems to be an approach towards English ways in Scotland, and we are surprised that Mr. Pearson was not asked to design the Barony Church instead of reporting on the designs. If Mr. Honeyman insists on consistency with the old ways, he will find that he must betake himself to the hills like the Covenanters, and run the chance of arrest as a trespasser.

When we said that architectural assessors are supposed to know everything, we should have made one exception. The gentlemen who are selected occasionally show a strange unacquaintance with the ordinary laws of courtesy. Mr. Honeyman wrote a civil letter to Mr. Pearson, announcing that he had declined to accept the fee which was the reward of the unsuccessful competitors until the affair was cleared up, and he requested Mr. Pearson to aid him in expiscating the facts. Mr. Pearson is a timid gentleman, and may have fancied at first sight of the word expiscating that he was expected to assist in skinning the committee by whom he was employed, or in some similar operation. But whatever may be the extent of his temporary embarrassment, it was not enough to explain the sending of a curt letter written by a clerk to a brother-architect in the position of Mr. Honeyman.

Having failed in his own applications, Mr. Honeyman, still clinging to old ways, and believing that writers are possessed of an extractive power, turned the case over to his lawyers. He might have known that the committee had also a resource of that kind. Mr. Honeyman's lawyers

argue that their client has a right to see Mr. Pearson's report and the measurer's estimates, the committee's lawyers say they are confidential documents. Mr. Honeyman's lawyers assert that there were two designs submitted by the winners, although described in the explanatory statement as "the design." The committee's lawyers reply by saying "it was not intended that this explanatory statement, prepared for the committee alone, should be subjected to the minute verbal criticisms of competing architects or their agents. All of these criticisms, moreover, could have easily been obviated in the present case by the simple expedient of preparing two descriptions instead of one, or by the use of the plural 'designs' instead of the singular 'design,' and other like trifling alterations. What difference this could have made in the merits of the case we do not see," and they maintain that the committee's procedure has been in harmony with the conditions of the competition. Mr. Honeyman's lawyers retort by writing—"The contract from its nature required exact performance, and infers the right of each architect to see the plans and descriptions of the other competitors, and the right to receive from the committee the frankest statement of their proceedings, and the production of such papers as may be required to show that on their part they have observed the conditions which they imposed. The committee in this case have persistently refused all information and all access to papers under their control, and we share our client's opinion that he has been treated uncourteously and unjustly."

Here the case ends for the present. Will it go further? Considering the hazy language of the conditions, we do not advise Mr. Honeyman to seek the opinion of the Scottish Courts on the matter. But we have so often condemned the procedure for conducting competitions that we have no hesitation in saying that Mr. Honeyman has right on his side. Under the new system the merits of competition designs are ascertained in secret, and no one but the judge knows what process is adopted. It is only in exceptional cases that the report appears. If it is withheld, it is supposed to be out of commiseration for the competitors. In the case of the Barony Church it is said that all the designs are "freely criticised," and in consequence the report was reserved "only for the consideration of the committee." Now, we hold that the judge is not worthy of his office who does not freely and severely criticise the designs, but the competitors should not be condemned behind their backs. A competitive architect cannot afford to be thin-skinned, and he is not likely to wince under a statement of his defects. This is only common justice. When the system was introduced the utmost publicity should have been advocated; but at that time what was sought was the creation of a body of judges, and their convenience rather than the needs of architects in general. The Barony Church case is only one among many in which disappointments have arisen from the system which Mr. Honeyman himself helped to create.

THE TREASURES OF CHANTILLY.

IF anyone will open the volume on Mdlle. de Longueville by M. Cousin, says M. Charles Yriarte, and read the chapter devoted to the Grand Condé, they will see from a note written in 1843 that the Duc d'Aumale (then a young officer in command of a column in Africa) was thinking of a reconstruction of Chantilly, and had obtained several projects for the work. The prince had even caused something to be undertaken under the direction of M. Duban. But the Revolution of 1848 suddenly burst out, the projects were set aside, and the "Châtelet" was let to Lord Cowley. Things so remained until 1875.

Twenty-seven years after the revolution of February the prince, who was still under the sway of his idea, which had meanwhile refined and developed, called M. Henri Daumet to his aid. He explained his programme to the architect, and asked him to direct the reconstruction. The prince was a widower; he had also lost his sons, the Prince Condé and the Duc de Guise. There was no longer a necessity to provide for grand installations. Chantilly could thus become a residence, and a museum of souvenirs of its old days and of the Renaissance. In it could be placed memorials of the Grand Condé and the superb relics of the Château of Ecouen—examples of French art in its finest epoch which had come to Condé as heir of the Montmorencies.

Instead of constructing a new château and ordering decorations and furniture for it according to determinate plans, the château may be said to have been constructed for the sake of its accessories, since they were not merely works of art of great value, but they were the only witnesses remaining of the history of the building which had been destroyed. In them lies the spirit of Chantilly. The stained-glass windows of the Château of Ecouen, which are *chefs-d'œuvre*, had been found under one of the last Condés. The architect had, therefore, to provide a chapel to enshrine them as well as the old woodwork from Ecouen—which was also admirable in style. The latter comprised the fine altar by Jean Bullant and the bas-reliefs by Jean Gougon. The reliefs had been confiscated, but at the Restoration they again came into the possession of their legitimate owner.

Nearly everything had a similar history. Statues, altars, tapestries, furniture, enamels, bronzes, tombs, and funeral urns, which had been violated during the Reign of Terror, were only brought together by great trouble after forty years' seeking. Some objects were carried to the prince because it was known that, in his enthusiasm as a collector, he paid liberally for such things. When secured they had all to be adjusted and put in position. In fact, the programme which was laid down for the able and ingenious architect arose from the possession of so many historical waifs and strays.

There was another influence at work to aid in determining the character of the new buildings. The marvellous substructure existed still. The fosses, the triangular site, and the subterranean parts prescribed the form of the upper portion. The architect was therefore forced to keep within the rather bizarre perimeter laid down by the early builders. It had been accepted by Montmorency, and then by the Grand Condé, so the Duc d'Aumale could not avoid following them. The great towers of defence at the angles, the massive counter-forts, the posterns, and the drawbridges existed on the plan, and it was inevitable that they must also form a part of the new façade.

Let us suppose that the visitor enters the modern château by the "Constable"—that is, by the great slope which unites the rock with the esplanade where a statue of Anne de Montmorency is placed. In the centre of the façade is the postern; right and left are the approaches (the substitutes for the drawbridge of the heroic times) by which the fosse is scaled. On entering we find ourselves in the Cour d'Honneur; on the left is the vestibule leading to the interior. It gives access to a second, and we find on our right the Galerie des Cerfs; on the left is a staircase which leads to the chapel, and in front is the upper storey of the châtelet, which is built at the foot of the rock.

In the "Galerie des Cerfs" the visitor observes the chimney-piece over which is painted the *Vision of St. Hubert* by Paul Baudry, the saint being a portrait of the Duc de Chartres. Over the entrance is the Minstrels' Gallery, which is carried on sculptured corbels in Renaissance style; access to the gallery is obtained by a narrow staircase concealed in the wall. On one of the walls are the great tapestries by Van Orley, formerly belonging to the Comte de Toulon. The "Galerie de Peinture" adjoins, and is the largest of all. In it all the schools are represented by some specimen that was carefully selected. The "Tour du Nord" is devoted to drawings by the great masters. The ceiling has for subject the *Flight of Psyché* by Baudry. The same artist has painted the voussoirs with winged figures that are typical of the arts.

The "Galerie de Psyché" is long and rather low. It was constructed specially in order to receive the important series of stained glass windows from the Château d'Ecouen, representing the story of Psyché. They are most precious examples of grisaille, and local tradition has attributed them to Bernard Palissy himself. Marc Antonio made engravings from them. On one of the walls appropriately lighted by the glass are original historic portraits of French celebrities of the age of Henry II., with drawings by various masters.

At the extremity of the gallery is the "Tour du Trésor," which is a sanctuary of art. It is devoted to objects which have to be enclosed in cabinets, such as small antique bronzes, statuettes, gems, bijoux and other interesting objects.

As the "Galerie de Peinture" and the "Galerie de Psyché," meet at an angle, the Florentine plan is adopted, and a tribune is formed in the intervening space between the two. It contains the cabinet of engravings. Here, also, is placed the famous Raphael which the Duc d'Aumale purchased from Earl Dudley at a fabulous price. Beside it is another Raphael, the *Vierge des Orleans*, and it has for companions pictures by Lippi, Botticelli, and other masters of the fifteenth century, with pictures which belong to the period of Romanticism in France. This tribune will be hereafter a shrine to which students of art can turn from all countries.

The chapel, as has been said, is enriched with works from the chapel of Ecouen. The windows form a *chef-d'œuvre*. The glass represents the Constable Montmorency on his knees with his wife and children. The woodwork from the same building reappears on the walls. The altar is by Jean Gougon. In the

circular *chevet* are the tombs of the Condés, which were rescued during the Reign of Terror, after being carried off from the Church of St. Paul, Paris. They are adorned with statues by Pierre Sarkazin, and it may be remarked that all the artists whose names are associated with the chapel are Frenchmen, and belong to the best period of French art.

The small "châtelet" is interesting for two reasons. It is probably the only example that remains intact of the work of Jean Bullant, the architect, who worked with Philibert de Lorme, and is especially associated with the Grand Condé. The hero of Rocroi, amidst all his alterations, respected this part of the Chantilly of the Renaissance. While the château might be said to be assigned to the King, and to expensive assemblies, Condé made of this his own habitation, and desired to give a modern character to the interior. The woodwork, paintings, tapestries, furniture, decorations, are masterpieces of the best artists of the period of Louis XIV.

It is unnecessary to say that the cavalry of Augereau, the Récidivistes of the Terror, the Tricoteuses, and the Black Band left little behind them. The Minister of War under the Directory had, however, saved the façades. Years afterwards, by force of patience and gold, many of the objects were brought back and restored to their original places. Several salons have been reconstituted. In one of them the Duc d'Aumale has deposited his famous collection of rare and unique books.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

THE first ordinary meeting of the winter session of this society took place on Monday evening, in the new rooms of the Institution, Croft's Chambers, Infirmary Street, Leeds. The chair was occupied by Mr. C. R. Chorley, F.R.I.B.A., president. On the walls of the lecture-room and library were exhibited the drawings of the students connected with the society.

The Secretary (Mr. Bulmer) read a letter in which the Royal Institute of British Architects expressed their sense of the zeal, energy, and professional good-will shown by this society in organising and carrying out the examination held in Leeds during February last.

The President distributed the prizes won by the successful students, the results of the examinations being as follows :—

The society's silver medal and five guineas, to Mr. Fred. Mitchell, for a set of drawings of Oakwell Hall, Birstal.

Three guineas for drawings of a warehouse showing construction, to Mr. Hardman.

Three guineas for the best design of a fountain, to Mr. Tute

Two guineas for the best set of drawings done at the class of design, to Mr. Twist.

Two guineas for the best work done in connection with the Sketching Club, to Mr. Bedford.

Three guineas, given by Mr. John Franks, for the best design of a country hostelry, divided equally between Mr. Rhodes and Mr. Hardman.

The President, in his opening address, congratulated the members on the uniform success which had attended the work of the society. The younger members had been enterprising and active, and the Sketching Club had worked assiduously. He had no desire to decry the value of sketching, but he would offer a word of caution against devoting too much attention to that enjoyable department of work to the detriment of the more solid and less pleasurable portion of an artist's acquirements. The architectural student could no longer plead ignorance of the curriculum to be followed in preparing for his future calling in life. That had now been carefully laid down by the Royal Institute of British Architects, and it could not be too often or strongly impressed upon the coming race of architects that in the near future no one could hope to be held in esteem by the public, or consider himself qualified for the pursuit of the profession of architecture, who had not, by successfully passing the examination, qualified himself for admission into the circle of the Institute. It was to be regretted that Leeds students had not yet shown themselves fully alive to the duty which lay before them of preparing for taking this examination, and it was a melancholy reflection that the town, in this respect, compared very unfavourably with others of the same importance. There was no lack on their part of industry, yet it was at present undisciplined and often misdirected. He urged them to pursue their studies with a definite object in view, viz, qualifying themselves for reasonable proficiency in all the branches of knowledge which the practice of architecture demanded. He must speak in the highest terms of the quality as well as the quantity of the work done by some of the associates. The drawings presented in competition for the different prizes offered by the society were admirable. He particularly mentioned those submitted by Mr. Mitchell, which had carried off the silver medal of the society. These were all executed in the most praiseworthy manner, and their number showed an industry of which he could not speak too highly. The general work of the society had shown uniform if uneventful progress during the year. The most significant mark of this was seen in the necessity which has arisen for removal to larger premises. Less than ten years ago they met in a cellar of the Mechanics' Institution. The advance made in so short a time had been manifestly considerable. They must strive to maintain the same rate of progress, and seek in all directions for openings of usefulness. Financially the society was in a sounder condition than it had ever been before. They had been able to almost extinguish the liabilities which the activity of the past had laid upon them. Their assets, he believed, were more than sufficient to meet any claims that could be made against them. He acknowledged the great services which Mr. Fraser had rendered as hon. treasurer, and hoped they might long retain him in that position. They had been enabled to make an addition to their very insufficient library. All the works purchased had been selected with a view to assisting those students who were desirous of preparing themselves for the examination of the Royal Institute of British Architects. The library should have the first claim on the attention of the committee whenever they had any spare funds at their disposal, and he looked forward to constant additions being made to it in the future. He would particularly invite the attention of the members to the certainty of their being held in grateful memory by the society if they had the generous foresight to bequeath the architectural and artistic contents of their bookshelves to it. Amongst all the provincial architectural societies theirs had steadily led the way hitherto, and set an example of energy and foresight which others had not been slow to emulate. If they were to maintain this position, there must be no relaxation in their watchfulness and no stagnation in their movements. Above all, they must ever remember the pre-eminent importance of collective action, and the pressing need for setting aside individual advantages for the general good. A pleasing result of their change of premises had been that they were now enabled to place their sanitary exhibits in a position where they could be properly seen, and where the public could assess readily the advantages offered by the many improvements which recent years have made in sanitary science. They must foster this particular section of the museum in order that it might illustrate the practical aids which manufacturers now afforded towards the establishment of really healthy houses, and towards which object their indefatigable townsman Mr. Teale had done such yeoman service. Attention had recently been again called to the ever-recurring question of competitions, by the erratic and aimless movements of the Corporation Committee, who had in charge the arrangements for the erection of an Art Gallery for Leeds. Not the least peculiar of the resolutions arrived at by this body had been one rejecting, somewhat brusquely, the advice of the society regarding the sum to be expended on the erection of the new building. The opinion of nearly all the leading architects of Leeds, men of all others the most competent to form a sound judgment on a question of the cost of building operations, was entitled to influence the decision of the Art Gallery Committee, however well and wisely they might consider themselves to be advised. That opinion ought to have been doubly binding on them, because the most experienced of their professional advisers held views in the matter coinciding with their own. How absurdly ridiculous the amount fixed for the erection of the art galleries was, in comparison with the work to be done, any rational and honest architect would admit, when he heard that the rate per cubic foot which the Leeds Art Galleries Committee considered sufficient to erect public buildings hardly exceeded threepence. This, too, to include fireproof floors and all the special arrangements for lighting, ventilating, heating, &c., which the future presence of valuable contents demands. With care and economy a cottage house of the poorest character might be erected at this rate; but he defied the committee or their advisers, whom they quoted, to name one single public building of the same class, which was not a temporary erection, that had been completed for anything, even approximately, near the sum they had named. The curt disregard which the committee had shown for skilled testimony in the matter would certainly end in their landing themselves in a position from which they could only be withdrawn with ridicule to themselves and injustice to others. It was the duty of the society to keep a watchful eye on all that concerned the art of architecture, and to use their special knowledge in such a way as to prevent other bodies, which could not possess the same information on particular subjects, from misleading the public or wronging the ratepayers. That duty they would practice in spite of any taunts of being an "interfering and fussy body," and thus throw on others the onus of having involved themselves and the town in an undignified and ridiculous position. The committee had resented one very natural objection to their having widened the area of competition at the eleventh hour. That they had a perfect and

undeniable right to invite open competition no one would wish to gainsay; but, having once tempted local architects to engage in the preparation of designs by a distinct promise that the competition should be limited to them, it became a distinct breach of faith and a gross injustice to local architects to alter the whole basis of the contest long after the issue of the conditions of competition. Some of the local competitors would not have taken part in the contest had it not been a distinct engagement that the number taking part in it should be limited; others were actually debarred, in the absence of a professional assessor, from making use of the work they had already done before the changed conditions were issued, and in reliance on the belief that the word of honour of a committee would be as binding as it would be in the case of an individual. Having referred to some of the buildings of note which have been erected in the town during the year, the President called attention to the completion of the new charter of the Royal Institute of British Architects, so far as the labours of the Institute itself were concerned. This document was now before the Privy Council, and so soon as their and the Queen's assent was given to it they hoped to find the Institute engaged in the preparation of the by-laws. Another subject for congratulation was the increased tendency which the promoters of public architectural competitions showed in favour of the appointment of professional assessors to assist in the decision of these contests. That this movement was largely the outcome of the great spirit of cohesion which architects now exhibited was unquestionable. In conclusion, he said the cloud which had so long rested over building industries had as yet shown no decided signs of lifting. At all other points except the one of material prosperity their profession had advanced, and was advancing, and he earnestly trusted and believed that this progression, artistic and moral, would continue, and that the society would play well its part by helping on all that was for the true benefit and interest of the noble art of architecture.

Mr. T. Pridgin Teale moved a vote of thanks to the President for his address. He remarked that there were points of contact between the architectural and medical professions. Perhaps the most important of these was the sanitary one. It had been the business of the medical profession to discover how much illness arose from sanitary defects, and, having discovered it, to go to the architectural profession and say, "Will you find out the best way of getting rid of them?" Since those discoveries there had accrued an enormous amount of knowledge about architectural details which had a bearing upon the health of the occupants of houses, and there had been added to the duties of architects, and in some senses to their labours, a new department of their studies. It was a curious coincidence also that that evening they were meeting in the old operating theatre of the Leeds Infirmary. Referring to the education of the rising members of the architectural profession, Mr. Teale urged the importance of practical work being made a test in examinations.

Mr. L. Cooper, in seconding the motion, concurred with the remarks of the President with respect to the proposed Art Gallery, adding that people would not send pictures, statuary, or other works of art to be placed in back premises and in the most beggarly constructed place in the whole borough. He trusted the society would use every effort to prevent such a great wrong being done to the town.

Mr. E. Birchall and Mr. J. B. Fraser supported the resolution, and it was adopted.

It was announced that a contribution of five guineas had been received from Mr. Chorley in aid of the library of the Institution.

MR. HENRY MOORE, A.R.A., ON ART.

At the last distribution of prizes to the students of the Ealing art classes, Mr. Henry Moore was present, and delivered the following short address on "The advantages of learning to draw, to the skilled workmen and workwomen of all kinds." He said:—Though I am a painter, rather than a decorative designer, I may be able to suggest to you a few ideas which you may be able to turn to practical account, and, if I do, I shall have succeeded in my object. The decorative instinct seems to be inherent as part of our nature, for we find indisputable testimony to the fact that the prehistoric races possessed this faculty in a high degree, and the carving on the tusks of the mammoth and on the horns of the reindeer, executed by those races, show an amount of art feeling far in advance of that displayed by the modern Esquimaux, and who do similar work, but indifferently. Drawing is the beginning of everything. It is almost like the discovery of a new sense, and from the time we begin to draw objects we begin to discover their beauties, for it is a fact that we never draw without comparing, and this comparing one thing with another is the beginning of the formation of taste or judgment. The moment you represent an object you begin to discuss its artistic worth; you weigh its proportions and lines, and, in fact, judge it from the art point of view. It seems to me that so much has been said and written on the advantages of cultivating this faculty which is inherent to us all, more or less, that it is almost superfluous to press the subject on you. But the recent inquiry by the Royal Commission and the Press have proved, beyond doubt, that we are behind in these matters, that is, we have the sense to know a good thing when we see it, without having the power of originating it, consequent on our want of facility in drawing, and that is why we prefer many goods of foreign manufacture to those of home produce, and we are told by dealers that they are in better taste. It may not seem very patriotic, but it seems quite natural that we should take a thing that pleases us—dress or what not—without stopping to inquire whether it is of home manufacture or not. Formerly we were content to get our articles of taste and luxury from abroad, or to employ foreign designers; but we have entered upon the race, and it is no longer a matter of choice whether we will continue it. Our national prosperity depends in a large degree upon it, so it has become a matter of the extremest importance that we should make art education a serious business, and the facilities for doing so much more numerous than they were formerly, in the way of art schools, &c. When I was a youth an inclination to art was looked upon as a sort of amiable weakness, and parents did their utmost to dissuade their children from choosing it as a profession. Holman Hunt and many other great men are what they are in spite of opposition. Now it is quite a different matter, and art training has become a necessity. What is there, from a button to a girder bridge, to which it is not of importance? I have been round the room to see the drawings, and find many of them to be excellent, and would say, in conclusion, be serious in your work, always do the best work that is in you, and never leave what you have begun so long as you can add to it quality, texture, reflected light or shadow, anything that will add to its truthfulness, for in that consists what we call finish, not mere smoothing and labouring of the tints, but actual additions that will make it nearer to nature than it was before.

THE CORPORATION ART GALLERY, BIRMINGHAM.

Some of the pictures lent to the gallery by Mr. G. F. Watts, R.A., have been returned to London, as Mr. Watts desires to work upon them before sending part of his collection to South Kensington. The other portion Mr. Watts has sent to the Corporation of Nottingham for exhibition in their Art Gallery at Nottingham Castle. The whole collection will, says the *Birmingham Post*, leave Birmingham towards the end of the present month, after having been here for nearly a year, during which it has been greatly appreciated by the public. Birmingham, indeed, is very sensible of the obligation conferred upon it by Mr. Watts by the prolonged loan of so many of the greatest works of his life, some of them ranking with the noblest examples of English art.

On the removal of the Watts Collection, another of great interest will take its place: one the preparation of which is already so far advanced as to be nearly complete. This is an exhibition of the landscapes of Mr. F. H. Henshaw. Though, in his earlier life, Mr. Henshaw spent some years in London, yet, like his friend and former fellow-worker, David Cox, he chose Birmingham—his native place—as his permanent home. For over fifty years his name has been intimately associated with the town, and many of his finest works are the records of scenes in Warwickshire, notably in the Forest of Arden, especially in Packington Park, where some of the grandest oaks in England are to be found, and where they were still more plentiful forty years ago. But Mr. Henshaw's works are by no means confined to that district. The West and South of England, Yorkshire, Wales, Scotland, and Ireland were, for many years in succession, the scenes of his studies, and occasionally he extended his painting tours to Switzerland and Italy. In all places and at all times he was constant to his favourite subjects of wood, mountain, and water, in all the varieties of season and of effect; his pencil was capable of rendering with equal perfection the solemn shade of English woodland, the brightness of pastoral landscape under a summer sky, and the poetic gloom of an Alpine or a Highland pass. In the painting of trees and of river scenery few English painters have approached and none have surpassed him. When his works are brought together, representing a period extending from 1828 down almost to the present day, they will, in the range of Mr. Henshaw's subjects, constitute well-nigh as great a revelation of variety and power as did the first great collection of David Cox's works at Liverpool. It is rare indeed for one town to have the records of its art enriched by two such landscape-painters as Cox and Henshaw, and it is a source of high satisfaction to those who justly appreciate the survivor of the two to know that his genius will be worthily illustrated by the exhibition of this collection, while he is still with us in the enjoyment

of the calm repose of age, and with the capacity still, in a quiet and leisurely way, to practise his art.

We are glad to say that the desire of the Art Gallery Committee to form a collection of Mr. Henshaw's works has met with a prompt and hearty response from the possessors of the best examples of the painter. In no instance, we believe, has there been hesitation in complying with the request of the committee, still less a refusal; and we look forward to an exhibition containing probably a hundred and fifty carefully chosen works, all of high quality, and so varied as to illustrate all the fields in which Mr. Henshaw has studied, all the subjects which have specially attracted him, and the full period of his activity as a painter. One feature of the collection will be very notable, namely, that a large proportion of the pictures will be actual out-of-door work, for long before landscape painters generally finished their pictures on the actual scene, Mr. Henshaw learned and practised the great secret that a picture made up in the studio, from notes and sketches, never can possess the charm, the freshness, or the truth of one studied direct from Nature, and then left untouched. We must not, however, be tempted into an anticipatory criticism; all we have now to do is to tell the public what is being prepared for them, and to promise all true lovers of Nature a great enjoyment. We may add that some time will necessarily be occupied in bringing together and arranging the pictures already promised; but that it is hoped to open the Henshaw Collection in the course of November.

THE BRITISH SCHOOL AT ATHENS.

A MEETING of the supporters of the British School at Athens was held in Albemarle Street on Monday. Professor C. T. Newton was chairman.

The following report of the executive committee was read by Professor Jebb :—

The principal duties imposed on the committee at the meeting of February 2, 1885, were two—first, the building of a suitable house for the director, with a library and lecture-room attached; and secondly, an appeal to a large number of learned bodies for assistance in providing a suitable income for the maintenance of the school. The committee are happy to report that the first of these proposals has been successfully carried out. With the generous assistance of Mr. Penrose, who placed working plans at the disposal of the committee free of charge, a suitable house has been built on the plans submitted to the meeting, and the final instalment of the amount due to the contractor has been forwarded to Mr. Merlin, British Consul at the Piræus, with a request that he should take possession of the building in the name of the committee. The committee take this opportunity of thanking Mr. Merlin for the warm interest he has taken in their work, and the invaluable assistance and advice which he has at all times been ready to place at their service. The contract for the building amounted to 76,467 frs., almost exactly the 3,000*l.* at which Mr. Penrose, when laying his plans before the subscribers, estimated the cost. The honorarium of the Athenian architect, Mr. Theophilas, to whom the superintendence of the work was entrusted, and certain extras, chiefly connected with the garden, have brought up to the total cost to 3,240*l.* Mr. Penrose, who has, at the request of the committee, twice visited Athens during the progress of the works, has expressed his entire satisfaction with the manner in which the contract has been carried out. The committee have much pleasure in reporting that an immediately adjacent site at Athens has been granted by the Greek Government to the American school. In August 1885, Professor Charles Eliot Norton, on behalf of the American committee, wrote a most cordial letter when this offer was in contemplation, suggesting that a great saving of expense might be made by both schools if it were possible to build a common library, and thus avoid the duplication of expensive books of reference, and generously offered as a foundation the considerable collection which had already been made by the American school. The English building, however, was by this time too far advanced to admit of any common structure; but, in reply to Professor Norton, the committee expressed the hope that, by agreement as to purchases and a liberal system of mutual lending, it might be possible to effect the saving proposed by the American committee, so far, at least, as regards the rarer and more costly works so essential to an archæological library. This suggestion was very favourably received by the American committee. It remains only to indicate briefly the present aspect of the undertaking. The total amount subscribed and promised towards the capital of the fund has been 4,474*l.* 6*s.* There thus remains a balance in hand, as appears from the financial statement, of 1,027*l.* 14*s.* 4*d.*, including, of course, the subscriptions promised but not yet paid. Of this it is estimated that about 350*l.* will be required for furnishing, &c., leaving some 650*l.* for the foundation of a library and other initial expenses. In accordance with the second resolution above alluded to, applications for annual subscriptions were sent to the following bodies :—The Universities of Oxford, Cambridge, London, Durham, Dublin, Edinburgh, Glasgow, Aberdeen, and St. Andrews; University College and King's College, London; the Royal Society, the Royal Academy, the Hellenic Society, the Royal Geographical Society, the Royal Institute of British Architects, the Society of Antiquaries, the Royal Society of Literature, the Royal Archæological Institute, the British Archæological Association, and the Society of Dilettanti. Most of these, we regret to state, replied either that they had no spare funds beyond what was required for pressing needs of their own, or that they were precluded by their constitution from subscribing to such a scheme as the present. But it is with great pleasure that we can report the handsome offer of 100*l.* a year from the University of Oxford, and a like sum from the Hellenic Society, in each case to be continued for three years, and to become payable as soon as the school is in working order. The Hellenic Society further stipulates that their subscription should be conditional upon the provision of at least 300*l.* a year from other sources. Of this 300*l.*, the contribution from the University of Oxford provides one-third, and annual subscriptions to the amount of about 70*l.* have been promised by individuals. An anonymous donor has most generously offered to guarantee the balance of the 300*l.* for the three years covered by the grants from Oxford and the Hellenic Society, so that an income of 400*l.* is now, at least provisionally, secured. This fact has enabled the executive committee to avail themselves of a most timely consent on the part of Mr. F. C. Penrose to assume the directorship of the school for the first year, beginning in November 1886. The committee need not point out the importance to the welfare of the new British school of its being thus inaugurated under the guidance of an archæologist of European reputation in his own department, and an authority second to none in regard to the architectural monuments of ancient Athens. But the satisfaction which the committee naturally feel in announcing Mr. Penrose's appointment must not blind them to the duty of reminding themselves, and the general body of subscribers, that strenuous efforts are still required to place the school upon a thoroughly sound financial basis. In the first place it is not right that the anonymous donor above referred to should bear the whole burden of making up the income of the school from about 270*l.* to 400*l.* for three years. In the second place it must be remembered that this income of 400*l.*, though sufficient to justify the opening of the school, is a bare minimum for its maintenance and proper development. The committee have already stated in a previous report their conviction that an annual income of from 700*l.* to 800*l.* is essential to the thorough efficiency of the school. The most satisfactory plan would be to secure a permanent endowment, whether by investing a large sum of money, or by the application of educational funds already existing. But if this be not practicable, the only remaining course is to solicit annual subscriptions from those who are interested in the undertaking. The treasurer will gladly forward the usual banker's order to all who are willing to act upon this suggestion, and to promise subscriptions annually or for a term of years. The Bishop of Durham, who presided at the last meeting of subscribers, justly urged that the honour of Englishmen was nearly concerned in the speedy establishment of a British school at Athens. The committee feel that the permanence and efficiency of the school when established is a matter of not less national importance. They appeal, therefore, confidently to all who have helped them so far, and to those who have, for whatever cause, held aloof, to see to it that an adequate endowment is provided, in order that the British school may compete, in generous rivalry and on equal terms, with the French and German and American schools, which have already done such excellent work in the field of Classical archæology.

The Chairman, in moving the adoption of the report, congratulated the meeting on having obtained the services, as their new director, of such a veteran in archæology as Mr. Penrose. What was now wanted was an efficient staff to work under the director and to go hither and thither, reporting every fresh discovery, first to their chief and then to the committee of the school and the subscribers. To provide such a staff we ought to imitate the example of Germany and France, which are in the habit of sending out young men who had received special training under archæologists, such as M. Waddington. Special measures would have to be taken for the training of such students. To enable the school to do its work efficiently money was absolutely required, in order to make allowances for the travelling and other expenses of young men engaged in the work of exploration. He hoped that the interest shown in this work would not be of the temporary character which too often attended undertakings at first heartily entered into, but subsequently neglected or abandoned. It was a national disgrace that we should have left the peribolus of the Temple of Artemis at Ephesus to be explored by some future architect not of our own race.

Professor Jebb then moved the following resolution :—"That the present committees (general and executive) should

now be dissolved, and that a managing committee be appointed, to be composed as follows :—1. Of the three trustees and the treasurer *ex officio* and the hon. secretary. 2. Of five members to be appointed annually by the general body of subscribers. 3. Of members to be nominated, one by each corporate body subscribing not less than 50*l.* per annum towards the maintenance of the school." He said that it was just forty years since the French school at Athens was established ; it was just four years since the American school was opened there. If England was somewhat late in doing what France, Germany, and America had done, we might at least remember that the province of work was one in which Englishmen were not newcomers.

It was announced that Mr. Walter Leaf would be the treasurer and Mr. George A. Macmillan the honorary secretary, and that the five members of the committee appointed for the year were Professor Gardner, Mr. Gennadius, Professor Jebb, Sir F. Leighton, and Mr. J. E. Sandys, Public Orator of the University of Cambridge. Mr. F. C. Penrose had accepted the directorship for a year, and the school would be opened next November.

A vote of thanks having been passed to the Chairman, in replying he said that he wished he could look forward to pursuing the study of archæology in all its many branches. But in the small space which still remained for him he could only hope to devote himself to two subjects. One was the Corpus of Greek Inscriptions, the third part of which Mr. Hicks was now preparing, and which as far as Priene and Iasos would be issued to the public in a few days. The other was his lectures at University College. During the last year and a half he had brought out a course of lectures on Greek inscriptions, in which the subject was treated more popularly than by Mr. Hicks. He was sorry to say that at his lectures the only habitual attendants were one gentleman and three ladies, and one of the ladies was only seventeen.

ST. MARK'S, VENICE.

THE architect in charge of the work at St. Mark's, Signor Saccardo, has written a letter on his relations with the Society for the Protection of Ancient Buildings. He says :—

I thank you for having called my attention to the publication in the *Times* of London of the protest which the Society for the Protection of Ancient Buildings addressed some time since to the Prefect of Venice against certain hypothetical (*supposte*) alterations with which the pavement of the Basilica of St. Mark's is threatened.

It is a fact that such a protest came some time since to the Prefecture, but it is also a fact that it was found so devoid of foundation (*talmente priva di fondamento*) that it was not considered worth while to communicate it either to me, who have the direction of the work, or to the committee charged with watching it.

It is evident that in this case the good faith of the worthy society in England was deceived by inexact information. But it ought to know that, if formerly there was anything to be said about the restorations of St. Mark's, for some years now—*i.e.*, since the *personnel* and system have been changed—they are carried on irreproachably, so that the most vigorous and outspoken censors of past times have for them only words of praise and approbation.

I do not venture to urge my own name ; but, apart from what they may be worth, the worthy society should know my ultra-conservative ideas in relation to monuments, and especially in reference to the Basilica of St. Mark's, inasmuch as for some years they have prevailed and become known. And that they were known is shown by the fact that the St. Mark's Committee has counted me among its members since October 1880, and from Mr. William Morris having honoured me the year before by a very amiable letter on the part of the society so worthily represented by him.

Returning to the pavement, I do not know what can have given rise to a protest. It is true that in my report on the work done this year in the Basilica and that to be done next year, which was published in the "Archivio Veneto" and in a separate brochure, there was mention made of necessary repairs to be done to that large portion of pavement composed of great slabs of marble which is under the central cupola ; but it is also true that it is added "and this on account of the partial sinking, which seems to be increasing, and which causes frequent and dangerous falls."

Perhaps the word *riforma*, used without any expectation of false (*sinistre*) interpretations in an essay not intended for the general public, may have suggested who knows what alterations? In reality, however, there is only question of putting in their place those large slabs of marble, the support of which being continually diminished, there is danger of the fractures increasing, and in the meanwhile people slip or fall and break their heads.

Certain people believe that the pavement of St. Mark's was originally made unequal purposely to symbolise the waves of the sea. This is a prejudice—a fable. Whoever knows the structure and history of the edifice knows that there was once under the whole a crypt ; that this was demolished and filled up with rubbish without the precaution being taken to demolish the piers and columns which carried the vault, which, remaining upright, offer a resistance, while the earth round them gives way, whence the inequalities and the so-called waves of the sea.

However the matter may stand, no one thinks of correcting this peculiarity of the Basilica ; nor could it be done without the gravest inconvenience of another kind and much more serious, which this is not the place to discuss. But so far as the slabs of marble are concerned these waves never existed, and even of these there is no question of restoring the level (which is, in fact, hardly possible) ; but, as I have said, to prevent the matter getting worse, and that people should not injure themselves. Indeed, there are indications that the ground in certain points is still sinking, and accidents from falling are growing more and more frequent.

I have under my eyes a most sensible circular, dated August 1, 1880, which was sent me in that year by the aforementioned St. Mark's Committee, and which expresses clearly the object of the committee, and the perfect discretion with which it is intended to act for the preservation of our cathedral. Very well. After having proposed to "act with the greatest delicacy, with friendly observation, with the resolution to wound no national susceptibility," it added, very opportunely, "and without noticing simple and necessary repairs." Now here there is precisely question of simple and necessary repairs, with regard to which neither the well-deserving committee nor the most zealous society need have taken the pains to occupy themselves.

THE RHIND LECTURES ON ARCHÆOLOGY.

THE course of Rhind lectures now delivering by Professor Masson, of the Edinburgh University, has for subject "The Social System of Scotland in the Sixteenth Century." Professor Masson's extensive studies in this epoch of history are a sufficient guarantee that the subject will be handled in no exclusive spirit. Dealing in the first lecture with the country and its inhabitants generally in the period, the question of the size and distribution of the population was considered. The distinction of Highlanders and Lowlanders, with the prevalence of surnames in the various subdivisions of the country ; the state of the border clans ; the political unity of the country notwithstanding the turbulence and lawlessness of certain districts, and the reputed poverty of Scotland throughout the century, were brought under notice. The following lecture will be upon the sovereigns and the kingship, the recurrence of minorities among the sovereigns, its effect upon society, and the conception of the sovereign as theoretically the universal landlord in his dominions and head of the Militia system, with glimpses of Court life at Holyrood under James IV., James V., Queen Mary, and James VI. The third, fourth, and fifth lectures will treat respectively of the nobility, lairds, and unlanded gentry, the tenant-farmers, and agricultural population, in which many social features of interest for all time will be brought under review. The sixth lecture will be on the townspeople and the burghs, in which special reference is to be made to Edinburgh as a specimen burgh, with its crafts, guilds, and diversified community.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

THIS Association held its second examination of candidates for the offices of municipal engineers and local board surveyors at St. George's Hall, Liverpool, on Friday and Saturday, the 1st and 2nd instant. The examiners in the various subjects as set forth in the syllabus were, 1st, Engineering as applied to Municipal Work, W. G. Laws, M.Inst.C.E., City Engineer, Newcastle-on-Tyne (past president) ; 2, Building Construction, R. Vawser, M.Inst.C.E., Manchester (past president) ; 3, Sanitary Science, E. B. Ellice-Clark, M.Inst.C.E., County Surveyor, West Sussex (member of council) ; and 4, Public Health Law, J. Lobley, M.Inst.C.E., Borough Engineer, Hanley (president of the Association). Twenty gentlemen offered themselves for examination, and of these the following satisfied the examiners, and will receive the Association's certificate of competency :—E. Sykes, Reddish, Lancashire ; E. T. Beard, Lincoln ; T. Mallinson, Selby, Yorkshire ; R. J. Thomas, Carnarvon ; G. Ball, Scarborough ; Wm. Young, Pendleton ; J. S. Pickering, West Bromwich ; J. A. Crowther, Leeds ; V. H. Turner, Leeds ; M. W. Jameson, Leeds ; C. Brownridge, Leeds ; E. J. Silcock, Leeds. The next examination will be held in London in April 1887, particulars of which will be duly published.

NOTES AND COMMENTS.

The annual meeting of the Glasgow Institute of Architects was held on Tuesday under the presidency of Mr. James Sellars. The report referred to the efforts that the Institute is making for the study of art. Henceforth prizes called "The Glasgow Institute of Architects' Prizes" are to be awarded in the School of Art for the best set of four drawings of architectural ornament drawn from casts in the School of Art; the best set of at least four measured drawings from existing buildings; the best set of lecture notes on building construction. The first competition for the Travelling Studentship, in connection with the Alexander Thomson memorial, will be held next year. It is of the value of 75*l.*, and is open to students of the United Kingdom. Mr. Sellars said that the terms of the competition would be issued very soon, and the benefits would be enjoyed by the successful competitor during the summer of next year. Glasgow hardly knows the artistic treasures it possesses in Mr. Thomson's works. It is to a great extent true of Alexander Thomson, that a prophet is not honoured in his own country, and that a man is seldom known till he is dead. The following architects will hold office during the ensuing year:—President, Mr. David Thomson; vice-president, Mr. H. H. M'Clure; auditor, Mr. John Burnet; treasurer, Mr. T. L. Watson; and secretary, Mr. Wm. Maclean.

One of the most popular prints in France used to be the engraving after Horace Vernet's picture of Napoleon taking farewell of his Guard after his abdication at Fontainebleau. Afterwards Vernet's son-in-law, Paul Delaroche, painted the fine single figure of the Emperor as he deliberated over the sacrifice he was about to make. The abdication is once more to be painted. This time the commission comes from the Emperor of Russia. The artist is M. Berne-Bellecour, who has painted the Emperor seated, and showing the declaration he had signed to his marshals. The room in which the scene occurred was one of those appropriated by the Emperor, which overlooked the Jardin de l'Orangerie. In Vernet's and Delaroche's works little importance was given to accuracy of detail, but M. Berne-Bellecour has sought for garments of Napoleon, and will represent the furniture that existed in the room at the time of the abdication.

Some statistics have been prepared by the waterworks engineer of Bradford, which suggest how much water is wasted in a town of that size. An inspection was made in one part of Bradford comprising 18,774 houses. The consumption of water was 1,821,200 gallons per day of twenty-four hours, being at the rate of 22·47 gallons per head daily. It is needless to say many of the taps were found to leak. After the inspection and repair the consumption fell to 1,163,100 gallons a day, or an average rate per head of 14·35 gallons, the difference in the consumption of the twenty-four hours being 658,100 gallons, or at an average rate of 8·12 gallons per head. But when the calculation was restricted to the dead hours of the early morning, when there is most waste, it was found that the saving amounted to 966,000 gallons per head. In the remaining part of Bradford there was a daily estimated waste of 801,600 gallons. After no more than a partial repair the figures were reduced to 472,800 gallons.

The works at Pierrefonds, which were commenced by the late Viollet le Duc, are being completed under the direction of M. Lisch, who is one of the chief inspectors of historic monuments. The château of the Duc d'Orleans, the brother of Charles IX., was constructed in 1390, and was probably the greatest of the French seignorial palace-fortresses. It was strong enough to resist several attacks, but at length it was demolished by Richelieu's orders. The restoration was intended to be as exact a reproduction of the original building as could be devised with the materials that were available as guides, but the work has not satisfied all archæologists. A portrait-statue of Viollet le Duc is now seen at the entrance. He appears in a pilgrim's garb, with a gourd at his side and shells on his hat. In the principal chamber is a fresco, representing life in the fifteenth century, which was designed by Viollet le Duc.

At the present time there are not many English contracts that can be compared with one for completing the Ribble Navigation and the Preston Docks, which was undertaken by Mr. T. A. Walker, of Westminster. Differences have already arisen between him and Mr. E. Garlick, the engineer appointed by the Preston Corporation. Mr. Walker has asked for the supersession of the engineer, which is a rather novel proceeding. But after considering the subject in private at a special meeting the following resolution was adopted:—"That in reply to the letter of the contractor for the Ribble Navigation and Dock Works to the chairman of the Ribble Committee on the 8th inst., he be informed that the Corporation have every confidence in the engineer carrying on the works and doing full justice between themselves on the one hand and the contractor on the other, and decline to appoint or call in any other engineer, but require the contractor to proceed with the work in accordance with the contract." Any other result could not be expected. Unless engineers and architects are supported there is an end to building organisation.

The Liverpool Corporation have agreed to introduce the following clauses respecting building regulations in the Bill which they are to promote in the next session, viz.:—To require that when any street is laid out as a *cul de sac* it shall be at least 36 feet wide throughout. To prevent any court being laid out which does not at each end open at its full width into a street at least 30 feet wide, and shall not exceed 100 feet in length and 30 feet in width. To allow back streets which are to be paved as carriageways to be laid out at a less width than 15 feet, but not less than 9 feet. To make regulations as to fireplaces, stoves, flues, &c. To require, before the erection of any building is begun, plans and sections of the building to be submitted to the Corporation, and to be retained by them for the purpose of insuring the observance of their regulations and for future reference. To regulate the erection of hoardings in the streets with regard to—(*a*) their position and dimensions, (*b*) the length of time during which they may remain, (*c*) the fees to be charged for the privilege, (*d*) the "making good" or restoration of the footpath. To recover the cost of watching buildings or other property which the owners have failed to secure after receiving due notice of its dangerous condition.

The new Sorbonne in Paris could not do without sculpture, and several commissions have been received for the work. The two pediments are entrusted to M. Chapu and M. Mercié, who will fill them with figures that will typify the faculties of the Sciences and the Arts. The cost will be 60,000 frs. There will be eight figures, each about nine feet high, on the façade, of Literature, History, Philosophy, Geography, Mathematics, Natural Science, Physics, and Chemistry. They are to cost 5,000 frs. each. The ten seated statues will be 7,000 frs. each. In the grand vestibule will be two seated figures of Science and Literature, and in the rector's vestibule a figure representing the Sorbonne itself. On the principal staircase will be six seated figures of Frenchmen who have gained eminence in science and literature. Altogether the taxpayers will only have to pay about 9,000*l.*, and for that outlay they will acquire works by twenty-nine eminent sculptors.

The Scottish Law Courts continue to have the case of the Langholm statue before them. The right of one of the inhabitants to object to the removal of the Malcolm statue was not recognised, because he was not a subscriber to the original fund for the erection of the statue. Four subscribers have been discovered and they protest, but the Courts are opposed to their rights also. Lord Traynor says that the giving of a subscription towards the erection of a monument or statue does not *per se* confer on a subscriber any right of property in the thing erected. He is entitled to see that his money is expended for the purpose for which he gave it. But, that being done, he has no further right in the money given or in the object on which it has been expended. There may, however, be cases where by special agreement or by conditional subscription a right is conferred on the subscribers in the thing subscribed for, whether monument or anything else, but the Langholm case is not one of them.



FRESCO IN CHURCH OF

By SIGNOR E

22ma 1880



T SPIRIDION, TRIESTE.

AGHI-CATTANEO.



DRAWN BY A. BLANSFORD FITE.

HOLCOMBE WOOD, K

JOHN BELCE



"INK PHOTO." SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C

IT. GARDEN VIEW.

Architect.

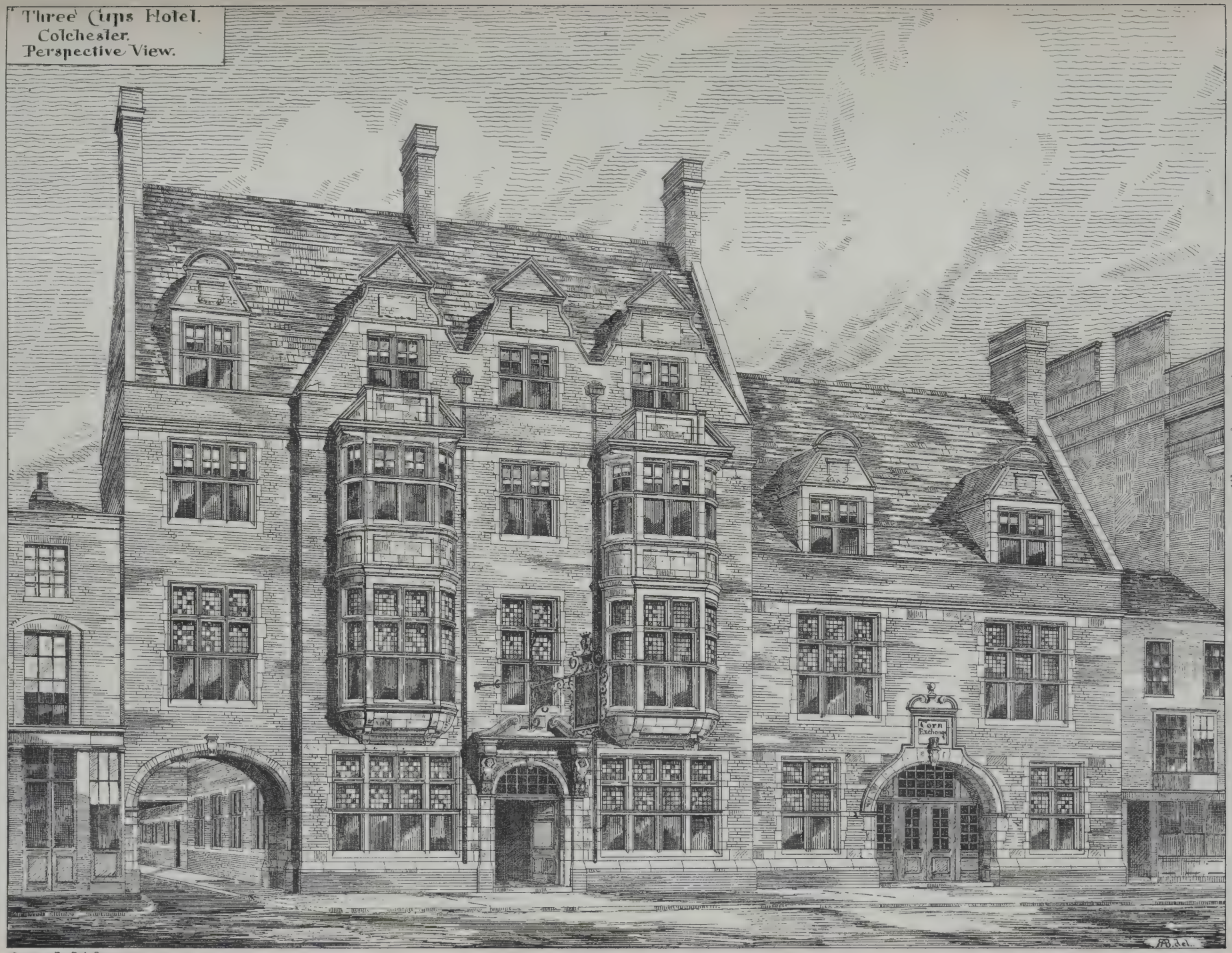


The Architect, Oct.r 22.nd 1886.

Printed by Sprague & C.o 22 Mauns Lane Cannon St. EC

DESIGN FOR WESLEYAN CHAPEL AND SCHOOLS DEWSBURY ROAD, LEEDS.

By T. BUTLER WILSON, Architect



The Architect, Oct.ʳ 22ⁿᵈ 1886.

Designed By R.A Briggs

Printed by Sprague & Cº 22 Martins Lane Cannon St. E.C.

ILLUSTRATIONS.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 31.—HOLCOMBE WOOD, KENT.—GARDEN VIEW.

NEW WESLEYAN CHAPEL AND SCHOOLS, DEWSBURY ROAD, LEEDS.

THIS design was recently submitted in limited competition for new Wesleyan church and schools, Dewsbury Road, Leeds, by Mr. T. Butler Wilson, architect, 12 East Parade, Leeds, and James Street, Harrogate.

DESIGN FOR THREE CUPS HOTEL, COLCHESTER.

THIS design, by Mr. Briggs, is also competitive. The drawing that is reproduced was exhibited this year at the Royal Academy.

FIGURES FROM ST. SPIRIDION, TRIESTE.

THE plate shows part of a frieze painted in fresco by Signor Barzaghi-Cattaneo, who now resides in Paris. A severe character was imparted to the figures in order to bring them in harmony with the building.

MANCHESTER ARCHITECTURAL ASSOCIATION.

THE twelfth session of the Manchester Architectural Association was opened on Tuesday with a conversazione in the lecture-hall of the Athenæum. There was a large gathering of the members of the society and their friends, the company numbering close upon five hundred. After the guests had been afforded an opportunity of inspecting the architectural drawings and models, specimens of decorative art and furniture, and specimens of building materials and construction, which were on view in the hall, the President (Mr. Lawrence Booth) delivered a brief address :—

The coming year, he said, would be made memorable as the jubilee of Her Majesty's accession. An exhibition was to be held at Old Trafford to illustrate the progress made in the development of arts and manufactures during the Victorian era. If that illustration should be made complete, the result would be the most marvellous exhibition the world had ever seen. No half-century, no century, probably no five centuries, could show such a record of real progress. They would probably be subject to the reproach that architecture as a fine art, distinct from the more general application of the term art, had not been enriched by the evolution of any new style that could with propriety be called the Victorian. Unless the "crystal" or glass and iron system of construction could be dignified by such an appellation, of which it could hardly be said to be worthy, they must accept the reproach for what it was worth, always remembering that the true principles of art were "not for an age, but for all time," and could not be invented like a new machine or those thousand and one industrial appliances which in the aggregate had conferred innumerable blessings on the people. Both the possibility and desirability were indeed debatable questions ; and whether in what architects had been privileged to do there were any germs of a new style time alone could determine. Those who were still engaged on the work were too near it to comprehend its proper proportions. It might, however, be fairly claimed for the Victorian era that, owing in a great measure to the initiatory efforts and fervid eloquence of the elder Pugin, it had seen the revival of Gothic architecture ; the resuscitation, for what it was worth, of the Queen Anne style ; and now they were in the throes of a struggle for the reintroduction of the so-called Jacobean. Concurrently with these efforts much that was best in the ancient styles of architecture has been faithfully adapted to the modern and diversified requirements of an exceptionally progressive age. Without wandering far afield for examples, the warehouse architecture of Manchester might be cited in evidence. Given the same atmosphere and other favourable conditions, there were streets in the city whose architecture was not unworthy to be compared with that of ancient Venice. But probably the architect of the period would prefer to base his credentials on the utilitarian and hygienic character of his work—the utilisation of such materials as cast and wrought iron and concrete ; terra-cotta, both as tiles and solid building material ; glass at its wonderfully reduced cost and in its almost unlimited capability of adaptation ; and even such articles as indiarubber and paper for constructive purposes. These, together with a host of "inventions" which the architect could for the most part only claim the credit of having adopted, had almost transformed the utilitarian character of modern buildings. He had, moreover, and none too soon, joined the ranks of the earnest and practical sanitary reformer. In all the essentials to comfort, to a healthy and therefore prolonged existence, the pauper of to-day was better housed than was the peer of fifty years ago—an assertion not less true than startling. Between these two extreme representative members of society there were others for whom much required to be done, and the architect of to-day was a willing co-operator in the good work. Aided, constrained, and sometimes, he was sorry to say, thwarted in his efforts by the numerous local sanitary authorities dotted all over town and country, he was actively engaged in the most beneficent branch of his profession—letting in light and air on thousands who had not hitherto had their proper share of two of heaven's best gifts. There was on such matters still much hesitation to be overcome in places where it should be least expected, and only the few had the full courage of their opinions. So recently as thirty years ago he (the President) industriously designed shutters for bedroom windows, not so much for the purpose of keeping out the burglar as for the exclusion of draughts of cold air, and incidentally the rays of the blessed morning sun. Since that time, and for nearly twenty years, he had slept with the bedroom window wide open, winter and summer, and had not paid the doctor 20*s*. during the whole of that period. Contrivances for blocking up the openings of bedroom fireplaces were gradually disappearing, and the old "four-poster," with its heavy and closely-drawn curtains, would, it might be hoped, soon be relegated to the museum of domestic curiosities. This partial awakening to the importance of a due regard to the laws of health was not confined to any one class. In so far as it increased it would be a valuable auxiliary to the architect's efforts, and be in most gratifying contrast to the supineness of fifty years ago. He trusted that in the arrangements for the illustration of architecture in the Jubilee Exhibition there would be the opportunity afforded of hygienic and utilitarian as well as artistic progress. Some disappointment, founded on the casual reading of the prospectus and the regulations, had been experienced at the apparent omission of provision for the display of architectural work ; but he was happy to say on the best authority that there had not at any time been such an intention on the part of the promoters, and he hoped his professional brethren would be well to the front in the display of what architects had done and were doing for the general good. A vote of thanks to the President for his address, proposed by Mr. Alderman Bailey and seconded by Mr. G. H. Gaddum (president of the Manchester Chamber of Commerce), was heartily accorded. Vocal and instrumental music followed.

ARCHITECTURAL FEDERATION AND THE R.I.B.A. NEW CHARTER.

THE replies to the circular issued by the Architectural Federation Committee are now nearly all to hand, and show over a thousand signatures in favour of closing the profession by Act of Parliament. With so large a response the committee did not think it right that any partial reform, such as that suggested by the proposed New Charter of the R.I.B.A., should be allowed to pass without discussion, feeling sure that if it were to do so it would greatly retard the progress of the greater reform so urgently needed by the profession at large. They have therefore decided to oppose the grant of the Charter, and have invited the Society of Architects to do the same. The latter body have, however, decided to meet the Council of the R.I.B.A. before entertaining the question, both bodies feeling that if the R.I.B.A. would defer their Charter and take the lead in framing an Act, they would achieve their object with rapidity, and raise themselves to the position they ought to occupy in the architectural profession, from which they have hitherto lamentably fallen short.

MR. RUSKIN'S MUSEUM AT SHEFFIELD.

RECENTLY communications have been passing between Mr. Ruskin and the local authorities of Sheffield with a view of obtaining some of the property of the St. George's Guild placed in Meersbrook Hall, Meersbrook Park, thus giving to all sections of the inhabitants ready access to some of the valuable treasures which that Guild possesses. Mr. Ruskin intimated his readiness to consider the question, thus conferring a new favour upon the people of Sheffield, although it was clearly intimated by him and quite understood by the authorities that none of the contents of the Walkley Museum were to be removed. The only other condition imposed was that any of the property of St. George's that might be placed in Meersbrook Hall would be liable to removal at any time. A day or two ago the Mayor wrote to Mr. Ruskin stating that he quite

understood this condition, and gratefully appreciated Mr. Ruskin's kindness in consenting to consider the placing of a portion of the property of St. George's at Meersbrook, a boon which he was sure would be most thankfully accepted by all classes of his fellow-townsmen. The following letter has been received by the Mayor:—"Brantwood, Coniston, Lancashire: October 15, 1886.—Dear Mr. Mayor,—I am entirely happy in the frankness and fairness of your letter, to-day received, and do not need to see the plan of the museum, but will at once begin the arrangement of a series of drawings, which may be placed anywhere so only that they have enough light well guarded; and a series of minerals which, if not equalling the Walkley ones, will be more generally useful. Nor shall they be taken away again unless the smoke or any other influence is visibly injuring them.—Ever faithfully yours, JOHN RUSKIN."—In another letter Mr. Ruskin says he will at once send the first instalment of minerals and the drawings, to be kept in the town hall, or wherever else it may be thought desirable, until the Park Museum is ready for them. He also states that every stone and every drawing will be catalogued when sent, with a sufficient description.

HAUGHMOND ABBEY.*

IT may not be amiss briefly to recall to our minds some of the characteristics which belong to the other three abbeys lying near to the foot of the Wrekin; to facilitate this, we may glance at the several plans which were made use of on the occasions of our visits to them. In the Cistercian house at Buildwas, dedicated to the Blessed Virgin, as all their churches were, the remains show in a very marked manner the grand simplicity which distinguished all they did—thick walls, low, massive piers, broad and simply-treated arches, and details of noble proportions. At this abbey the church and chapter-house form the principal part of the ruins; some of the domestic buildings have been turned into a gentleman's house. Lilleshall was a smaller house than Buildwas, and belonged to the Order of Austin Canons, and there the church again forms the main feature of the present ruin, but the remains of the domestic offices on the south side of the cloister are still extensive. That church was without aisles, and its sub-divisions are numerous. It is of later foundation than Buildwas, but the early parts of its work are very minute and beautiful. Very few changes were made in the buildings even at Lilleshall, and at Buildwas scarcely any alteration had occurred.

The Cistercians had no love of change, and as their rule remained unaltered, so did their ambitions.

The mighty works at Wenlock, built by the Cluniac Order, were far the grandest of these four abbeys, and there, again, the remains of the church are much the most extensive. They show more than usual changes during the occupation of the monks, as may be seen in the large lady-chapel at the east end of the church, and the prior's lodgings to the south. At this place also a gentleman's house has been formed out of the abbey buildings. It will be noticed that of the four abbeys referred to, three of them have the church to the north, with the conventual buildings to the south, whilst at Buildwas this arrangement was reversed, the church being to the south. No doubt the "lie of the land" and the position of the river at Buildwas dictated the change in this respect, but though their buildings were north of their church, they contrived to get southern fronts to some of them, as is seen by what remains of the prior's house and infirmary. But it is time we turned to our more immediate subject, directing our attention closely to these remains at Haughmond.

First of all, it should be said that the whole history of this place, so far as it has come down to us, is fully known, and may be read in the county histories, and in the Salopian guide-books by the late Mackenzie Walcott, published by Messrs. Adnitt & Naunton, of The Square, Shrewsbury. Next it may be pointed out that there has been a time when opportunities were better than now for getting a clear view of certain foundations which had been laid bare by excavations, but which are now more or less covered by vegetation or otherwise. Then, the descriptions of the buildings given by Mr. Walcott are patent to every one. So it must be at once said that perhaps there is nothing new to be told in respect of these buildings. It is, therefore, a mere matter of examination that is left to us. To this let us now proceed, first premising that the priory was founded between 1130 and 1138 by William Fitz-Allan for the Austin or Black Canons, and in 1155 was raised to the dignity of an abbey. It had many benefactors, and at the dissolution was valued at about 260*l.*

The present approach to the abbey is on the western side, and the buildings on the western front present an extensive range. To the north is a long blank wall of considerable height, which originally formed one side of a large block of buildings to the west of the cloister square. Then comes a gable end with a central arch, now the principal entrance to the premises, with an arch on each side, filled in with masonry. This is said to have been the refectory with an "undercroft;" next, a length of wall broken up by two large projections, which formed the kitchen fireplaces, and at the southern end the gable of a building flanked by turrets, which now forms the most prominent feature in the ruins, and said to be the infirmary. At the extreme north of this range stood the church, the southern wall of the nave of which in part still remains.

The outline of the church may be tolerably well made out from excavations which were made some years ago. It seems to have consisted of a nave with a north aisle only, with a projection to it near the west end either of a porch or tower; transepts, with eastern chapel or chancel. The foundations of the west end of the church are traceable; also some of those of the south transept, and in a degree the rough mounds appear to indicate the general outline of the building. The doorway on the south side of the nave from the cloister is complete, and in the south wall are the remains of a later doorway inserted near to the original one, and at about the centre of this wall the lower part of the side of a recess is visible. Two flat gravestones on the south side of the floor of the choir are still preserved and carefully railed off. They are dated, and bear inscriptions given by Mr. Walcott. To the south of the church is the cloister square; to the east of it is the front wall of the chapter-house, with its three elaborate openings; to the north the enriched doorway in the south wall of the church; to the west the long wall, which originally flanked a western range of buildings, and in it at the north end are two doorways, one blocked up and the other converted into a window-opening, in times much later than the original building. At the south end are two lofty arched recesses which have been called the "lavatories;" but there has been a doorway in each recess, and at present there are no indications of lavatory troughs or drains. The importance of these features hardly point to their use as lavatories, not that very beautiful work has never been employed for this purpose, for such is seen at Wenlock and elsewhere; but the loftiness of these arches is not consistent with the strong sense of appropriateness which characterises all early architecture. These points lead me to demur to the dictum assigning this as the place for ablutions. The west and south walls of the chapter-house are its only ancient ones, and they bear signs of a vaulted roof. In the floor may be seen a stone coffin built of a number of stones. A cover stone, if placed on this coffin, would be useful. To the south of the cloister square are considerable remains of what has evidently been a two-storeyed building, the main floor being entered by the fine doorway now remaining at the cloister level. No doubt this has been correctly named as the refectory, which invariably was entered from the cloister, and generally by a doorway of importance like this, which is a very fine example. The remaining features of the refectory point to a large and nobly-proportioned room with wide and lofty windows, as seen by those on the south side and the arcading in the south-west corner. It is seldom that the refectory is placed on the first floor, but it is evident that in this case the ever-varying levels of the ground have dictated it.

Taking the floor level of the church as being fixed, together with the desire that the cloister should be of one level, it is clear that the natural level of the ground on the southern side afforded height for a basement floor, which the ever-present ingenuity of the early builders failed not to avail themselves of. The varying forms of the arches employed in the front gable of this building is noticeable. In a very short length of wall the pointed, segmental, and semicircular arch are all used, and that in a manner dictated by common sense and the particular requirements of each opening. This block did not extend east and west the full width of the cloister square, for there are not only the remains of foundations showing its eastern end, but also distinct evidences of there having been a groined passage-way between it and the eastern line of the cloister buildings. This passage would connect the cloister square with the smaller court southward. The springers in this passage and a short length of groin shaft on the inside of the northern opening of the chapter-house are the only indications of groined ribs about the buildings. In a line with the western side of the chapter-house there runs southward an original wall of considerable length, and to the east of it there are indications of this wall having formed the western flank of an extensive range of buildings, and several remaining doorways in this wall point clearly to the same fact. The published plan defines such buildings as "the dormitory, with undercroft." Still further eastward of this range the position of the "Abbot's Lodge" is suggested, but the actual evidence of the appropriation of these buildings is not very strong. High up in the south wall of the chapter-house an original doorway, with an external staircase, are plain enough, and this rather points to a difficulty of direct approach to the church from the monks' dormitory, which was a very general rule. Here it may not be out of place to suggest that the monks

* A paper by Mr. C. Lynam, F.R.I.B.A., read on the occasion of a visit to the ruins.

dormitory might very well have been over the western range, as at Durham, and this would give point to the doorways at the north end of this range opening into the cloister, and also explain satisfactorily the position of the doorways on the south side of the church, which at Buildwas, Lilleshall, and Wenlock are opposite the eastern walk of the cloister, and not the western, as here.

Up to this point all the buildings are of the same date—that is to say, the church, the chapter-house, the refectory, the western cloister block, and the range running southward from the chapter-house are all unmistakably of twelfth-century architecture, but the remainder of the buildings are of later date. To the south of the refectory is what has been termed the "Base Court," a term adopted from the French monastic arrangement. To the west of this open court the cottage of the present abbey-keeper is placed, which erection has been made up for the most part of fragments from the original buildings; and on the outside of its western wall are two huge projections, which are said to indicate the kitchen fireplace, but this part has been so much altered and interfered with that its present condition does not very clearly declare itself.

Flanking the south side of the "Base Court" runs a very important line of buildings, the most perfect of any of the remains. This has been one great hall, with two entrances from the base court, two at the east end, two to the west, and a garden entrance in the south flank. Its windows have been admirably planned, not only for the admission of light and air, but for the enjoyment of the prospect without, as the seats in their recesses testify. The west end has been screened off; a passage has run between one stair turret and the other, which still exist at the angles of this building, at the west end. This hall is but of one storey in height, and a very noble apartment it must have been. The published plans assign it to the "Infirmary," and no doubt the monks took care of those of their number who from age or infirmity were unable to perform the round of daily task and nightly vigil, which the young and strong of their house had to perform, and no doubt monastic infirmaries were buildings of no mean order; but then, as with the other arrangements, so with this—they were strictly appropriate to their purpose, pleasantly situated away from the traffic and bustle of the general house, and having nearly always a chapel either within or adjoining. These were the usual accompaniments of a monastic infirmary. But who can say that they are present here? This hall is pleasantly fixed with its low-silled southern window no doubt. But then others than the infirm might well covet that advantage. All the other characteristics of the place point rather to the seat of entertainment than of repose, and it may well be that the abbot of this great house made this the hall of entertainment for his guests. In considering this suggestion it should be borne in mind that this building was erected at least two hundred years after the original works, when perhaps the possessions of the abbey had not yet grown less, and when it may be that the first strict rules were not absolutely sustained.

There is one small matter in connection with this building which is not without interest. It will be remembered that at Abbey Hulton the monks were almost convicted of having taken the gravestones of their earlier brethren and made use of them for the floor of a drain from their kitchen, Such was the position many of these stones were found to be in, but then the fact was covered by the possible excuse that a "scamping" builder might have put them there unknown to anyone; or it might be that an "Irish labourer," so to speak, had laid hold of them and put them unseen in the trench of the drain; but here all excuse is unavailable, for there is the fact that in one of the stone treads to the north-west angle turret of this building a former gravestone or coffin-lid has been made use of, mutilated, and brought to shape for its present purpose; so we see that hundreds of years ago a "society for the protection of the memorials of the dead" might even then have been useful, and that amongst a class of men we should least expect to have required it.

The great fireplace on the north side of this apartment is, of course, of much more recent date than the building itself. At the north-east angle of this room is a stone staircase, which leads to the upper floor of the long building running north and south at the eastern end of this hall. This building has been altered to such an extent as to make it difficult to unravel its puzzling fragmentary state. If the suggestion that the building which has been called the infirmary was in reality the abbot's hall, this range of buildings was most likely his private quarters. In modern times it seems to have answered the purposes of both kitchen and parlour, and it appears probable that originally it contained the offices required for service to the great hall. Its southern end projects into the original sunny gardens of the monks or abbot, parts of the ancient walling of which still remain. Having got to the brightest side of this venerable establishment, we might perhaps not inaptly close our inspection; but there are one or two further general points which should be noticed. The burial-ground was probably to the far north of the church. The walls are generally built of rubble from the rocks on which the establishment is built; the dressings are of, perhaps, Grinshill stone, and to this day bear the marks of the mason's tool and of his own distinguishing sign. The water supply came from a conduit in the wooded hillside to the east, and it is said that the fishponds lay in the valley to the north, whilst the entrance-gates, with their chapel and almonry, were to the west.

THE YARMOUTH TOWN HALL.

At last week's meeting of the Yarmouth Town Council the subject of the town hall was once more brought forward.

Mr. Wiltshire, in moving the adoption of the Works and Repairs Committee report, said the main feature was of great importance, for it was the question of the rebuilding of a portion of the town hall or its removal to another site. There were four courses that seemed open to the Corporation. First, the rebuilding of the hall on its present site, and the majority of the committee were in favour of this; but there was one point in this, and that was as to whether any one would guarantee the work. No one could do so, although Messrs. Bottle & Olley's reputation would be at stake. To take the town hall elsewhere would involve a very great deal of expense. Another suggestion was to remove the assembly-room from its present site, or to erect a lighter one. Then it had been proposed to hold a meeting of the ratepayers; but he thought the Council, as the representatives of the ratepayers, were capable of dealing with the matter. He regretted to say that the settlements in the town hall continued, and it was a matter the Council should deal with at once.

Mr. F. Danby Palmer moved as an amendment:—"That, having regard to the fact that the ratepayers of this town have grievously suffered in consequence of the resolution passed by them in public meeting assembled on April 20, 1878, not having been properly and duly considered by the Town Council, it is not now desirable to proceed with the work of repairing or rebuilding the town hall until another public meeting of such ratepayers had been held to consider the subject."

On a vote being taken, it was found that five members voted for the amendment and twenty-nine against. The report was adopted.

The following resolution was afterwards adopted:—"That the committee recommends the Council to pull down forthwith the west portion of the town hall according to the plan of Messrs. Bottle & Olley, and that no contract be entered into for rebuilding until further consideration by a committee of the whole Council."

Correspondence

French Architects and their Responsibility, &c.

Sir,—It is not agreeable to have to deal with a writer who cries *peccavi* and begs to be let off on the score that he is compelled, in spite of himself, to be inoffensive during eleven months of the year—for, in a few words, that seems to be the meaning of the beginning and end of Mr. White's last epistle. I am not insensible to an appeal of the kind, and as I consider Mr. White has been humiliated enough for his escapades in the fields of history and language, I would gladly overlook him. But I consider it incumbent on me, as the cause of the offence, although unwittingly, to take the earliest opportunity of protesting against the indecorous attack on Her Majesty, which Mr. White has introduced in his reply to me. A week or two before, when commenting on my article, Mr. White ostentatiously referred to his loyalty. Why that was done was not apparent at the time. It is evident now that it was simply a means to give more force to the blow that was impending. Why should Her Majesty in person be rebuked because the Academicians will not set up professorships and lectureships to gratify Mr. White and his little band of friends? The offence may be very grievous, but the old English principle, "the King can do no wrong," is surely wide enough in its application to cover a case of that magnitude. Even if we assume that it does not, still, what must we think of a man who selects a time when all subjects are about to unite in paying a tribute of respect to their Queen, as an opportunity for writing in 'Ercles' vein after this fashion?—

"If the Royal Academy is still injuring, from a professional point of view, both sculptors and architects, let us not forget that the injury is inflicted with the personal approbation and sanction of the Queen's Most Excellent Majesty."

The charge is so groundless and unworthy that I cannot suppose it will be permitted to pass uncensured by the members of the Royal Institute of British Architects, who have the privilege of wearing the Queen's Cloth. It is also deserving of

reprehension by the Council of the Institute. A society that boasts of being under the royal patronage should show its gratitude by exacting loyalty from its officials in their public utterances.

I also trust that Mr. White's words will open the eyes of architects both in and out of the Institute, and suggest the extent to which the men who are eager to revolutionise English architecture are prepared to go for "the cause which they have at heart."

Here my letter ought to end, but on second thoughts I will ask the reader to bear with me while I say something on the condition of architecture in France, since Mr. White has made a show of replying to what I suggested on the subject. He tells us that architecture in England and France cannot be compared, and then characteristically he sets about a comparison. Mr. White makes some novel discoveries, which may be summarised as follows :—

Paris.	*London.*
The architect in Paris practises architecture pure and simple. He is absolutely an art architect.	The English architect is a house agent, surveyor, valuer, &c.
He is the master of his contractors.	
He is their social and artistic superior.	He is the inferior of the "eminent contractor."
He is, as of old, the master of the work.	
He is better trained and more highly respected than the Londoner.	He is paid more and does less work than the Parisian.

Here again we can observe the power of Mr. White's sense of what is apposite. To decry the existing practice of architecture in England, he selects a time when the Institute is presided over by a representative man who has worthily acted already as President of the Surveyors' Institute. Now, sir, when people talk of pure and simple architects, they forget the history of architecture. In the best periods architects were prone to undertake any worthy kind of work that related to building. If Philibert de Lorme was not only an architect but a contractor (and so much was he to the manner born that his contemporaries doubted his honesty in that capacity), why should not a less able artist be allowed to measure, value, or sell a building when he is invited to do so? Many French architects act on the principle, and believe it is not necessary to be hoity-toity in the selection of work.

It is only necessary to use one's eyes to obtain evidence. A Cook's tourist, as he is whirled through the streets of Paris, can hardly fail to be reminded of home by the enormous canvases on vacant building sites announcing that particulars are to be obtained of M. So and So, Architecte. If the tourist can find an opportunity to escape from his watchful guide, and will stroll about the streets, he has only to look into the first house-agent's shop to see drawings and photographs of several examples of that class of house which is suggestive of a highly-developed state of speculation, and he will find, as in London, that every agent has his favourite architect, or the architect has his favourite agent. If the tourist be of an inquiring turn, he will have little difficulty in hearing of French architects who do not wait for commissions to come to them, but, like city architects, work on the financial sense of mankind, and make the commissions be created for them. There is much before him to suggest that the French architect is not unlike his English brother in having a desire to gain money to pay his way. Our tourist will even discover that if the "eminent contractor" does not abound, the "speculative builder," who is near akin to him, flourishes in the land, and is duly respected by architects. The tourist has only to turn to the last book of the realistic novelist, and he will be enlightened about the relation of Parisian architects to men of that class. A few words like the following will reveal a good deal to him :—"Avant-hier, j'ai découvert un architecte qui travaille pour un grand entrepreneur. Oh! non, on n'a pas idée d'un architecte de cette ignorance : un vrai goujat, incapable de se tirer d'un décalque ; et il me donne vingt-cinq sous de l'heure, je lui remets ses maisons debout." Should the tourist imagine that he might do "a little business" with some production of his own if he knew such an architect, he has only to go to any of the great ateliers, and with tact he will discover that many of the best and most ambitious students, who are trying to get on the road to the Institut *viâ* Rome, are willing to turn aside and give their best skill to the speculator and his architect for an equally modest stipend.

I am not suggesting that every architect in France is connected with a speculator. That would be as absurd as to lead young folks to suppose that all the French architects are pure and simple, with rosettes in their button-holes, and a legion of contractors kneeling before them. In all countries the conditions under which life is carried on are pretty much alike, and everywhere architects have to accommodate themselves to what is about them. Nor can I see that architecture suffers by bringing an architect into a close relation with life—which nowadays means buying and selling. I doubt if the City of London can show a building that would be more pleasing to the eyes of a French artist than the Bible depôt in Queen Victoria Street, which is the work of an architect who is not above surveying or letting a plot of ground. On the other hand, there is a risk that the pure-and-simple architect may forget the susceptibilities of the flesh among common folks. May I not say that Mr. White was disabused of some of his prepossessions when, on visiting Cardiff Castle, he discovered that "art" did not necessarily mean tightly-fitting windows and doors and other conditions of the comfortable?

It is natural that Mr. White, with the pure and simple in his mind, should see nothing remarkable in the enactment to which I alluded, and by which French architects are held responsible during a long term of years for the stability and independence of repair of every building they designed. Apparently he considers that, like an aristocratic variety of gout, it is a proof of descent, and they ought to be proud of it. They are the representatives of the masters of works—that is, of the fine, mysterious fellows who play so important a part in some modern imaginative disquisitions on Mediæval art. Unfortunately the French architects are not sentimentalists, like Mr. White, and they think more of the monetary meaning of their liabilities under the Code than of the prerogatives which responsibility confers. "Nous vivons constamment," says one honest architect, "avec l'épée de Damoclès suspendue au-dessus de notre bourse et de notre liberté parfois," and physiologists would probably conclude that the bald heads which are so remarkable a phenomenon in an assembly of French architects, are owing to the constant apprehension that the sword is about to fall. There is not, I believe, an architectural society throughout France that has not tried to get rid of a liability that in most cases is inequitable. So much has been said and written on the subject, it would be rash for any one to say they have read all the reports. But I have no hesitation in defying Mr. White to produce an authoritative document by which the French architects recognise any right to be held liable from their relationship with the masters of works. In France logic is taught generally, and as there is no evidence of the duties, responsibilities, or rewards of the Mediæval officers, a French architect wisely refrains connecting himself with them. What was a master of works? Judging from the archæologists' explanations, the phrase is so elastic that it may be taken to mean anything and everything. Language with that quality is dangerous to meddle with in a case of damages.

There is one reason which upsets the master of works theory. If the responsibility had been founded on it, then it must have been continuous from the Mediæval times to the Revolution. But the remarkable fact is that the pure and simple architect was free from the ten years' liability prior to the promulgation of the Civil Code. This is evident from the most interesting commentary on the ancient "Coutume de Paris," by Antoine Desgodets. There we read how the master masons and other artisans were responsible during ten years for any fires which might arise through defective construction, how the contractors, masons, and carpenters were responsible during ten years for the edifices they constructed, how other workmen were responsible for a single year, and so on. The owners and tenants had likewise responsibilities. But not a word appears about the responsibility of an architect acting as designer or superintendent of works. If architects are referred to, it is merely as experts in case of dispute, for Louis XIV. appointed twenty-five of them and twenty-five contractors for masonry to act as *experts jurés*. Desgodets, it will be remembered, was one of the *protégés* of Colbert, who sent him to Rome in 1674. Afterwards he lectured on building law, among other things, and is an undoubted authority on what was enforced in his time.

Under the Old Régime, architects, like other worthies, were able to escape from the consequences of their incapacity or neglect. This is plain from the notorious case of Claude Perrault, the "méchant médecin," who is gibbeted by M. Boileau and extolled by Mr. White. He was guilty of the most extraordinary blunders in the Louvre, some of which had to be remedied at great cost, while some were irremediable ; but there was no attempt to make him refund the money he misspent. It can be supposed that ex-students of the Académie Royale d'Architecture would not fail to bring forward so remarkable a precedent to safeguard them against any liability for defects in their own buildings.

One thing seems certain, that prior to the time when the Code was formalised the architects enjoyed immunity from responsibility. Then a new state of things was created. It is reflected in the humble work of the index-maker. Look at the index of a treatise on the "Loix des Bâtiments," published before the Revolution. Several references will be found under the head of "entrepreneur," while the word "architecte" is ignored. Then take up one of the early editions of the Code, and on turning to "entrepreneur" the reader sees "V. architecte," and he discovers that the Codists made no difference between the two classes. Henceforth the architects were to pay the penalty of their old privileges by the terrible clause No. 1,792, which

haunts many minds :—"Si l'édifice construit à prix fait, périt en tout ou en partie par le vice de la construction, même par le vice du sol, les architectes et entrepreneurs en sont responsables pendant dix ans." The old masters of works must pity their nominal successors who have to work under such conditions. No wonder so many are prematurely bald.

Mr. White must have known all this when he wrote about the responsibility as if it were a becoming arrangement. I can only explain the anomaly by the supposition that the passage was dictated by the gentleman who exercises the office of Mentor towards Mr. White. Doubtless there are other difficult passages in his letter that could be traced to the same source.

Mr. White professes to be unable to understand why I should have introduced the subject of French responsibility when French education is under discussion. The two are closely, I might say, inseparably united. Why did the Codists insist on putting architects in so perplexing a position? One writer says it was through ignorance, another through prejudice, and various explanations have been offered. I maintain that it was owing to the architectural education that was given in the days preceding the Revolution. Then, as now, incompetent men were let loose from the official school to practise architecture. It was impossible to dispense with the system of education, for whatever may be the form of government, a corps of artists must be provided for its glorification, and a reform of the system was difficult. But a check was devised; bane and antidote were put together. Men without practical knowledge were allowed the opportunity of setting up as architects, but the liberty was accompanied by the liability for every defect that should occur above and below the ground. It is not even stipulated when redress is to be sought from the unlucky architect, and an owner can allow the defects to be aggravated by time and neglect as long as his claim is within the stipulated period. If architectural education in England should at any time assume the French form, the safety of the public will demand a similar clause; while no legislator would attempt to have the obnoxious clause struck out of the French Code, or amended, until some system with the good qualities of English education is introduced in France.—Your obedient servant,

THE WRITER OF THE ARTICLE ON "THE ROYAL ACADEMY AND EDUCATION."

The Barony Church Competition.

SIR,—After abstaining from competitions for many years, I recently accepted an invitation to engage in a limited competition for the new Barony Church in Glasgow, as the chances of fair play seemed exceptionally good. I have been unfairly dealt with; and as I think my experience in this case may be instructive to others, I send you a short account of it, and illustrative correspondence. Since the committee intimated their decision, now four months ago, I have been vainly endeavouring to get from them such information as would enable me to judge how far they had disregarded their own conditions; but they have persistently refused to give any such information, and I regret to say that their conduct in this respect has been approved—at least so they assert—by Mr. J. L. Pearson, R.A., who acted as their professional adviser. Having been informed on excellent authority (the testimony of well-known Glasgow architects who had seen all the designs) that the conditions had been grossly violated,* I first appealed to the committee and to the clergyman, Dr. Marshall Lang, personally on the subject. Receiving from them only evasive answers and assurances that they were not at liberty to show me either Mr. Pearson's report or the report of their own surveyors, I next appealed to Mr. Pearson himself, who declined to give me any answer whatever! (I enclose a copy of this correspondence.) My next step was to hand the matter over to my law agents, who tell me they have exhausted every means of having the matter settled extra-judicially, and that they have now received a final reply from the agents of the church declining to give any information or to continue correspondence further. (I send you this letter and two which preceded it.) Before deciding on further action I think it is right to give our professional journals, and members of the profession generally, a statement of the issues involved, and to invite an expression of opinion as to their importance or otherwise to the profession. If the committee in this case are allowed to have their own way, we shall have precedents established for the three following things :—

1. That in a competition where the total expense is strictly limited to 13,000*l.* competitors are at liberty to submit to the committee designs costing 16,000*l.* or 20,000*l.*, or indeed any sum they please so long as they also submit along with these drawings showing how much of them can be done for 13,000*l.*; or, alternatively, so long as they state in their report that part of the design they submit must be omitted if the stipulated sum is to be adhered to.

2. That in a competition where the cost is strictly limited, and where it is a condition of the contract between the committee and competitor that a surveyor shall be employed to report upon the designs, "so that they may be compared on a uniform basis as to cost," a committee is justified in refusing to give a competitor who challenges the justice of their decision any information whatever as to the grounds on which that decision is based, or to show him the reports or extracts from the reports of their professional adviser or their surveyor bearing on this point.

3. That in such circumstances a professional adviser is justified in refusing to give the aggrieved competitor any information; in withholding his report, or so much of it as bears on the point at issue; and, practically, in combining with the committee to keep the whole transaction dark.

If you will take the trouble to wade through the correspondence which accompanies this, you will see that these are the points involved. I have made them, I think, perfectly plain both to the committee and to Mr. Pearson, who have acted so far as if they were ashamed of themselves, but with an unwavering determination to refuse more light.

I ought perhaps to mention that Messrs. A. J. & A. Graham, who wrote the letter dated September 28, are lawyers of good repute. This seems the more necessary as their succeeding letter, dated October 4, is, so far as it relates to the point at issue, simply untrue. They say that I have received all information necessary to satisfy me of the justice of the committee's decision, and the fact is that I have not up to this date received one single atom of information from the committee. The questions asked in my first letters of June 16 and 28 remain unanswered, as Messrs. Graham must know perfectly well. In these I ask for the only information which could possibly satisfy me or any other person interested in the committee's decision, and it is still denied. The committee and their advisers have been at least consistent in this, and I hope their conduct may receive the public recognition it deserves.

I shall be much interested to know what the members of the profession think of the three points mentioned above. To me they seem important, and not matters to be left in doubt.—Your obedient servant, JOHN HONEYMAN.

Glasgow: October 15, 1886.

* My information was to this effect :—(1) That it was manifestly absurd to suppose that any of the designs placed in order of merit above mine could be carried out in their complete form, as shown, for the stipulated sum. (2) That the surveyors' report bore that the designs of Mr. W. F. McGibbon and myself could be carried out for the stipulated sum, but that the authors of all the others placed higher in the order of merit had violated the condition as to cost, some of them flagrantly. This being so, my anxiety to see the reports (which are still withheld) can be easily understood.—J. H.

The Late Mr. E. W. Godwin, F.S.A.

SIR,—At a meeting of the Council of the Society of Architects held this evening, a motion of regret at the loss which the architectural profession has sustained in the death of so distinguished and talented a member of it as the late Mr. E. W. Godwin was proposed by the President, Mr. H. R. Gough, seconded by the senior Vice-President, Mr. J. J. Lish, and carried unanimously. We should be glad if you would give this publication.—Your obedient servants,

EDGAR FARMAN, Hon. Secretary.
G. A. T. MIDDLETON, Secretary.

5 Great James Street, Bedford Row, W.C.:
October 15, 1886.

Elland Town Hall Competition.

SIR,—I write to call your attention to a few facts in connection with the above, as advertised recently in your columns. Wishing to obtain particulars, I wrote on October 7 but failed to get an answer. I waited patiently until the 15th, when I ventured to send a gentle reminder. To this I received a short reply, stating that the particulars were exhausted, and it was thought (?) that there was scarcely time to prepare designs, seeing that they must be delivered by the 6th proximo. After writing again, saying that I still thought there was ample time, and wished still to have particulars if possible, at length, on the 19th, I was allowed a copy of the precious document which had, as a great favour, been specially prepared for me.

Let me give you a specimen of the generosity and respect for the architect's profession displayed in the printed conditions. The fortunate man whose designs are selected is to receive a commission not exceeding 4 per cent. on the work, inclusive of quantities! He is allowed to state his commission, so, if generously disposed, he need not take advantage of such heedless liberality, but he is expected to include in his charge "all information required by the contractors." I may further mention that the directors "reserve to themselves the right of making any alterations they may deem necessary in the selected plans." Now, seriously, Mr. Editor, what are we coming to when public competitions are sinking to such a level, and what

will the profession of an architect and his status be worth ten years hence, if this sort of thing is allowed to increase? And, further, what will be the type of the public buildings by which our towns are to be disgraced—though not permanently, let us hope, as the work done by those with so little respect for themselves and their profession generally does not last very long to repel by its ugliness, and swell the death rate by its unsanitariness.—I enclose my card, and remain, yours very truly,

October 20, 1886. INDIGNANS.

Damp Spots and Water-Colours.

SIR,—It is impossible to give any suggestion to "Collector" unless he supplies more particulars about the drawings. Are any of the colours opaque? What kind of paper is employed?—Yours, &c., COLLECTOR II.

The Pavement of St. Mark's.

SIR,—It is just possible that the builders of St. Mark's deliberately made the pavement wavy in imitation of older pavements, but it is very unlikely. It would have been a queer joke for the workmen. All older mosaic pavements, whether in the Baths of Caracalla or any Roman villa in Britain, exhibit the same peculiarity in greater or less degree. It is doubtless partly owing to eccentricities of natural drainage, and partly to the action of earthworms. Darwin, in his book, gives statistics of the amount of movement of earth through the mosaic floor of the small villa at Albury. All these floors are laid on a very thin bed of lime on the top of the natural soil, and there is none of the rigidity of concrete.—Faithfully yours,

Guildford. RALPH NEVILL.

CHURCH BUILDING AND RESTORATION.

Manchester Cathedral.—Mr. Crowther has commenced what promises to be, when completed, another great improvement in the cathedral restoration. This is cleaning off all the plaster and cement which has for many years hidden the beautiful original masonry in the Derby Chapel and Ely Chapel on the north side of the chancel. A similar work is being carried out with the spandrels and piers of the outer northern aisle of the chancel. In regard to several mural monuments (among them that of the Rev. John Clayton, the "Jacobite" Fellow and friend of John Wesley, and those of Anne Hinde, Dauntesey Hulme, George Lloyd, &c.) which have been temporarily removed while the work has been going on, we are informed that suitable places will be found for them when the restoration of this part of the cathedral is completed.

Edinburgh.—The memorial-stone of a new United Presbyterian Church, South Morningside, has been laid. Mr. G. Washington Browne, of Edinburgh, is the architect.

Tallaght.—The church erected as a memorial of the well-known Dominican priest, Rev. Thomas Burke, has been consecrated. The building has been erected by Mr. Meade, the architect being Mr. Ashlin, of Dublin.

Sutton-in-Ashfield.—The foundation-stones of a new church have been laid. The contract for the work was taken by Messrs. Morgan & Cowper, of Campsall, Doncaster, at 1,505*l.* Mr. J. Fowler, of Louth, is the architect.

Netley.—The new church of St. Edward, Netley Abbey, which has been built from the designs of Mr. J. D. Sedding, of Oxford Street, London, has been opened. The builder was Mr. Bone, of London.

Stonham Parva.—The chancel of Stonham Parva church has been restored. Mr. G. Nevard, builder, of Nayland, carried out the work from the designs of Mr. E. F. Bisshopp, diocesan surveyor.

Workington.—The new free Presbyterian church has been opened. Mr. James Howes, of Workington, was the architect, and Mr. Beattie Towers had the contract for the building. The sub-contractors were:—For the joiner's work, Mr. W. Carruthers; painting, Mr. Sherwood; and plumbing, Mr. D. H. Walker.

ARCHÆOLOGY.

Aston Hall, Birmingham.—In pursuance of the policy of displaying to the best advantage the architectural and antiquarian features of the building, an interesting restoration has just been made at Aston Hall, under the direction of Mr. Rodway, secretary to the Baths and Parks Committee of the Borough Corporation. The kitchen, which is situate at the north-west corner of the hall, and which for some years past has been closed to visitors and used as a lumber-room, has been cleaned and painted, and a large portion of the old cooking apparatus has been placed in position. The dogs have been replaced in front of the enormous fire-grate, and the smoke-jack which turns the spits has been put in working order. Several of the old spits, including those used for roasting different kinds of carcases whole, have been fixed on the dogs or hung at the side of the fireplace ready for use. At the side of the fireplace is a kind of cooking-range, probably one of the earliest patented inventions of its class. It is labelled "John Slater, patentee." Near at hand are the ovens in which bread, and probably pasties, used to be baked; while at the other end of the kitchen is a large "hot plate" for pots and stewpans. The windlasses, which probably have served to lift the carcase of many a fat deer, have been restored. The fire-irons have been brought out, and the sets made up by having the missing parts made in similar style. On the wall are hung the heads of the stags fed in the park, a huge tortoise-shell, and other appropriate relics. The old mortars are missing, but two stone balls which served as pestles are to be seen, and at one side of the room stands the old chopping-block. The old kitchen clock remains where it has been for some years, in the entrance hall facing the principal door. Some of the modern fire-extinguishing appliances are hung in the kitchen for convenience of access, and it may be noted in this connection that additional apparatus has lately been purchased, and that the employés in the hall and park are drilled weekly by Superintendent Tozer, of the Birmingham Fire Brigade. Over the fireplace of the kitchen a painted shield, dated 1635, and bearing the arms of Holte impaling those of Bradbourne, has been restored under the personal direction of Mr. Rodway. The whole of the work has been done as part of the ordinary work of the Baths and Parks Department, and involves no special expenditure. Other restorations in a similar spirit will probably be made as opportunity offers.

GENERAL.

M. Garnier delivered an address on Sunday at the unveiling of the statue of Berlioz, the composer, by M. Lenoir, in the Place Vintimille, Paris.

Mr. Frank Holl is painting a portrait of Sir George Trevelyan, to be presented to him by the electors of Hawick.

The Duke of Sutherland has offered to the School of Art at Stoke-on-Trent a cast taken from the statue of *Jonah*, attributed to Raphael.

A Statue of Rude, the sculptor, was inaugurated at Dijon on Sunday.

Mr. Allan Fraser, H.R.S.A., last week received the freedom of the burgh of Arbroath in presence of Mr. W. Calder Marshall, R.A., Mr. John Hutchison, R.S.A., and other friends

The Exhibition of the "Incohérents" in Paris was on Sunday visited by several thousands of people. It will remain open for about two months, and the proceeds are to be given to charities.

Mr. W. M'Ewan, M.P., has offered to give 50,000*l.* for the erection of a grand hall and other additions to the new University buildings in Edinburgh.

The Eastbourne Town Hall was opened on Wednesday. The building was designed by Mr. W. T. Foulkes, of Birmingham.

The Grand Casino of Biarritz was destroyed by fire on Sunday morning, but the adjoining Hôtel d'Angleterre was preserved. The damage is estimated at 700,000 frs.

The Water Supply Works just completed at Stratford-on-Avon will be inaugurated on Wednesday next.

The Holborn Union Workhouse, erected at Mitcham, from the designs of Mr. H. Saxon Snell, F.R.I.B.A., was formally opened yesterday.

"**L'Art**" contains an engraving of the statue of Berlioz that was unveiled on Monday in Paris, with articles on the composer, French woodwork, and other subjects, besides several engravings.

The Théâtre-Montparnasse has been reconstructed under the direction of MM. Peigniet and Marnez, architects, at a cost of 250,000 frs. It will contain 1,200 places. An iron curtain is provided at a cost of 8,000 frs. The house will be opened on the 28th inst.

Truro Cathedral, it is expected, may be ready for opening during the month of August next, and the Queen and Prince of Wales will probably be asked to be present on the occasion.

Mr. E. H. Banks has offered to the Carlisle Corporation the bell formerly in Silloth church, for the town hall clock. The bell, however, is said to be too heavy for the tower.

The "Journalist," a paper for all newspaper producers, appeared for the first time on Friday last.

Ladhope Old Free Church, Galashiels, was sold on Monday by auction. The upset price was 500*l.*, and it was sold to Mr. A. Herbertson at 505*l.*, on behalf of Messrs. Gibson & Lumgair, manufacturers.

The Architect.

THE WEEK.

A month ago, when referring to the proposed Colonial and Indian Institute, we were enabled to indicate the line of action that was adopted in the highest quarters on the subject, as well as the proposals of the leading commercial men in the City, and to suggest that the two were in opposition. In a case of the kind some obscurity could not be avoided, but our readers were no doubt able to read between the lines of the "Note." A communicated article in the *Times* of Tuesday confirms what we said. In the first place, Her Majesty has expressed a desire that the Jubilee Memorial is to be at South Kensington. In the next place, a good deal of pains is taken to limit the restriction to utility imposed by the site. It is said that an attempt is to be made to reconstruct the Albert Hall Company, and as the present gardens are to be utilised as part of the scheme, there is no fear that the Imperial Institute will have them attached. It is also admitted that "it would be a disgrace to the Empire in the eyes of other nations and of future generations, if the great memorial marking one of the most momentous periods in the history of the Empire were to consist solely of a few acres of sheds little better than those which now cover the ground at South Kensington." All this tallies with what we wrote, and reveals the change in the minds of the promoters during a month. We said that the further the Institute was from South Kensington the better, and the writer in the *Times* reveals that "merchants and manufacturers and colonial producers have emphatically urged their objections to South Kensington as a site for a commercial museum that would be of any practical utility." It will be thus seen that while authority favours South Kensington, business seeks another site. Would it not be possible to get over the difficulty by having two museums? It is understood that an effort will be made to retain the contents of the present exhibition for the Institute. Many things among them would be considered rubbish in the eyes of merchants and manufacturers, but they are no less interesting to sight-seers. Let a building be erected at South Kensington to preserve objects of the kind, with others like them that might arrive from time to time. It should be a new building, and not the City and Guilds Institute transformed. But let a second building be raised in or near the City, and let it be arranged in such a way that there can be no suspicion of the contents being playthings to amuse idle people. Two conditions are requisite to attain that end—a business institute cannot be at South Kensington, or controlled by South Kensington officials.

The Salle des Etats, in the Louvre, between the Pavillon Denon and the Grand Galerie, and which separates the Cour Caulancourt from the Cour Visconti, has been appropriated to modern paintings of the French school. Four of the principal works of Delacroix, viz., the *Entry of the Crusaders*, the *Moorish Interior*, the *Bark of Don Juan*, and *Dante in the Inferno*, with the well-known portrait of the painter, have been placed there. The *Apotheosis of Homer*, by Ingres, which was illustrated in *The Architect*, is on the opposite wall, with a *Combat of Stags* by Courbet, and the *General Prim* of Henri Regnault. The rearrangement has, up to the present, given general satisfaction.

The art annual published by Messrs. J. S. Virtue & Co. has Mr. Alma Tadema for subject, and forms a fitting companion to the two by which it was preceded; indeed, it has more illustrations than either of them. Owing to the character of the painter's work, it has also more unity, and the annual seems at first sight to be a treatise on Roman life. In that respect it puts some learned treatises into the shade, and it becomes a delightful archæological manual. From the memoir we learn that the Tademas have dwelt in the Frisian village of Drouryp from time immemorial, but the prefix Alma is peculiar to the painter, as he received it from his godfather. It is interesting to learn that, although Mr. Alma Tadema showed artistic ability from his earliest youth, yet his relatives insisted on making a lawyer of him. It was only after a severe attack of illness that he was allowed, as a favour, to study art. Then he could not gain admission to an art school in Holland, and was compelled to pass on to Antwerp, which is entitled to take pride in his success. There he displayed the fastidiousness which is one of his characteristics. From the Academy Mr. Alma Tadema went to the studio of Baron Leys, the painter to whom he is most indebted. At first he painted Mediæval subjects, but in 1863 he began to represent scenes of an earlier time, starting with Ancient Egypt. In 1869 he arrived in England. His *Vintage*, which is one of his most popular works, was produced in 1870. His power was early recognised, for six years afterwards he was elected an Associate of the Royal Academy. Some of Mr. Alma Tadema's thoughts on art are appended. He is severe on modern critics, and with reason, for the majority only judge by the subject. What subject, he asks, is there in the *Venus of Milo* that can be written down, yet nobody will deny that it is one of the greatest works of art? He is opposed to much travel, and says, quite truly, that the Prix de Rome men of France and Belgium, with one or two exceptions, do not become famous. The reader will find the annual worth many times the small sum that is asked for it.

There is a vast difference between the results of the Liverpool and the Edinburgh Exhibitions. Liverpool has not been a financial success, and looking at the way the medals were sent about no one can be surprised, for that event reveals other misdeeds. In Edinburgh there is so large a surplus that the Committee hardly know how to get rid of it. They have done one graceful act. On Tuesday, the Committee offered the grand hall, the sun-dials, the manager's house, the model dwellings, the college gate, all being of the value of 16,000*l.*, to the Corporation, together with 2,500*l.* for structural repairs, and a sum that will produce 200*l.* a year to pay for future repairs. But it will scarcely be credited that there are statutory difficulties in the way of accepting so generous a gift. Such is law!

A year rarely passes of late without a new Raphael appearing. This time the favoured place is Lausanne. The new masterpiece was familiar for a long time to the old furniture-dealers in the purlieus of the place. It was what London auctioneers call "a speculative lot," but the value of it among the trade never got beyond 3*l.* sterling. However a M. Nicole came, saw and conquered the work on easy terms, say about 8*l.* He obtained a new name for the picture as well as a new frame; it became the *Vierge au sein.* It had a triumphal procession from gallery to gallery, and of course the critics grew eloquent over its qualities. The price increased by travel, and, according to the last quotation, it stands at 8,000*l.* It was supposed that a lady was about to gain fame by investing in the work, but at the last moment her courage failed, or she grew alarmed at the prospect of seeing her name in all the newspapers. The latest news is that M. Nicole proposes to carry his treasure to Paris, and set it up in the Salon Carré of the Louvre, in order that it may outshine the Raphaels to be found there. As another Nicole says in the "Bourgeois Gentilhomme," "Ils se trouvent bien ensemble!"

The picturesque and the sanitative are not synonymous. There is no city in Europe that has the making of so many pictures in it as Edinburgh. But since the sanitary inspector began his rounds there are unpleasant revelations of what is to be found behind the walls with such a charming play of light and shade, and so many "bits" of detail. In a report of the Burgh engineer, which was issued on Monday, we are informed that "during the past year 1,001 dwellings have been, or are being, supplied with water and water-closet accommodation." Imagination had better not dwell on the condition of a city which is improved at that rate, nor inquire when the last of the unclean dwellings will be reached. But it is worth knowing that twelve years ago 14,000, or one-third of the houses in Edinburgh, were without closets, and over 8,000 had no water supplied to them. It is not surprising that so many of the inhabitants look as pale and unhealthy as the people in the east of London.

FEDERATION.

FROM want of space last week we were compelled to forego the publication of some letters relating to the latest phase of the federation question. The writers were so little agreed that it was impossible to make a selection, and we must have printed all the letters or none. We had to adopt the latter course, but the subject of the correspondence is too important to be passed over without a little consideration.

When the proposal for federation was first mooted we expressed an opinion against it, and we still maintain that any arrangement of the kind can only be nominal, and is therefore of no great importance to architects. We must, of course, except those who like to play at organising their brethren. For what is the meaning of federation if it is not a contract, or obligation, by which individuals or societies agree to give mutual support? Can anyone who knows the state of architectural practice in this country believe that such a league is possible, unless in respect of questions in which there can be no clashing of individual interests? Every architectural society is to some extent an example of federation, but the history of them shows that a member's cause is rarely made the cause of a society. In this way even Lord Grimthorpe would agree that they differ from trades unions. It would be vain to suppose that by any combination on paper of the different societies the interest of an individual member would assume more importance than it does at present.

What has just occurred will by itself suggest whether the time has come for union. The Institute, as we all know, appointed a committee to consider the subject of federation. Time does not count for much in Conduit Street, but a report was not unlikely to be issued within a year or two, and there was no great urgency on the subject. Another committee was, however, formed elsewhere, of which some Fellows and Associates of the Institute were members, and went to work in a very different way. A form was issued which suggested that federation was an impossibility without compulsory registration. To accomplish that end, an Act of Parliament was of course essential, making it penal for any one to practise architecture after a certain date without undergoing an examination, a saving clause being introduced for the benefit of all who claimed to be architects, whether competent or not, who might be in practice at the time. As a rule reformers try their hand with the present time; but the anxiety of the Federation Committee began with the clients and architects of the future. Two months ago, when the document appeared, we wrote against it; but we are now informed that over a thousand architects declared their approval of the proposals.

So much support must have amazed the Federation Committee, and on the strength of it the conclusion was come to that the best way to demonstrate the federal spirit would be by forthwith opposing the application for the Institute charter before the Privy Council. It is henceforth to be understood that with federation a society is not to be considered the best judge of its own affairs. The aid of the Society of Architects was invoked against the Institute, for another effect of the new species of federation is that society is to be set against society, in order to promote the general good. The Society of Architects hesitated until it had acquired an opportunity of conferring with the Council of the Institute on any day after the 22nd inst. In other words, the Council might save the Institute from defeat by withdrawing the application for a charter, and throwing in its lot with the victorious Federation Committee.

That the proposal for a conference should excite the ire of the authorities of the Institute is not surprising, for the establishment of the Society compelled the Institute to make a show of awakening from the lethargy which used to be taken as a sign of respectability. The members have not derived any great gain from the exertion, but the officials feel that times have changed. They can no longer enjoy the repose that follows from what the Frenchman calls "les doux plaisirs d'une paix fraternelle," and of course are not likely to forgive the cause of so much inconvenience. An incoherent sort of circular was at once issued, which reveals the state of feeling in the bureau of the Institute. But, like all bodies that are subject to scares, the Institute is squeezable, and the hectoring tone of the circular was soon followed by a conciliatory announcement that the Institute Committee on Federation is to meet on the day after the delivery of the presidential address. For it is to be remembered that next week the case of the charter has to be heard, and opposition of any kind is dangerous.

If the Federation Committee or any body of architects will appear before the Committee of the Lords of the Council on Wednesday and explain the real character of the proposed charter, we are disposed to believe that there is a chance of its rejection, for to approve of a deed which is declared to be remarkable for its elasticity is to set up a precedent that might be inconvenient in more important cases. But that course is not to be recommended. The members of the Institute accepted the clauses, and it is hardly the business of another body to save them from the consequences.

The Federation Committee raise opposition on the ground that the charter will be an obstacle to the carrying out of the Act for Compulsory Examination and Registration, should one be obtained. But is an Act of that kind ever likely to be among the statutes? It is quite true that Bills somehow get passed occasionally without much examination, but they belong to some of the great interests that are represented in Parliament, and the Federation Committee is not likely to have a body of members under its thumb like one of the big gas or water companies.

To pass an Act of the kind it would be necessary to make out a stronger case than can be done. There is no use in concealing the fact that the necessity of architects is not more manifest to anyone who considers them from the legislator's standpoint than is the necessity of painters, sculptors, and writers. Every member knows that substantial buildings can be erected without the aid of architects, and he is likely to believe that on principle they are not employed on Government buildings. If he has had no dealings with one he is sure to know of the allegations against the profession, and will be sceptical about the motives of reformers. Nowhere is there a stronger prejudice about the misdeeds of architects than in the Houses of Parliament, for almost every member finds a cause of complaint in the arrangements. Does anyone suppose that a noble lord could be discovered with sufficient courage to reply to Lord Grimthorpe, supposing his lordship had moved the rejection of the contemplated Bill?

On such an occasion the question would be asked, Where was the gain to the public from a Federation Examination Act? If we assume with the Institute and the Federation Committee that there are incompetent architects who are not duly elected members of the societies, still the shortcomings in their designs are set right by the builders. Until it can be shown that houses by one class of architects are liable to collapse and bring danger to taxpayers there will be no case for compulsory examination. Now, in spite of the sudden gales which arise in England, houses do not tumble. It takes a big storm to affect one of the jerry-built houses made up of bricks separated by road sweepings.

It will be said that the application for an Act of the kind could be based on the importance which the architect has assumed under the prevailing theory of sanitation. As a factor in preventive medicine he is supposed to come near the doctor, and therefore should be legalised like him. But the doctor does not act by deputy, or only by a deputy that is also legalised, while the deputies of the architect are endless. Every man on a building, from the excavator who opens a trench to the financier who receives cheques on a certificate, are in their way deputies of the architect, and if an Act existed of the kind which is suggested he would become responsible for their misdeeds to an extent that is now unknown. It is not easy to obtain Acts of Parliament to confer privileges without something being done in return, and the Federation Committee would do well to ask themselves in what way they propose to increase an architect's liability, for that will be necessary if he is to be distinguished from painters and sculptors by having the protection of an Act of Parliament.

But assuming that the Act was obtained, and a system of examination and registration in force, would there be much of a benefit to the rank and file of the profession? The examination would have to be limited, and is not likely to be more severe than that for candidates for district

surveyorships. It is not necessary to be a Wren or a Barry to undergo one of that class in safety, and a bungler might contrive to pass through it. Besides, if examinations were general the architectural crammer would be created, and if, as commonly happens, the candidates had the faculty of forgetting soon after an examination, we do not see how affairs would be improved. The profession might be narrowed to an infinitesimal extent, and that is all.

Acts of Parliament are inconvenient treasures for any set of men who are liable to change. Architecture has changed before now, and may do so again. The relation between the architect and the builder at one time was indistinguishable. With the introduction of technical education, building might once more rise into favour, and architects become imitators of prominent members of the Institution of Civil Engineers, who find a pride in undertaking a difficult contract. On the other hand, the realisation of William Burges's dream might come to pass, when the architect is to prepare designs in a luxurious office and leave the carrying out to an inferior race of surveyors. An Act of Parliament would not be of much avail in the latter case, for we can hardly suppose that a Bill could pass through the two Houses for the enforcement of truth and beauty unless under a new constitution derived from Utopia.

An application for an Act like that proposed by the Federation Committee presupposes a nearer approach to unanimity among societies than is possible—that is, if we may judge from the conduct of the Institute and the Society of Architects to one another. All big societies are jealous and hanker for a monopoly of power. What is needed is not an organisation to unite architects in a great society, but one that will break up the societies into many with no more than a reasonable number of members. The benefit that an architect can draw from association in any case is limited. If he has a wish to be successful he must learn to stand alone, to seek his commissions himself and not through a brother architect, to design, when he gets the chance, with his own right hand without having recourse to his neighbour, to settle his differences with contractors and clients with such equity as he possesses. If he seeks aid he is more likely to find it in a society where men can meet without formality, where there is free criticism and where there is no necessity to address reporters. A man may fancy that he derives reputation from being able to show that he forced his way to the front in a crowd where there are notabilities. But the world does not always take that view. Let any one, for example, recall the history of the Institute, and they will find that the members who were most distinguished as essayists and speakers were rarely successful as architects. How many buildings were designed by Donaldson, who carried everything before him for years?

Societies do not, as we have said, make a common cause of the grievance of a member. Probably they dare not do so. There could not be a much stronger proof of this than the case of the Barony Church competition. Mr. Honeyman has held a high office in the Royal Institute and in the Glasgow Institute. He knows the futility of both whenever a member desires to excite the reprobation of a wrong, and accordingly he turns to the professional press. Mr. Honeyman's case also suggests that an architect must not be expected to sacrifice himself to an imaginary *esprit de corps*. His competitors were all fellow-members of the local society; some were, like him, members of two societies. But, according to Mr. Honeyman, there was only another competitor and himself who adhered to the instructions. Everyone knows that it would be vain for him to expect that either of his societies would utter a word of censure of the practice of deviating from the track in order to gain the prize. Would Mr. Honeyman be more likely to be supported if half a dozen societies were federated with those to which he belongs? If a society with a large roll of members like the Royal Institute and an important provincial society like the Glasgow Institute cannot make the members loyal to one another, we are afraid that a union of the two with the Architectural Society of Little Peddlington would not be more effectual.

Another case, no less exemplifying the relation between architects is that of the Elland Town Hall. The ordinary rule of fees was set aside, and not more than four per cent. will be paid for designs, quantities, and superintendence. It is left to a competitor to say how much less he will take. Yet so attractive was the proposal that there was a scramble for the conditions. It is quite possible that offers as low as two per cent. will be made: indeed, we have heard of a case where an equal amount of work was done for one and a half per cent. Is it to be supposed that all the aspirants for the honour of designing the Elland Town Hall are architects who do not belong to any of the societies?

As long as competition is one of the distinguishing marks of the architectural profession, there cannot be a local or general federation that will be more than a sham. Something of the kind may be found in other professions, but neither doctors nor lawyers have to stand the strain of offers of commissions by means of competitions. If they were in the same position as architects, they would probably think as little about what is called the general interest of the profession. No Act could be passed in Westminster to prohibit people like the Elland authorities from making the best bargain they can with architects, or to prohibit architects from dealing with them; and as long as legislation is in that state it is only adding to the delusions which architectural societies have created when they propose to form a federation league in England, and to obtain privileges for it from Parliament.

THE ASSOCIATION MASONRY CLASS.

On Tuesday the Class of Masonry which was organised by Mr. L. Harvey, as honorary director, for members of the Architectural Association, was opened in the City and Guilds of London Institute, South Kensington. The President of the Royal Institute of British Architects and some of the Fellows attended. The following address was delivered by Mr. Harvey on the occasion:—

Gentlemen,—In the Polytechnikum of Zurich and the Ecole des Beaux-Arts of Paris, establishments of which I have been a pupil, and in every other school of architecture on the Continent, the knowledge of masonry and of its theory under the name of "descriptive geometry" is considered the indispensable basis of an architect's education. Up to this time English architectural students have had no opportunity of studying either the theory or the practice of masonry. It is certainly not one of the subjects taught in an architect's office, and, on the other hand, it is an art which remains nearly an impenetrable mystery to those who try to get at it through books. It is for this reason that I have offered to hold classes of masonry in this establishment, at hours convenient to the members of the architectural profession.

Amongst architects—even students—it would be superfluous to attempt to give a definition of the art of masonry, for we all know very well what it is. But I may say that it comprises two questions:—1. Which are the shape and the dimensions a stone structure should have to insure its stability, and to satisfy the requirements of taste and convenience? 2. The shape and dimensions of a structure having been determined beforehand, how to produce the structure out of an aggregate number of blocks of stone of moderate size and of such shape that, placed side by side in a given order, they will support one another as if the whole structure consisted of one single stone?

The first question depends on the laws of Statics, on the toughness of the stone used, on the artistic rules of architecture. This is, therefore, a vast subject of study, which includes nearly all the science of construction and the history of architecture. I do not intend to treat this part of our subject, but will confine myself to the second question only, viz., to showing you the scientific operations of stone-cutting, or the methods by which the mason obtains from the designs of the architect the exact shape of each stone in a building, so that, when set in its place, it shall fit exactly the adjacent stones without previous reference to them.

Even in this limited sense the study of masonry is not merely a matter of technical interest to the stonemason, but is of importance to the architect. 1. There is a close union between the geometrical rules used by masons at different periods, and the architecture of the time when they practised. Thus, the Greeks, who understood conic sections, applied them in their mouldings, whereas the Romans, who did not, were content with circular curves only. The groins of the vaulted halls of the Romans form waving lines which were dissimulated behind a stucco decoration of carpet pattern, a clear proof of their ignorance of the scientific operations of masonry relative to vaults. Later architects tried to overcome the same difficulty by building the groins as separate ribs, a system of masonry which gave rise to Gothic architecture. It is evident, therefore, that a knowledge of masonry will help an architect to properly appreciate the characteristics of past styles of architecture.

2. The geometrical operations used in masonry are equally applicable to carpentry and joinery, to erecting centreings for brick and concrete vaults, to forming circular and other stairs in wood, as well as in stone.

3. They are a great assistance to the architectural draughtsman; they give him the means of delineating intersections of surfaces and of shading his drawing with mathematical accuracy.

Now, gentlemen, I know very well that in offering to teach you masonry without introducing it by a course of descriptive geometry, I am exposing myself to the accusation of putting the cart before the horse. Masonry is only one of the applications of descriptive geometry, and, therefore, *logically* the study of descriptive geometry should precede that of masonry. This I admit, but, gentlemen, the logical sequence is not always the most natural. The Latin language is undoubtedly the application of the rules of the Latin grammar, and in our schools it is usual to begin by conjugations and declensions before the pupils are set to composing Latin sentences. This is the logical sequence. Nevertheless, the Roman spoke Latin from his babyhood, and, if he ever learnt grammar at all, it was long after having practically mastered his native tongue. This is nature. Similarly masons have practised the geometrical operations of masonry for centuries before descriptive geometry was invented. Why should we not do likewise?

The stonemasons of France are still embrigaded in one of two guilds dating from the Middle Ages. The one is called "La Confrérie des Compagnons de la Loi," or "Les Loups," and the other that of "La Confrérie des Compagnons du Devoir," or "Les Dévorants." In nearly every town of France these guilds possess hostelries called "Mère des tailleurs de pierre," where the "compagnons" have a right to put up on credit until they obtain work. To become a "compagnon" an apprenticeship of seven years is required and a stringent examination in the science of masonry has to be passed before the masters of the craft *les appareilleurs*, for it is important that none but able workmen should be admitted to the privileges of "companionship."

While I was studying at the Ecole des Beaux-Arts, I got introduced to one of these guilds of stonemasons, so as to pick up practical knowledge as well as theory. It is there that I have seen in working the system of instruction which has been preserved traditionally in these guilds from the remotest times of the Middle Ages, in fact the very system by which were formed the architects of Westminster Abbey and other glorious fanes. It is, gentlemen, thanks to that ancient system of tuition that I hope you will find the science of masonry both easy and entertaining.

I beg to point out one of the great advantages obtained by beginning our studies at once by masonry. Speaking from my own experience, descriptive geometry, when studied as a pure mathematical science, is apt to weary one, for it seems an aimless series of abstractions. I have often heard students ask, "*What is it all for?*" If you have already studied masonry, you see at once *what it is all for*, and descriptive geometry becomes intensely interesting, as furnishing the key to all kinds of questions which have arisen in your mind.

For instance, in descriptive geometry a plane is said to be generated by the motion of a straight line in contact with two other straight lines which either meet or are parallel. When the last neither meet nor are parallel, the surface generated is on the wind. This seems rather a pedantic definition of a very simple thing, but to the mason this definition has a practical meaning, for it expresses the very operations he does when working a plane face on a stone. As to winding surfaces, he is but too well acquainted with them, for if he be not very careful in drawing his guiding lines he will find that the surface produced is on the wind and not the plane. In the same way the scientific definitions of a cylinder simply express the operations by which masons work cylindrical surfaces.

The material we will use in lieu of stone for building our models of masonry is a composition of fine plaster and soap. This material costs but a trifle, and remains soft for any length of time instead of becoming brittle, like pure plaster.

I shall in every case explain the exact way the stonemasons use in cutting the stones so as to save their labour, but I do not think it would be worth our while to imitate on a small scale the exact handling of a mason's tools. What interests us are evidently the geometric operations of stone-cutting, and the more rapidly we shall be able to cut out the stones of our models the better. I propose, therefore, that we should use saws as much as possible, of which there are two sorts, one for cutting out planes, the other for cutting out cylindrical surfaces. A small chisel is required for cutting out such surfaces as cannot be worked with a saw.

It was my intention, gentlemen, to work out fully each problem of masonry on the black-board, so that you might see the successive operations carried out in your presence. But I find that the arrangements of our black-board will not allow of my doing so. In the absence of the particular black-board required, I must be content with explaining the operations of masonry on working drawings made beforehand. As the first class which I shall direct is limited to but a few, I think we will find this arrangement feasible.

Then from my drawing and the moulds I shall make for you, you will each cut one stone of the model to be constructed. In fact, we will form a diminutive mason's yard, in which I shall act as foreman, and you as stonecutters.

When you have completed cutting the stones, you will then make the same working drawing as the one I shall have prepared for you. I believe you will find this operation much easier after having built up the model of the structure than you would have found it before you had realised *de visu* what you were going to draw.

You will then be ready to act as foremen in the subsidiary classes. For this purpose you will use the drawings you have made under my direction; and as each of you will probably have but a few pupils to instruct, you will no doubt be able to explain all the operations of stone-cutting without the help of the black-board. At all events, although the instruction of the subsidiary classes will be entrusted to the members of the first class, still I shall make a point of attending also myself to give assistance when wanted. In their turn the members of the subsidiary classes should complete their instruction by acting as teachers to others. They may have an opportunity hereafter of superintending the instruction of future classes of masonry in this establishment; but, at all events, they can at once offer their services to the existing institutions for the technical instruction of workmen. They will thereby attain three desirable objects: they will get useful practice for themselves; they will promote the interests of architecture by forming abler workmen, for much of the beauty of our art depends on the perfection of its execution; lastly, as the superior officers of the great army of the building craft, they will get a more intimate acquaintance of their subordinates, and be able to inspire them with the same lofty aspiration and pride in their work as all true architects possess.

I think I have now fully explained our plan of campaign. It only remains to me to thank our visitors for the interest they have taken in this matter, and to begin work at once with the members of the first class.

Mr. Cates said he was very pleased to see such a class started, for it was very much required. He had seen the Paris Municipal classes of masonry, and he had been surprised at the results attained. The pupils were workmen who, after a hard day's labour, turned out drawings which certainly very few architects could equal, and worked out problems of masonry far more difficult than anything Mr. Harvey contemplated for his class. He only wished he had had in his youth such an opportunity as the one Mr. Harvey offered them, and he hoped that the architectural students would attend in great numbers, and that these classes of masonry would develop themselves more and more with time as they deserved.

Mr. Robins said that, as a member of the Executive Council of the City and Guilds of London Institute, he was glad to see so many architects assembled in this building. The classes of masonry were a small beginning, and might eventually develop themselves in a large school architecture. In Mr. Harvey, who had studied in Germany as well as in France, they had an exceptionally able instructor.

The proceedings closed with a vote of thanks to Mr. Harvey.

THE SCOTTISH WATER-COLOUR SOCIETY.

THE annual exhibition of the Scottish Society of Painters in Water-Colours was opened on Thursday in last week. There are 689 works shown, which is less by 175 than the number seen last year; but the general character of the exhibition is maintained. Among the English artists who are represented are Sir John Gilbert, Sir J. D. Linton, Mr. H. S. Marks, Mr. J. W. North, and Mr. E. S. Calvert. Sir W. Fettes Douglas, the President of the Royal Scottish Academy, has three small sketches. The influence of the French school is seen in the works of the younger exhibitors.

A luncheon was given by the Council on the opening day, at which Mr. F. Powell, the president, was chairman.

The Chairman, in proposing the first toast, said that no one could shut his eyes to the facilities for the art student in France, or the rapid strides in the power of drawing he gained there. But though there were French painters of the noblest stamp, yet when one thought of the pictures that crowded the walls of the yearly Salon, and remembered the subjects of ghastliness and doubtful morality, one dreaded the influence such teachings must have on the susceptibilities of youth. Good art required both skill and purity for its perfect development, hence he desired that our own Royal Academies should supplant all foreign teaching.

Sir Wm. Fettes Douglas said he was happy to hear the President say he did not think art students needed to go to France. He saw no reason whatever for their going to France,

and they in the Academy in Scotland had been endeavouring, and were still endeavouring, and would continue to endeavour, to make every provision for the education of youth amongst them. In Glasgow, it was true, they might not have as many advantages as were to be had in Edinburgh, although he could not say exactly, as he had little knowledge of art in Glasgow. There was one thing he was very much struck with, and that was that there was a very strong rising school of artists in Glasgow. He trusted they would make themselves more felt in Edinburgh than they had yet been able to do in the past. The Royal Academy was not for Edinburgh alone. It was the Royal Scottish Academy for the whole country. He trusted the members of the Glasgow school would make themselves felt in Edinburgh, and be looked up to by the Academy, and exercise their own influence upon the whole art of the country. He did not know why they had not been so well known in Edinburgh as they ought to have been. He himself had been very much exercised in Edinburgh regarding that matter. He was extremely struck—very much struck—with the amount of ability shown all around the walls. He advised young men not to rest from their labours, for the longer a man worked the better would his work become. Many a young man ceased to do good work from the day he succeeded in getting his pictures on the walls.

Mr. Colin Hunter, A.R.A., also replied.

Mr. Wm. M'Taggart gave the next toast, "The Glasgow Institute of the Fine Arts." No one would deny that the Glasgow Institute of the Fine Arts had done a great deal to forward the interest of art in Scotland, especially in the West of Scotland, although he maintained it had also helped art all over the country. Like the Royal Scottish Academy, it had been a centre, although, unlike the Academy in one respect, it had no school for the training of artists. In these times it was necessary that something should be said about the schools of art in this country. There were many of them, but the two most famous were those of the Royal Academy in London and the Royal Academy of Scotland. He did not think it was generally known that the best men in those societies were told off to give instruction gratis to the pupils. He could not recall any other profession that did the same thing for its pupils. In both medicine and the Church the best men were told off to instruct students, but they were paid very highly for it. The institution he had the honour to propose was doing its best without schools to impart training by its exhibitions and in other ways. The feeling now was that there were too many exhibitions, and there was a great deal of truth in that. Many of the works sent to exhibitions were done by young girls not following art as a profession, but only amateurs. This was a matter for the council, who could, by choice and selection, do a great deal to purify and clear the annual exhibitions. A hint which was given them by the French might be imitated with advantage, and that was to hold triennially an exhibition of selected works. He thought such an exhibition would do a great deal of good, not only in exhibiting works which had been exhibited before but in showing what an exhibition of carefully-selected works might be. Mr. M'Taggart went on to speak of some of the things with which they had to contend, and he alluded particularly to centralisation. Whenever an artist became famous the temptation to go to London was very great.

Mr. E. D. Outram said it augured well for the prospects of art in Glasgow that all the societies were working so cordially together, having only for their object the exaltation of art. He thought there was a feeling among them to draw closer to each other, and perhaps they would soon be accommodated under one roof, having separate departments. Art had suffered from the depression of trade, but they all hoped the worst was past, and that we would soon have the good times back again.

Mr. Renny Watson gave the next toast, "The Scottish Society of Painters in Water-Colours."

The Chairman, in replying, said there were not so many pictures on their walls this year as last, but the progress shown was so great that it fully compensated for any diminution in number—in fact, the advance made by some of their members was extraordinary, illustrating, he thought, forcibly the benefits the society was conferring in giving an impetus to water-colour art. Lately there had been several letters in the *Times* newspaper under the heading, "Light on Water-Colours." These had provoked considerable discussion, and had probably influenced many admirers of drawings in a most prejudicial manner, and a word or two on the subject, without going deeply into it, might not be out of place, and clear away a few wrong impressions. No doubt some old water-colour pictures, like old oils, had suffered from age, but others were as beautiful as on the day they were painted. There were pigments in both mediums which were fugacious, some in one way, some in another; but, fortunately, there was an ample number of permanent ones. The water-colourist had an advantage over his brother oil-painter, inasmuch that the improvements in the aquarellist's art were greater than in oils, and the water-colours of to-day would be infinitely more durable than those of the times of Girton, Barret, De Wint, Varley, Turner, &c. In oils he knew not any advance that gave a clearer daylight or richer shade than already achieved by the old masters. Nay, it even seemed as if their secrets of permanency had been lost, many oil pictures of modern date suffering diminution of brightness to a serious extent. Years ago he experimented on numerous pigments, which resulted in his discarding several from his box, and this April he again tried those he habitually used to the action of the sun. He painted shaded bands of different colours on long strips of paper, and cut them in two lengthways, placing one set of halves in a window facing the south, and the other in a drawer in his studio. After six months' exposure to the daily sun there was no perceptible difference between the colours on the slips exposed and on those kept in the dark. Professor Hartley said that direct sunlight was probably four hundred times stronger than the suffused daylight in a room. From that he thought they might conclude that a water-colour picture painted with good pigments and properly cared for would last for centuries with all its charms, delighting many generations of men.

EDINBURGH MUNICIPAL BUILDINGS COMPETITION.

THE following circular was issued a few days ago to the architects engaged in preparing plans for the Edinburgh new municipal buildings:—

"City Chambers, Edinburgh: October 18, 1886.

"*Edinburgh Municipal Buildings Competition.*

"Dear Sir,—The Committee of Town Council charged with this matter, having found it expedient to relinquish their intention of acquiring any property to the west of Warriston Close, I beg to enclose a supplementary plan showing the requisite modification, and hope you may be able to adapt your design thereto without much trouble.—Yours faithfully,

"Town Clerk."

As it is now some time since the original plan was issued, most of the competitors are already well advanced with their work, and great dissatisfaction has been created, as the result will probably be that designs will have to be recommenced. According to the *Scotsman*, several letters have been sent to the town clerk complaining of this departure from the original plan, and pointing out the great inconvenience and waste of time which, in their case, it involves. In some instances grave doubts were expressed as to the possibility of finishing the work in the stipulated time. A meeting of the committee charged with the matter was held on Monday in the Council Chambers to consider the matter. During the discussion it transpired that the limitation of the site was due to the decision of the committee not to acquire the property of Messrs. M'Laren, Son & Co., unless at a considerably smaller sum than 50,000*l.*, which is said to be the amount asked by the firm. The result of two hours' deliberation was that the limitation embodied in the circular should be adhered to, but that competitors should be allowed another month to alter their plans.

ROYAL HIBERNIAN ACADEMY OF ARTS.

AT the annual meeting of the Academy the following elections were made for the year 1886–87:—

President, Sir Thomas A. Jones; secretary, B. Colles Watkins; treasurer, Thomas Farrell; keeper and librarian, P. V. Duffy; visitors—living model school, P. Vincent Duffy, Thomas Farrell, Alfred Grey, W. Osborne; visitor—day living model school, S. Catterson Smith; professor of painting, Sir Thomas A. Jones; professor of sculpture, J. R. Kirk; professor of architecture, Thomas Drew; professor of anatomy, W. Thornley Stoker, M.D.; professor of history, W. J. Fitz-Patrick, J.P.; professor of literature, Edward Dowden, LL.D.; professor of antiquities, J. T. Gilbert, LL.D.; professor of chemistry, Sir C. A. Cameron, M.D.; trustees—Sir Thomas A. Jones, B. Colles Watkins, W. Osborne; auditors, A. J. Mayne, Thomas Drew.

Council 1886–87—senior members—G. C. Ashlin, P. V. Duffy, B. Colles Watkins. Junior members—T. N. Deane, W. Osborne, S. C. Smith.

At the annual meeting, held on Monday, the 18th inst., Mr. Walter F. Osborne was elected a constituent member of the Academy, which election has since received the approval of His Excellency the Lord Lieutenant.

At the annual competition in the Academy schools for the year 1885–86, the following students were awarded prizes:—The Albert Scholarship, 20*l.*, S. C. Cairns; special competition, drawing from the living model, silver medal, J. P. Moran; ditto, bronze medal, Oliver Sheppard; drawing from the antique, bronze medal, J. C. Radcliffe; prize of 4*l.*, best drawing from life, J. O'Reilly; ditto 2*l.*, second ditto, J. P. Moran; ditto 2*l.*, best from antique, J. O'Reilly; ditto, 1*l.*, second ditto, J. C. Radcliffe; ditto 3*l.*, best study in painting, A. Casciani; ditto 2*l.*, second ditto, C. E. Lodge.

NOTES AND COMMENTS.

Anyone who at the present time enables this country to compete with foreigners is rendering a public service. One of the trades which Germans, Italians, and Frenchmen have contrived to monopolise is the gilding of plates of glass. The demand for work of that kind is increasing every year. Nor is this surprising, for gilded glass can be used for an almost infinite number of purposes. It can be applied to utilitarian needs, such as announcements of various kinds as well as to decoration. But the processes in use have been slow and expensive. A new process has been discovered by a Mr. Pratt, who was at one time an engineer working under George Stephenson, and he has disposed of his rights to a company. When it is known that Mr. George Matthey, F.R.S., is the chairman of the company, there can be no doubt either of the efficiency of the process or the prospects of the shareholders. The principal feature in the new process is the precipitation of the metal. One of the advantages that follow is the saving of time. We saw specimens produced in as many minutes as they must have taken days if an amalgam had to be applied. Then again a broken surface for the gilding is obtainable if necessary, and that is not practicable by hand labour without a vast amount of trouble. A third advantage of the process is that when an elaborate subject is painted on the glass the gilded background can be applied without the least injury to the painting. The gilding is preserved by a coating, and becomes indestructible. In a word, the new process has all the good qualities of the one in use with many that are unattainable by hand gilding. The company can secure a wide field to work in, and, as the process admits of hand painting in connection with it and superior artistic skill, the operations of the directors will be watched with interest. This mode of gilding can easily be made subservient to the decoration of buildings and furniture. Indeed, it can be said that it is not often a scientific process is to be found that so readily becomes an efficient auxiliary to art. For the present the specimens are to be seen at 82 Hatton Garden.

Whenever we suggest that the Ecole des Beaux-Arts in Paris is a moribund institution, some readers may suppose that we are inspired by prejudice against a famous school. The *envois* or works sent over from the school in Rome by the selected prizemen are now on view in Paris, and here is what M. Dargenty says of them in the *Courrier de l'Art*:—"This time the show goes beyond all expression. Never before were the weakness, the incapacity, the ignorance of the pensioners in Rome manifested in so outrageous a manner. Up to the present the public had entertained a little respect for the old institution, for, although it is toothless, debilitated, and expiring, it was formerly regarded as the Alma Mater of Art. It is a shame to put before the eyes of the public such miserable refuse, such decrepit productions of a school that is falsely termed national, and of which the exhaustion is a forerunner of the last hour. How will it end? Will it comprehend before it goes that artists are not to be made in the same way as artisans, that art is not a trade with rules which are uniform for all the operatives, that whatever touches the spirit and the sense belonging to an artist finds something that is essentially susceptible, volatile, and imponderable, and that any influence that opposes the natural course may end in annihilating the original power?" There is more said in a severer manner, but the extract will suggest that the critics, like the artists, believe that the school must be reformed if it is to survive.

M. Charles Garnier has presented the costly work on the Paris Opera House to the library of the Institute. According to the old proverb one must not look a gift-horse in the mouth, but the volumes belong to that class of goods which publishers call "dead stock." At one time a proposal was made to issue the work in connection with *The Architect*, but from its character it would not answer. French architects know that a second Opera House like M. Garnier's is an impossibility. It would be necessary to have again the same kind of Government and the same kind of manners in society. People in Paris say, *apropos* of the revival of "Frou-Frou," that the play is a mirror of the life that was led under Imperialism. The Opera House may hereafter be taken as a symbol of that same life; and a few months since some archæologists visited the building, just as if it were a memorial of a past state of things that could not return. That may account for the building being so little studied as a model. It is a showy structure, but the style is overreached, and, as was once wittily remarked, M. Garnier, like a Mississippi captain, has won the race at the cost of an explosion. The quantity of metal in the building is sure to be an element of decay, and cracks were to be seen in the pavillons soon after completion. Apparently it was M. Garnier who honoured the Council when he accepted a medal, and in an excess of gratitude it is now sought to make him out a second Ictinus.

We have more than once remarked on the curious spectacle that has been presented in a court of the Louvre during the last five months by the collection of defective statues and casts that was deposited on one of the grass plots. There is an end to the sight, for the collection was sold by auction on Friday. At first the figures did not seem to be worth the cost of removal, but an enterprising broker paid no less than 36*l.* for them. One lot was carried off from him. It consisted of a large statue of Louis XIV., a still larger figure of a warrior, and the eternal *Truth Leaving her Well*, with sundry odds and ends, for 22 francs 10 centimes, or say 17*s.* 6*d.* There is an opportunity for the restorers who are attached to the establishments of the buyers. In due course the figures will appear in a condition that may amaze the curators of the Louvre, and as it can be said of them with more truth than usually accompanies descriptions of artistic masterpieces, that they are "from the Louvre collections," who knows but they may eventually find their way to one of the American millionaires who are such a blessing to Paris brokers.

The awarding of medals in an exhibition gives as little satisfaction as the selecting of designs in an architectural competition. The gold and other medals of the Liverpool International Exhibition are supposed to have been given with so little discrimination that in some cases the prizemen will not receive them. For instance, Mr. Fletcher, of Warrington, in a letter to the chairman of the Jury Committee, says:—"I regret to be compelled to decline to receive the gold medal awarded to me, and to ask that my name shall be erased from the list of awards. The shameful revelations in connection with these awards render this course imperative. I have no desire to have my reputation brought into question by the possession of 'honours' from such an exceedingly doubtful source." A firm of exhibitors who received three medals adopted the same course, considering that the medals, from the way in which they were adjudged, would be "of no practical use as advertising mediums." Some people say the medals were given by favour, others say the jurors were incompetent. One exhibitor complains that the jurors on leather were the same gentlemen who were inquiring into the qualities of the jams, inks, mineral waters, and food in general! The dissatisfaction will not add to the pleasure of the guarantors when they find they have to draw cheques to make up the deficiency.

According to the Birmingham masons there is nothing like stone for the walls of the new Assize Courts, and they made out a very good case when they appeared before the Mayor. However, the Corporation decided against them. Now it is the turn of the Birmingham bricklayers. They are no less confident about the superiority of terra-cotta over stone. But both trades could not pretend that they considered the subject in its architectural relation alone. The masons said that with terra-cotta there would be 30,000*l.* lost to the operatives of the town. The bricklayers maintain that statement is erroneous, for if stone were used it would be prepared to some extent outside the town. If the test of numbers is applied, the bricklayers say they deserve most consideration, since in Birmingham there are at least four bricklayers to one mason, and, while every bricklayer must have a labourer, one labourer can serve nine masons.





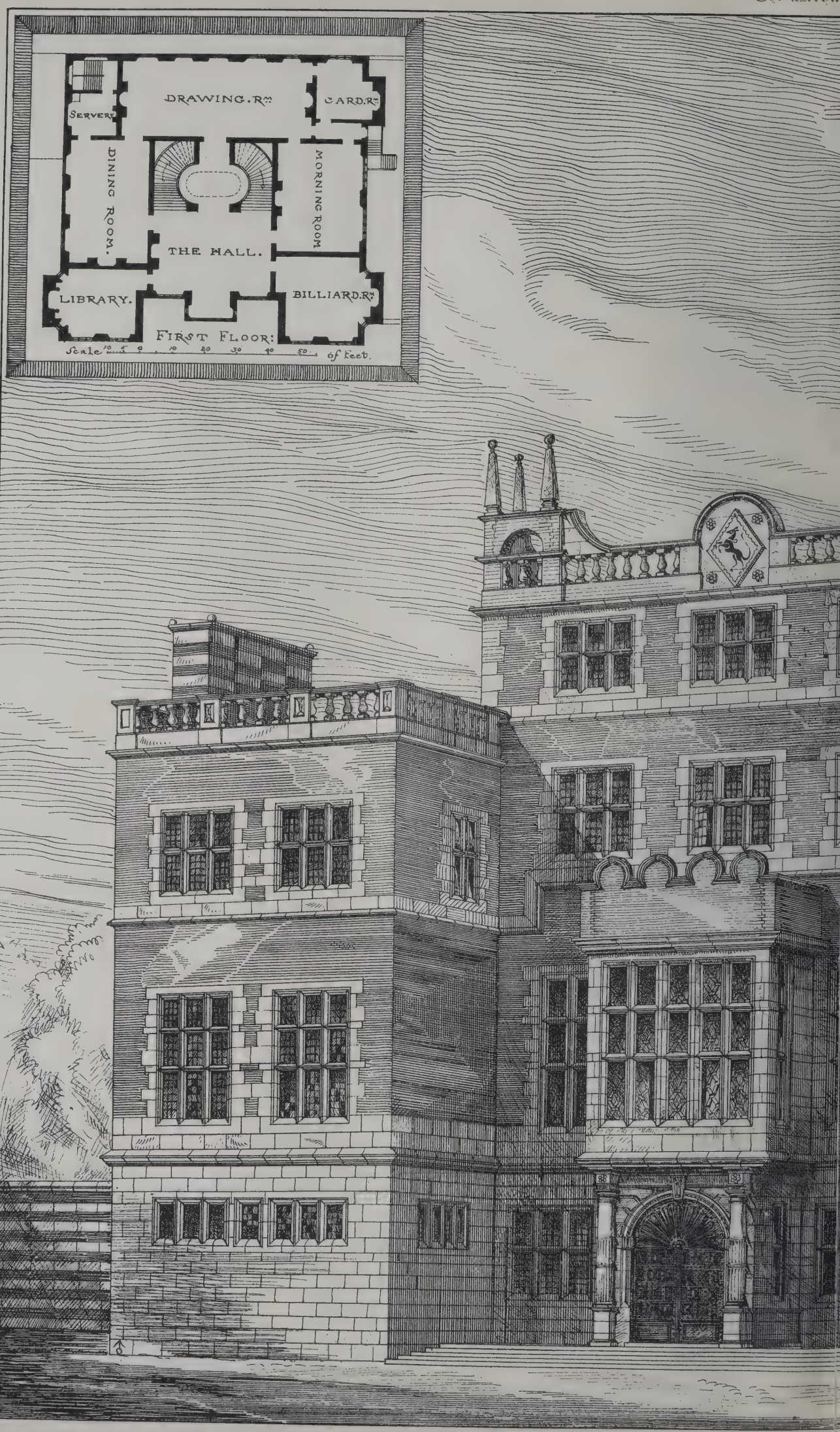
Thomas Gainsborough R A. pinx — Paul Rajon sc

THE BLUE BOY

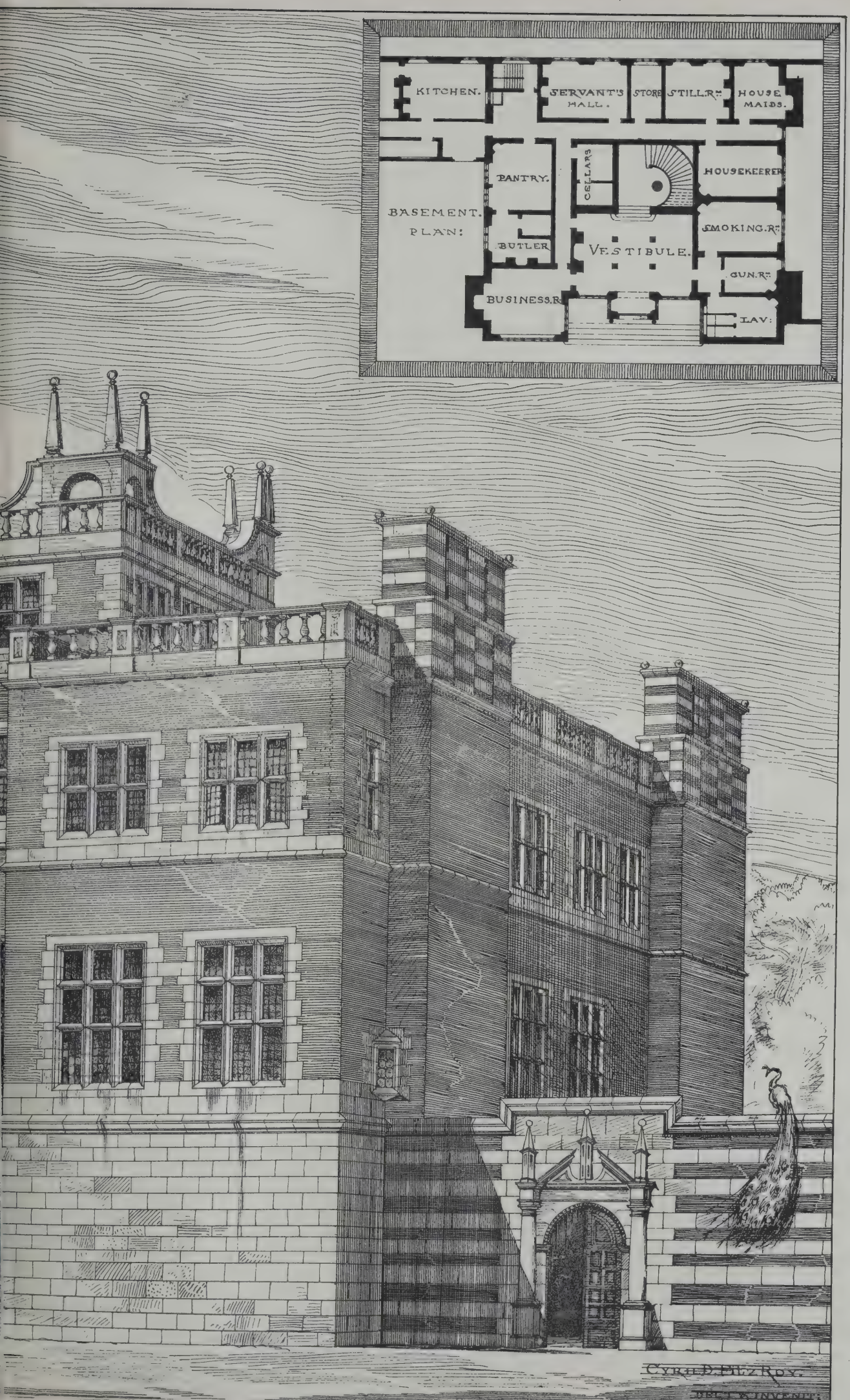
Gallery of His Grace the Duke of Westminster

W. Strang from Life

Printed by Spiegue & ... St Martins Lane Cannon St EC


DRAWING. Rm
CARD. Rm
SERVERY
DINING ROOM.
MORNING ROOM
THE HALL.
LIBRARY.
BILLIARD. Rm
FIRST FLOOR:
Scale 10 0 10 20 30 40 50 of Feet.

DESIGN FOR C


KITCHEN.
SERVANT'S HALL.
STORE
STILL R.
HOUSE MAIDS.
PANTRY.
CELLARS
HOUSEKEEPER
BASEMENT. PLAN:
BUTLER
VESTIBULE.
SMOKING R.
GUN R.
BUSINESS R.
LAV.
CYRIL D. FITZROY.
DEL. J. RUNVENT.

TRY HOUSE.





R. Phené Spiers

"INK-PHOTO" SPRAGUE & Co. 22, MARTINS LANE, CANNON ST. LONDON E.C.

VIEW IN CENTRAL AVENUE OF HALL OF COLUMNS, KARNAC.

Drawn By R. PHENÉ SPIERS, F.S.A.

ILLUSTRATIONS.

THE BLUE BOY.

IF any man can be considered as deserving of honour by French painters it is the experimentalist who produced the portrait of Master Buttall, the immortal *Blue Boy*. At a time when glowing reds and yellows were in favour, and when many colours were supposed to be indispensable in a good picture, he set aside all established canons by demonstrating that a masterpiece is possible should a painter be restricted to blue. The experiment was successful, but the modern painters of France are the first who have acted on it, and Gainsborough should be joined with Constable whenever the history of the existing school is traced back to its prime movers. If we wish to see the extent of the influence that was exercised by the two English masters we must visit a Salon exhibition rather than one of the Royal Academy. It is strange that Englishmen have to go abroad in order to be taught the value of two of their countrymen, but that is the fact. Even in the lecture-room of Burlington House Gainsborough appears to be ignored. He is supplanted by a crowd of Dutchmen, some of whom were not worthy to mix his colours or clean his palette.

It was only right that *L'Art*, as the leading publication of its class in France, should give the elaborate etching from the *Blue Boy* which we now reproduce, and which is a tribute to the memory of a man who has made French painters his debtors. It is one of M. Rajon's best works.

The *Blue Boy* made its mark when it appeared. Jackson, of Exeter, when writing of it, said:—"Perhaps his best portrait is that known among the painters by the name of the *Blue Boy*. It was in the possession of Mr. Buttall, near Newport Market." It was, in fact, the portrait of the son of the worthy Mr. Buttall. Father and son, like most of the inhabitants in the Newport Market region, have fallen into oblivion. All that is known of Master Buttall is that he served as a model for Gainsborough.

It is generally accepted that the picture was painted in order to refute a theory of Reynolds's about the danger of allowing blue to have prominence in a painting. "It ought," he said, "to be indispensably observed that the masses of light in a picture be always of a warm mellow colour—yellow, red, or a yellowish-white—and that the blue, the gray, or the green colours be kept almost entirely out of these masses, and be used only to support and set off these warm colours, and for this purpose a small proportion of cold colours will be sufficient." But it is remarkable that in the discourse which the President delivered after Gainsborough's death nothing is said about so noteworthy an experiment. He did, indeed, suggest that the painter was over-fond of colouring. "Gainsborough," he said, "having truly a painter's eye for colouring, cultivated those effects of the art which proceed from colours, and sometimes appears to be indifferent to or to neglect other excellences." Afterwards he said that Gainsborough's works were distinguished by a lightness of effect produced by colour to an unexampled degree; but "it must be acknowledged that the sacrifice which he made to this ornament of our art was too great—it was, in reality, preferring the lesser excellences to the greater." Reynolds made many experiments in colour, and probably was not satisfied that another painter could also make them as if they were only a diversion. Time has, however, proved that Gainsborough did not sacrifice everything to colour. If we take the *Blue Boy* as an example, do we not find that it owes its position among English portraits to the expression of character as much as to its novel scheme of colour? There were subjects that Gainsborough could not paint so well as Reynolds, but there were others which he painted better, and the *Blue Boy* is one of them. Nor is Gainsborough to be blamed because he recognised his own limitations. Would that Reynolds did so when he attempted historical pictures!

There was not only the power of rivalry to make Reynolds ungenerous towards Gainsborough, but as President of the Royal Academy he could not be enthusiastic about his rival's works. For he must have felt that Gainsborough was a living refutation of the advocates of an Academical system of education. A son of a Suffolk clothier, he owed his skill in painting to such teaching as was to be had in London, aided by his own ability. He had not made the Grand Tour, he was unread in books on art in foreign languages, he was not a worshipper of the "gusto grande." "When such a man as Gainsborough," said Reynolds, "arrives to great fame without the assistance of an Academical education, without travelling in Italy, or any of those preparatory studies which have been so often recommended, he is produced as an instance how little such studies are necessary since so great excellence may be acquired without them." Reynolds could not deny the force of the objection, and the only way he met it was by undervaluing the art of Gainsborough. For his class of subjects, said the President, the living world was sufficient. Gainsborough was not the man to acquiesce in shams. He reached his position in art by hard work, which he went through with as much fervour as if it were only a boy's game in the fields, and he could not believe that a better course was to be found in listening to professors who were doing their best to persuade themselves and their auditory that they were eloquent. Gainsborough was supposed to be frivolous, but he was wiser than the educational reformers who believe they can make artists by methods which they have been unable to apply in their own cases. He was not at his ease in the new Academy, and was obliged to retire from it. But the change made no difference in his position, for too many of his contemporaries believed him to be the first painter of the time.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 32.—AVENUE OF HALL OF COLUMNS, KARNAC.
NO. 33.—DESIGN FOR A COUNTRY HOUSE.

THE ARCHITECTURAL ASSOCIATION.

THE first ordinary meeting of the Association was held last Friday evening, the President, Mr. J. A. Gotch, in the chair. Mr. E. C. Hanson was elected a member. Votes of thanks were passed in connection with the conversazione, including a vote of thanks to the ladies and gentlemen who kindly assisted in the concert, to the Institute, to the exhibitors, &c.

The President then distributed the prizes to the successful students. The prize list was published in the report of the conversazione which appeared in *The Architect* for October 15. The name of Mr. Woodward appears in the list as winning the sketch-book title-page prize. This award is for the session 1884–85, which award was still *sub judice* when the prize list for that session appeared in *The Architect* of October 16, 1885.

The award for the session just ended has not yet been made.

Mr. H. D. Appleton, hon. secretary, announced the death a few days previously of Mr. H. J. White, a hard-working student, who this year had succeeded in winning the Architectural Union Company's prize, a success which, sadly enough, had come too late.

The President's Address: The Beginner's Prospects.

The President having begun with a remark as to a future Bunyan of the profession writing an "Architect's Progress" of adventure and misfortune, said:—Ours is, indeed, an arduous profession, and it is with no light heart that those who have the shaping of a young man's destiny should thrust him upon it. Ten years of toil may, perhaps, fit him to cross the threshold of independent practice. But to many that door is never opened, while to others it opens twice—once that they may enter and once that they may go forth, either to rejoin the army of those who work for others or to seek some different occupation, where the reward will be in greater proportion to the toil. In greater proportion—ay, there's the rub. Surely no one will become an architect hoping to find a fortune. If he works hard during the day and for a little of the time that other men devote to tennis or billiards, a conscientious man may manage to live and an unscrupulous man may do even better; but, as for fortunes, they fall to few in the architectural world. No! let him who enters for the race do it not for the prize but for the pleasure of running. If by good luck he gets the prize, then is he doubly blessed; but if not, he still has the delight of exercising fine faculties in a masterly manner. This, however, is perhaps a refined joy that it is not in every one's nature to experience, and therefore I say let those who regard the practice of architecture as a money-making pursuit turn their eyes in another direction, or they will find themselves mistaken, when, perhaps, it is too late. I do not deny that there are architectural practitioners who turn out much lucrative work at five per cent. and a good deal less, and in their work is patent the very natural desire to do as little as possible for the money they get. But

the architect and the architectural practitioner are widely different beings, and it is for the benefit of the former, and not of the latter, that this Association is maintained. The spirit that should animate the architect, in common with all artists, is not the commercial spirit of doing no more than is absolutely necessary to avoid reproach and reprisals for non-fulfilment of contract, but rather that nobler spirit that aims at reaching its own ideals, even if in doing so it gives more than was expected or bargained for. Satisfy yourself as well as your client—

> To thine own self be true,
> And it must follow, as the night the day,
> Thou canst not then be false to any man.

In designing a building, no matter how humble, ask yourselves two questions—first, Will this please my client? secondly, Would this please the visitors of the class of design? Once fairly embarked upon the sea of architecture, the most vivid impression one receives is from its limitless extent. There may be an ultimate shore of knowledge to which the architect may attain in time, but it is far below the horizon at the outset; and not infrequently it happens that when the voyager has left land so far behind as to render return impracticable, the outlook becomes rather dreary, for retreat is difficult, and there is no goal visible. The best thing to do, then, is to keep your eyes in the boat. Pay heed to the handling of the craft, and she will carry you into harbour sooner or later. This magnitude of the outlook, this feeling that no knowledge comes amiss, is at once the despair and the joy of the architect. On the one hand, it induces a feeling that no length of life and no strength of memory are sufficient to acquire and retain the information which it may be essential for him to have at any moment; on the other, it assures him that no day need be wasted, no experience fruitless. Consider for a moment some of the calls that may be made upon him. He may have to design a church, which implies an acquaintance with a special form of ritual; or a chapel, which, while possessing many points in common with a church, should yet be conceived in a wholly different spirit. His next work may be a school, towards which a knowledge of religious architecture will help but little. To design a row of cottages, with appropriate arrangements and internal fittings such as will draw forth the commendations of the inmates, implies a considerable knowledge of the habits of the poor; while a gentleman's house could never be fitly designed by one who had not mixed with gentlemen. These are but a few samples of work which might fall to any architect's lot. Other buildings would call forth even more varied acquirements. A set of farm buildings, a range of stables, a bank, and a public-house require a more intimate acquaintance with man and beast than any ordinary person would seek. Of course, much of this knowledge can and must be acquired by special effort as each case arises. It is really a matter of mastering your brief. But the knowledge must be acquired, and the more completely it is digested the easier will be the task and the better its results.

An architect ought to be a man of wide sympathies, able to view things as much from the standpoint of others as from his own, able to throw himself into various parts as completely as an actor, and above all, perhaps, able to realise as he draws what will be the actual effect of his drawing in execution. All this he should be in his capacity as planner, that is to say, while reducing into working order the various points of the problem. In addition to this he must be able to clothe the result of his contrivance in fair outward garments that shall appear well, not only in the elevations, but on the perspective too. And this implies a long course of study of architecture, as usually understood by amateurs, that is to say, of the Five Orders, of the arch, of proportion, of fenestration, of rhythms, of light and shade, of mouldings, and of all the other headings into which treatises on architecture are divided. But all these things, if not preceded by well-contrived practical arrangements, are but as sounding brass and tinkling cymbals. What are the student's prospects for fitting himself for his work? It must be admitted that he is better off than his predecessors. The facilities for acquiring knowledge, at any rate in London, are increasing year by year, and the student of to-day has a more defined and easier path to follow than the student of thirty, twenty, or even ten years ago.

First and foremost among the brighter prospects is the renewed activity of the Royal Institute of British Architects. This body has an age and a prestige which necessarily weigh much with the public; and if it keeps pace with the times, as it bids fair to do under the new charter, it will be an invaluable instrument in consolidating the profession, in training students, and in maintaining a high standard of professional honour and ability. The new charter, gentlemen, will inaugurate a new era in professional matters. It is earnestly desired by all the best men, and should any persons take upon themselves to oppose it, they will find themselves out of sympathy with the ablest, and most influential, and respectable part of the profession. But, to my mind, its most important action of recent years, and one which will have as far-reaching effects as even the obtaining a new charter, is the institution of the compulsory examination. This, gentlemen, is the first step towards establishing a universal test of competency for all practising architects, and I earnestly beg you to support the movement heartily by passing the examination yourselves, and doing what lies in you to induce others to do so too. First of all, it is a certificate of competency which must be of use in starting business on your own account. Then it helps the public to distinguish those who have had a recognised architectural training from those who merely slip into a practice, or endeavour to gain a spurious prestige by the addition of initials to their names, conferred rather as the mark of a subscription duly paid than of any architectural merit. All of which tends to the detriment of the architectural status generally, and to the confusing of good work and bad. Finally, the mere effort of going through an examination is of service to the student, as it helps to crystallise much knowledge hitherto in solution, and to show him where his strength and his weakness lie. The effort while the student-days are yet passing is a mere nothing, but when the active practice has begun it becomes a matter of difficulty to find the time amid the engrossing cares of responsible work.

To all young students of architecture I say—Regard the passing of the Institute examination as the first landing on the long staircase that leads to fame.

Having referred to other opportunities, the President continued:—I have touched upon some of the means by which students can prepare for the examination of the Institute, and less with the view of tabulating them for immediate use than of drawing a moral from them. And the moral is this—that it is highly desirable that some more concentrated system should be established. It may be said that ample means already exist for the student to gain the information he wants, but how can he avail himself of them when they lie wide as the poles asunder, and occur with no due sequence of time? What is wanted is a definite, recognised course of study, to be followed in conjunction with office work, and to a large extent during working hours. It is not fair to students to expect them to work all day, and then to apply themselves with unflagging energy to a serious course of study in the evening. There may be offices where pupils do not at all times get wearied with what is put before them to do. But there are also many offices whe day's work is quite as much as ought to be expected from a young man in a day, and from which he would issue in the evening not altogether fitted for making the best of further opportunities for study.

This question of concentrating the opportunities of education is, I am glad to say, now under the consideration of a committee appointed by the Institute, and we may hope before long to have valuable suggestions, not only how to make use of the existing multifarious and conflicting means of learning, also, I hope, for a further departure in the direction of establishing a central educational agency.

But there is no reason, because no regular highway to knowledge is yet formed, that we should not struggle manfully along such tracks as we have. Our present system of education is pupilage. Then, pupils, extract as much information from your principals as you can. Get to know the reasons for everything. I well remember how hopelessly I used to flounder about when I was a pupil, and to wonder whether I should ever learn the system upon which plans were devised, or under what circumstances one ought to use certain strengths of timber. Things became clearer after a time, and when I began to feel a real interest in the work; but for some years I felt that I certainly should never know enough to start work on my own account—everything seemed so vague and shifting; but, then, I was taught in the country, and did not know even of the existence of the Architectural Association. These things I mention in case any beginner may be in the same plight. Stick to it, and the atmosphere will gradually clear. One way of learning is to do thoroughly what you have to do. Let every line you put on the paper have its mission. Have a reason for putting every door and window in one place rather than another. Think everything out as carefully as a move at chess; learn the meaning of every phrase in a specification, and put nothing in from one to another that is not applicable to the new work. By such means you will save yourselves much subsequent worry and many reproaches, and you will be spared the mortification of hearing that your bedrooms have no wall-space for the bed or your drawing-room for the piano, or that you have called for extravagant work in a cottage, where every halfpenny has to be saved. Depend upon it, the three qualities of thoroughness, exactitude, and neatness, though they will not make an architect, will go far to help an architect to live.

The President considered how the opportunities of students in the country could be improved, these opportunities being mainly office-work and private study, and concluded by dwelling on the importance to an architect of a thoroughly good school education.

Mr. R. C. Pink proposed a cordial vote of thanks to the

new President, his successor in the chair, and spoke in very complimentary terms of the President's literary abilities.

Mr. M. B. Adams seconded the vote. His advice to students, he said, was "Work hard," adding that his experience was that the best men came from the country, thus showing that those who had the least opportunities had made the most of the opportunities they had.

Professor Kerr expressed the interest he always felt in attending the important meetings of the Association. It caused him the most extreme satisfaction to see the prosperity of the Association so well sustained. The President, he observed, had given an account of the profession which might discourage many. He hoped it would not discourage any of the students present. He proposed to turn to another view of the profession. It was remarkable that the building interest was the second great industrial interest in England. It held a field second only in extent to that of agriculture. Consequently no one with a head on his shoulders who learned his business in an architect's office, no matter in what way, need apprehend failure if determined to do his work in some one sphere or another of building in the interest of the public. He had witnessed great changes in architectural life during the last twenty years, changes almost as great as those which had been astonishing people in social life. The outcome of it was that we were being rapidly Americanised. Nature would have its way, and much that was old-fashioned and severe in various elements of respectability was giving way to a new system. As young men, they must face that system. They must not look back. However painful it might be, they must look forward to the new ideas that were arising, ideas which were commercial. Professor Kerr said he was not a commercial man, nor did he advise them to leave the sentimental side of their profession. In saying the building interest was so large, that was to be interpreted that there are a great many directions which a young architect might devote his attention to, and if one did not suit him he might turn to another. So also with art and with science. Architectural knowledge was acquired not in a school, but in the rough and ready training of an English architect's office. As compared with French architects, English architects were thoroughly practical. The French were exceedingly graceful in the use of the pencil, but they were wanting in the business and administrative qualities that distinguished the Anglo-Saxon race. The English architect combined in himself, as no other professional man in England did, certain elements of business that were antagonistic. Art and science were antagonistic to each other, and business was antagonistic both to art and to science. All three were combined in architectural practice. If, therefore, the young men would pay attention to the work they had to do in architects' offices, whatever the work might be, much or little, if they studied art, science, and administration, then, in the coming decade, if they found a difficulty in one branch of work they would find a dozen other ways open to them. The subsidiary arts were rising up in England in a marvellous way. In these they would take the pre-eminence over those who were educated in an upholsterer's shop, which would enable them to acquire opulence. Not only so, but they would cut out the engineers. Why should not architects design the great bridges and roofs of the present day? An engineer could not accomplish the design of grace because he was not brought up as they were being brought up. In concluding, Professor Kerr remarked that in the next generation a variety of fields of administrative building business would be found, not purely commercial but connected with commercial interests, and which would open out many channels of work.

Mr. W. M. Fawcett, of Cambridge, said it was the first time he had attended a meeting of the Association. The Association had always been a distinctly educational body, and therefore ran on lines parallel to those of the Institute. The Association had always appeared to him to be the handmaid of the Institute. He hoped they would always work together, as he believed they had hitherto. He had asked people what they meant by federation of architects. Each person gave a different answer. However, the whole question had been so thoroughly discussed and thought out, that he hoped some practical outcome would be the result.

Mr. H. L. Florence said the President had begun by alluding to Bunyan, and he could not help thinking it a good omen when he remembered that the pilgrim, at the end of his journey, reached the city which was paved with gold. Mr. Florence then said that if the students of the Academy were a much larger body they would have more influence, and, speaking of the Association, said that when they wanted anything they generally got it. Professor Kerr, he thought, spoke disparagingly of French architects. His experience was that French buildings were carried out without failures, without faults of construction—buildings such as we did not see here.

Mr. J. D. Matthews expressed their regret that the President was unable to attend the conversazione, and that they were glad to welcome him.

Mr. Tarver considered that our modern architecture was able to hold its own with that of any other country. Much harmony of style was becoming apparent in both London and country architecture, and in regard of detail several of what were features of the day had come into existence from the requirements of the age, of building acts, &c.

The vote was carried by acclamation.

Mr. Gotch, in acknowledging it, said his accident a fortnight ago was not very serious; it was caused by a treacherous bicycle. As to pupilage, he by no means wished to abolish it, but rather to supplement it.

THE BARONY CHURCH COMPETITION.

A MEETING of the heritors of the Barony parish has been held to receive reports by the minister and committee on voluntary assessment, and, if approved of, to consent to the erection of a new church.

Dr. Marshall Lang said that in February 1884 the landward heritors intimated a consent to the erection of a new church, on condition that the minister should report that a sufficient sum had been raised for that purpose. The first duty, therefore, of the kirk-session and himself, after the movement had proceeded so far, was to forecast what sum they regarded might be required, and the amount likely to be realised, and after careful consideration they fixed the sum at 13,000*l*. Selected architects were next invited to offer competitive designs, and of the designs submitted by ten architects of professional standing that of Messrs. Burnet was selected. The contract for the work had been divided into three sections, the first including the church, with vestry and the session-house; the second including the rooms and hall; and the third the caretaker's house, with whatever might be required in the shape of premises for the High Church or additional hall accommodation. The first of these contracts, which would come to a little over 11,000*l*., was fully covered, as would be seen from the statement to be submitted by Mr. Galbraith, treasurer. He did not mean to say they had got all the money that was required, but he confidently reckoned that they would yet get 2,000*l*. In the first place, the congregation of the Barony Church had resolved to make a new effort to raise an additional 1,000*l*., and there were many friends who had not yet fulfilled their announced intention of contributing. In concluding, he trusted that the meeting would consent to the erection of the church, and it would be the desire of those in charge to proceed at the earliest possible moment with the work. No time should be lost. Work was very cheap and very scarce at the present time, and the building would be a great boon to many workmen in the city of Glasgow.

Mr. Galbraith then submitted a statement showing that 9,190*l*. had already been subscribed towards the erection of the new church, while the sum of 3,382*l*. had been promised, making in all a total of 12,572*l*.

The Chairman (Colonel Hozier) said that, having heard the statement by Dr. Lang, which showed that a sufficient sum of money had been raised, he formally proposed that they agree to the erection of a new church being proceeded with. The resolution was adopted.

The following is a description of the new building, plans of which were shown at the meeting:—The church consists of a wide nave and narrow side aisles, with a transept on one side. By this plan the greatest possible number of the congregation obtain an uninterrupted view of the minister, and are consequently more able to hear him. A chapel or second transept is placed on the east side of the chancel, so to speak, behind the minister. This may be thought an unusual arrangement and not likely to be agreeable to the sitters there, but the pulpit being placed on the opposite side of the nave, the preacher speaks obliquely across the chancel, so that this part of the congregation will not be exactly behind him, but in much the same position as the majority of the congregation in St. Giles's, Edinburgh, where the minister is easily heard. The organ chamber is placed in the transept west of the chancel. The choir seats, the communion table, and elders' seats occupy the back or north end of the church, and galleries are placed in the east transept and at the south end of the nave. The hall and committee-rooms are so placed and connected with the church that they may be used either independently or with each other. The session-house is close to the church, and the division walls are so constructed (of timber screens) that it can be connected with the chapel or chancel transept and used as an overflow for the church. The vestry is in close proximity to the chancel or session-house, and all these rooms look out upon Cathedral Square. A ladies' room is placed on the ground floor of the caretaker's house. The main entrance is at the south end of the nave, but the east porch is large and spacious, and can, if desired, be used as the principal entrance, as all the galleries may be reached from the interior of the church. There are three exits from the nave, independent of other three for the galleries, and the minister's entrance from the vestry and

session-house. The buildings are worked out in a somewhat Scotch development of the Early English style, a style specially favourable to the monastic grouping, and severe simplicity of detail is imposed alike by the requirements of the site and the smallness of the sum of money at the disposal of the committee. The exterior is to be entirely of common or square-dressed rubble freestone. In the interior the walls of the nave will be finished in plaster, except at the windows and arches, where polished stone will form the surface. The walls of the chancel will be entirely of polished stone, except in the spaces intended for mural decoration. The roof, an open timber one, is to be of red pine, and all the pews of pitch pine, the elders' and choir seats, organ case, &c., being of hardwood. The floors, with the exception of that of the chancel, are to be of timber, the chancel being laid with tiles and marble of a very simple design. The session-house is to be panelled to the height of 5 feet with wood, but the walls of all the other apartments are simply to be plastered. The windows are to be filled with simple leaded glass work of a very pale tint, except in the chancel, where the tints may be violet, and ultimately figure work may be used. The heating is to be effected by means of a low-pressure system of hot-water pipes placed in the chancel below the passage and round the walls, and in the other rooms above the floor. Each set of rooms can be heated separately, and the whole will be under the control of the janitor in the basement of his house.

THE JUBILEE CHURCH HOUSE.

THE proposal to erect a Church House by an architect of the highest standing has not given satisfaction to Mr. Cavendish Bentinck, who has sent the following protest to the secretaries :—

"Gentlemen,—I have the honour to acknowledge the invitation to join your Committee, which, by the desire of His Grace the Archbishop of Canterbury, you have forwarded to me, but I regret to acquaint you that I cannot support a proposal to erect a new Church House of large dimensions and at great expense, because it is evident that the clergy of the Church of England would be practically the promoters of the scheme, and as their leaders have no acquaintance and no sympathy with the ideas and works of the great architects and masters of art of the sixteenth, seventeenth, and eighteenth centuries, it follows that the funds subscribed would be handed over to some so-called 'Church architect,' who would proceed to add to the list of the costly architectural failures which are almost daily committed throughout our native country.

"But I will not limit this communication to a mere objection. I will venture to offer a practical suggestion for the consideration of your Committee, and as follows :—I have myself been long engaged in defending the 'City Churches,' and recently also 'the Charterhouse,' against the assaults of destroyers, and I am of opinion that if a 'Church House' be deemed a necessity for the Church of England, the 'Queen's Jubilee' would more fittingly be celebrated by adapting to such a purpose beautiful and interesting structures whose existence is precarious, rather than by rushing into extravagant experiments, which might produce even worse results than the new Law Courts or the new Sion College. But if the buildings to which I have referred be considered inconvenient, permit me to point out that the 'Chapter House' of Westminster Abbey might be well utilised for Church gatherings. It stands in a central situation, is admirably adapted for large meetings, and I, as an old Westminster, should rejoice to see this noble space rescued from the useless and degraded position it now occupies, and relegated to a purpose not materially different from that to which it was originally dedicated.

"I have the honour to be, gentlemen, your obedient servant, "George Cavendish Bentinck.

"Venice : October 15, 1886."

THE VENICE EXHIBITION.

PREPARATIONS for the National Exhibition of Fine Arts which is to take place in Venice next spring are already in progress, and the beauty of the public gardens has undergone a temporary disfigurement in the shape of unsightly hoardings and other signs of building operations. We think, however, says the *Venice News*, that the best, if not the only practicable site, has been chosen, and hope that the works will be pushed on with sufficient vigour at once, so that the structure may be ready for occupation by the date required, and if possible be got sufficiently dry to avoid any great risk of injury to the articles which will have to be exhibited there. The works now in progress extend from the bridge at the entrance to the gardens right along their whole length to the further end, but the large trees and main walks will not be disturbed. A temporary wooden bridge has been erected over the canal dividing the gardens from the rest of Venice, to give access at present in place of the one just referred to, and the devotees of walking exercise can still find some space for the stretching of their limbs, though the prospect is limited to the fatal mud-banks and shorn loveliness of the ill-starred island of St. Elena.

Correspondence

Architectural Federation.

Sir,—In consequence of the publication in last week's professional journals * of a circular letter from the Institute on this subject, we feel it necessary to send you a few remarks which perhaps you may find space to insert in this week's issue.

It is almost inconceivable that any members of the Institute who duly read our circular can have signed the accompanying declaration under the impression that it emanated from the Institute. The circular distinctly states that it is based upon resolutions passed at the general conference held in the Freemasons' Tavern, which all must be aware, from the notices sent to every architect in the kingdom, was not convened by the Institute.

We regret that at a time when the idea of consolidating the profession is within measurable distance, the Council of the Royal Institute of British Architects should appear to be endeavouring to divert the attention of its members from the all-important question of obtaining an Act of Parliament to close the profession in future against all but duly qualified men. Apart from obtaining such powers, we recognise no practical meaning in the term Architectural Federation, and nearly 1,300 architects have endorsed this view of the question.

We are of opinion that the existing charter of the Royal Institute of British Architects would be no bar to obtaining the proposed Act, but the fact of a *new* charter having been granted to the Institute immediately before the presentation of a Bill to Parliament would certainly retard, if not altogether defeat, this object.

The Institute's circular letter states that the report of a special committee of the Institute now sitting to consider the matter of architectural federation may be presented to the Council before the close of the year. We fail to understand how the Council of the Institute can appeal to their members to fix their hopes on this committee, which, having been sitting six months, has announced that its report will not appear till after the application for a new charter, the granting of which may fatally prejudice architectural federation.

We also take this opportunity of stating that there was no intention, as it is clear from the foregoing observations there could be no object, to exaggerate or to suppress in our circular any of the facts connected with the origin or constitution of our committee. The names of the gentlemen serving on it will be sufficient guarantee to the profession that this is the case.

Our circular does not appear to have reached more than about 2,500 architects, of which number, as before mentioned, about 1,300 have signed a declaration as follows :—

Whereas we the undersigned are of opinion that it is for the benefit of the public and the architectural profession alike, that legislative powers should be obtained, so that all persons hereafter entering the profession shall be duly qualified by examination. We are desirous that committees should be formed to promote the object in view, and to obtain the necessary Act of Parliament.

It will greatly facilitate matters if all architects who are in sympathy with the movement will send in their names and address immediately to the honorary secretary, Mr. Edgar Farman, 39 King Street, Cheapside, E.C.

The Institute has now an opportunity which we hope it will embrace of yielding to the wishes of a majority in the profession, by postponing the application for a new charter and carrying out this great reform.

Signed on behalf of the Architectural Federation Committee. Hugh Roumieu Gough, Chairman.
Edgar Farman, Hon. Secretary.

October 26, 1886.

Sir,—Will you allow me to answer Mr. E. T. Hall's letter on this subject, and in doing so some other letters which have been published in the professional journals.

The Federation Committee have simply asked an answer to a distinct question, which is, "Do you desire by Act of Parliament to close the architectural profession, so that hereafter only duly qualified men can act as architects?" Mr. Hall and

* As is explained elsewhere, we were unable to find space for the letters on Federation last week.

others, quite putting on one side this, the gist of the whole matter, try to smother the effort to obtain the necessary Act of Parliament, and excuse themselves for not joining it (although they are obliged to agree with the object of the movement) by raising all sorts of side issues, such as to the correctness of the wording of some of the circulars; as to what shall be the qualifications under the Act; as to the constitution of the Committee; as to the position or qualifications of the members of the Committee. Even granting some inadvertence in the wording of an accompanying circular is liable to be misunderstood, even granting the Committee was not composed of the best men, what have these side issues *in the smallest degree* to do with the question? They do not affect it one iota.

Members of the profession have not been asked to agree to the circulars; they have not been asked to vouch for the competency or the position of the Committee's members, but simply to say aye or nay to a question affecting an object which is clear and distinct and of the first importance.

Why stay to question the exact quality of the materials, or the construction of the bridge, when it will carry you over and you are in haste to go? The question is, indeed, too serious a one to the public and profession alike for it to be thus trifled with. Incompetency on the part of members of the profession means (as at present it does very often), for the public, loss and even death. Much of the business for the law courts arises from this fruitful source, and in consequence of it insanitary dwellings are no novelty.

Now, sir, I ask the Royal Institute of British Architects, and any other societies and persons who agree with the principle and try to cavil at unimportant details, why they cannot sink petty jealousies and work together for a common good. As to the Royal Institute of British Architects, they certainly have had the question before them for many years, and have also had, as Mr. Hall says, committees on this question before this one. These facts can hardly be to their credit, as they have as yet done nothing; while the Federation Committee, which has not yet been in existence six months, has obtained such special support from the profession in all parts, and to such an extent as to outnumber the existing architectural societies in the United Kingdom. They have not obtained this by sitting still, but by having the one good object in view and giving both the necessary time and other support which has been required from them.

The Council of the Royal Institute of British Architects would not act on this Committee when asked to do so at its election, at which election Mr. Hall himself was present. Still the members of the Federation Committee are, I believe, now, as they were and as they have always been, not only ready to act with the Royal Institute of British Architects in this important question, but to efface themselves so far as the "lead" in this movement is concerned; but they will not let the matter be dallied with or crushed out. They have put their hands to the plough; they will welcome more help and more hands, but they will not turn back.

May I say a few words as to the Federation Committee's reason for opposing the proposed new charter of the Royal Institute of British Architects. It was not because they are hostile to the Royal Institute of British Architects, or because they have any desire to prevent any society from obtaining a separate charter; but they believe that the present moment is inopportune, and that the granting of powers to the Royal Institute of British Architects to have a compulsory examination for those wishful to enter only its special ranks is useless, and will in no way protect either public or profession from any chimney-sweep, if he likes, opening an office and calling himself an architect.

Nothing but the course proposed by the Federation Committee—namely, that of obtaining a Registration Act, similar to those for the medical and dental professions—ever will attain that object, and the Federation Committee consider such object far more important to all alike than any charter to any individual architectural institution.

Our desire is to conciliate, to avoid further cause of jealousy, but honestly to carry out the object which it seems is in favour with all. Why cannot all alike help for the "common weal," and, if they think we are weak, make us strong?—I remain, yours truly,

WALTER EMDEN.

36 Southampton Street, Strand, W.C.: October 1886.

SIR,—At a special business meeting of the Leeds and Yorkshire Architectural Society, it was proposed by Mr. C. R. Chorley, F.R.I.B.A., seconded by Mr. J. W. Connon, F.R.I.B.A., and carried unanimously, that the following resolution be sent to the Royal Institute of British Architects, the architectural journals, and various architectural societies:—

Resolution.

"The Leeds and Yorkshire Architectural Society (Incorporated) congratulates the Royal Institute of British Architects on the completion of its proposed new charter, and repudiates in the strongest manner any share in the opposition to its adoption which is being threatened by a non-representative architectural society."

Yours faithfully,

GEORGE BERTRAM BULMER.

Infirmary Street, Leeds: October 27, 1886.

SIR,—We are instructed by the committee of the Architectural Association to state, in reference to a circular issued by Messrs. Roumieu Gough and Edgar Farman, that the Architectural Association is not represented or connected in any way with the Architectural Federation Committee.—Yours faithfully,

HERBERT D. APPLETON,
THOMAS EDWARD PRYCE, } Hon. Secs.

Architectural Association: 9 Conduit Street, W.

New Barony Church.

SIR,—As we fear that Mr. John Honeyman's letter, published in your issue of the 22nd, may mislead those interested in the affairs of the Barony Church, we would be obliged by your finding space in your columns for the following facts.

In answer to the invitation of the committee, we submitted two designs, unfortunately (in so far as our doing so seems to have resulted in this discussion) described in our report as one. One showed a church with a spire, in deference to what we thought might naturally be the wish of many members of the church, at an estimated cost of 15,600*l.* The other showed the church rearranged, and with a large western porch in place of the spire in the other design, at an estimated cost of 13,000*l.* At the same time we urged that in consideration of the surrounding features, and also in consideration of the small sum of money at the disposal of the committee, that the spire should not be built. We understand that our costs were verified by the measurers acting for the committee. It was intimated to us that the committee had accepted, according to our recommendation, the design without the spire, and we were instructed to prepare contracts for the execution of the work. This has been done, and the committee are now in possession of tenders which verify the accuracy of our probable cost.

Yours faithfully,

JOHN BURNET, SON & CAMPBELL.

167 St. Vincent Street, Glasgow: October 26, 1886.

SIR,—As one of the architects invited to submit designs for the New Barony Church, like Mr. Honeyman, I consider that I have been badly treated by the committee. The conditions of the competition were framed in a most specific manner, which would satisfy any competitor.

"Clause II. That the church, hall, classrooms, officers' house, all professional fees, heating, lighting, painting, &c., shall not exceed 13,000*l.* Deducting fees, left 12,000*l.* for buildings."

Keeping this sum strictly in view, I submitted designs which several eminent architects believe could be carried out for the sum named. Mr. Honeyman and I were the only competitors who complied with these conditions. I asked the committee for a copy of their assessor and measurer's reports, and have tried in vain for four months to get any satisfaction from them. The motto affixed to my designs by the committee was "No. I.," but when my designs were returned from London "No. III." was marked on each of them. I do not know whether the III. meant order of merit or not, and am in a fix unless I saw the report of the assessor.

Estimates have been received for part of the accepted designs, and I understand the mason work is about 10,000*l.* You will see that my grievance is established.—I am, &c.,

WILLIAM F. MCGIBBON.

Glasgow: October 25, 1886.

SIR,—I shall feel much obliged if you will permit me to pass a few remarks on the above by way of a reply to Mr. Honeyman's frank request. From your report of the transaction I look upon Mr. Honeyman as an architect of high integrity, and far above all trade pettifogging meannesses, and as one of those who are the only real supports of our profession. I think Mr. Pearson has acted honestly, inasmuch as his "only duty" was to present a fair report to the committee, which doubtless he has done, and, having so done, should do no more; but I gather from your report the fault lies in the apparent "purpose-dark" secrecy of the committee.

Has Mr. Honeyman in any of his communications in any slight way roused the ("usually tender") susceptibilities of the committee? If Mr. Honeyman, after careful reperusal of the copies of his own written letters, &c., finds nothing in them which could possibly be translated as offensive, or in any way but of the most gentlemanly and careful phraseology, and is not afraid of losing a little gold in the event of the case being decided against him, then I do urge him most assuredly (if his lawyers concur) to vindicate his right to expose this "in all

published appearance" ungentlemanly committee, and to have sufficient courage to be the first to endeavour to stamp out for ever the evil practice of exceeding the stipulated sum in architectural competitions; which sad practice has been much in use and encouraged by even eminent men, and is certainly not conducive to the promotion and advance of the profession in public opinion.

What a base world it must be in which we live *if* it is *possible* for a "Christian Church" committee to act in so unworthy a manner. I sincerely wish Mr. Honeyman every success.—Yours obediently, F. E. Thomasson.

October 25, 1886.

Edinburgh Municipal Buildings Competition.

Sir,—I have received, I presume in common with all other competitors, a notice from the Town Clerk of Edinburgh, to the effect that the authorities have abandoned their intention of acquiring the property forming part of the main frontage of the site of the proposed new Municipal Buildings, as shown on the plans of site issued with the instructions to architects. As my plans are nearly completed, this modification of the site involves the reconsideration of the whole design. In my judgment the authorities ought to have stood by their original instructions, and, after selecting the best design, instructed its author to alter it; or at least an apology for the vast amount of additional labour thus thrust upon competitors, and an extension of the limits of time, should have accompanied this notice of modification of site.—Obediently yours, A Competitor.

October 27, 1886.

Damp Spots in Water-Colour Drawings.

Sir,—In reply to "Collector No. 2," I beg to state that the damp spots referred to occur chiefly in the lightest parts of a lightly-washed grey sky (the drawing being on brown-grey paper), being apparently most numerous where the colour laid on is thinnest. How would it do to have the defective parts carefully stippled over in body colour? Would the damp again make its appearance if the drawing were so treated? I shall be greatly obliged for any helpful hints in this matter.—Yours faithfully, Collector.

CHURCH BUILDING AND RESTORATION.

Faulkburn.—The church of Faulkburn has been reopened after restoration. Mr. A. W. Blomfield is the architect, and Mr. R. Parmenter, of Braintree, the contractor.

Charlynch.—The church of St. Mary, on the Quantock Hills, has been reopened after repairs and improvements. The work has been done by Mr. H. J. Spiller, builder, from the designs and under the direction of Mr. Houghton Spencer, architect, Taunton.

NEW BUILDINGS.

Knowle.—Four cottage homes have just been built at the cost of Miss S. L. Barrow, of Milverton, Leamington. Mr. W. Hawley Lloyd, of Birmingham, was the architect, and Messrs. Smallwood & Sons, of Wootton Wawen, the builders.

Stoke-on-Trent.—The town-hall has been re-arranged and the assembly-room enlarged from the plans of Mr. W. Bowen, at a cost of 2,100*l.* Mr. Richard Bradbury was the contractor.

Kirkwall.—The municipal buildings erected at Kirkwall, from the plans of Mr. T. S. Peace, by Messrs. Samuel Baikie & Sons, of Kirkwall, have been opened on the occasion of the fourth centenary of the burgh.

Walsden.—Two corner-stones were laid on Saturday last at the new Liberal Club, Walsden, by Mr. James Schoefield, of Littleborough, and Mr. William Ormerod, of Todmorden. The building will be faced with Yorkshire parpoints and local dressings. The principal feature will be a large angle bay carried above the roof and finished as a tower. The joiners' work will be of pitch pine and Riga white panels. The whole of the work is let to local contractors. The architect is Mr. Jesse Horsfall, Rochdale and Todmorden.

Brentwood.—The foundation-stone of the Essex County Asylum has been laid. Messrs. Brass & Son, builders, are carrying out the work, from the plans of Mr. Stock. The contract price is 63,873*l.*

An International Exhibition is to be held at Saltaire in May in aid of the building fund of the new Schools of Art and Science, now being built from Messrs. Mawson's designs, at a cost of over 12,000*l.* The exhibition is to be chiefly of works of art, many of which are already promised on loan, and of industrial processes. It was originally intended to open the exhibition in June last, and advantage has been taken of the postponement to improve and extend the original plan.

GENERAL.

The Annual Exhibition of the Scottish Society of Painters in Water-Colours opened in Glasgow on Saturday. Over sixty pictures, to the value of 937*l.*, were sold on the first day.

Mr. Walter Ouless has painted a portrait of Mr. R. Benyon who has for over twenty years filled the position of Chairman of Quarter Sessions for Berks. The portrait has been formally presented to Mr. Benyon.

Mr. Frank Holl, R.A., is to paint a portrait for presentation to Lord Brassey.

An Art Union is proposed to be formed in connection with the Lincoln School of Art.

Mr. Norman Lockyer will distribute the prizes this evening to the students of the Reading School of Science and Art.

Casado de Alisal, one of the chief historical painters of Spain, has died in Madrid, at the age of fifty-four years. He was a native of Valencia, and was famous both as a portrait painter and as an historical painter. One of the best known of his paintings in this latter capacity was *The Legend of the Royal Monk.* Alisal was for some years Director of the Spanish Academy in Rome.

The Late Baron Meyer Rothschild has directed in his will that his famous art collection, after the death of the Baroness Louisa, shall pass to Sir Nathaniel Rothschild in London.

Messrs. Darbyshire & Smith, architects, have undertaken the designing of Old Manchester and Salford for the Manchester Jubilee Exhibition.

The Sketching Club of the Leeds and Yorkshire Architectural Society are displaying the whole of the drawings prepared during the recent summer months. Amongst the best are Mr. Alfred Whitehead's *Doorways from Lincoln Cathedral, Fountains Hall, Kirkstall Abbey,* and *Chantry Chapel, Wakefield;* Mr. F. W. Bedford's *Interior, Chester Cathedral; Lees Hall,* and *Fountains Abbey;* Mr. T. S. Ullathorn's *Hemingbrough Church;* and Mr. Frank Haigh's *Tower, Fountains Abbey.*

Mr. R. K. Freeman, of Bolton, has been appointed Surveyor of Ecclesiastical Dilapidations in the diocese of Manchester.

Mr. C. Flower has offered to bear the cost, about 740*l.*, of laying out the ground recently acquired by the Stratford-on-Avon Corporation for a public pleasure-garden.

The Annual Meeting of the St. Nicholas Stained-Glass Window Society, Newbury, was held last week.

The Aberdeen Mechanics' Institution propose voting 150*l.* for the erection of an ornamental wrought-iron gateway for the archway connecting the school of art and the art gallery.

Mrs. Woodhead, of Marshgrove, has given 1,000*l.* towards building a new church in Cleckheaton, Yorkshire.

The Western Baths, in Hillhead, Glasgow, after being closed nearly three years, are shortly to be opened by a private company, who have purchased the property for 6,000*l.*, or about one-fifth of the original cost.

The Bohemian Town of Kladno, with fifteen thousand inhabitants, is threatened with destruction, the old church, the town hall, several schools, and about sixty private houses being in a precarious condition. Whole streets are steadily sinking in consequence of the way in which the iron and coal mining underneath is conducted.

The House that was known as Owen Glendower Parliament House at Dolgelly was removed a few years ago, but the materials were purchased by Mr. Pryce Jones, who is now having the house re-erected on his own ground at Newtown. The original plan will be followed.

A Rumour has been circulated to the effect that Mr. William Emerson, one of the candidates selected to prepare drawings for the proposed cathedral at Liverpool, has accepted a lucrative appointment at the Cape, but it is entirely without foundation.

Mr. Silvanus Trevail, at the request of the electors of the Eastern Ward of Truro, has come forward as a candidate for a seat on the Town Council.

Mr. Bailey Denton, of the firm of Bailey Denton, Son & North, Palace Chambers, Westminster, was on Wednesday appointed consulting engineer by the Manchester City Council, to advise upon the scheme about to be carried out for the sewerage and sewage disposal of that city.

Archdeacon Hamilton, of Northumberland, and the Building Committee for St. Jude's Church, Newcastle-on-Tyne, have agreed to purchase the plot of vacant ground (also to buy and pull down the three houses adjacent thereto) situate at the corner of Clarence Crescent and Barker Street, Shieldfield, for the site for the church, and they have also appointed Mr. Arthur B. Plummer, A.R.I.B.A., of Newcastle, to be the architect for the building.

The Architect.

THE WEEK.

ON Saturday the Académie des Beaux-Arts met for the purpose of presenting prizes to the successful students and delivering discourses on deceased members. M. CHARLES GARNIER presided, and spoke with feeling of the late PAUL BAUDRY. The prizemen were as follows:—Architecture (*a Building for the Cour des Comptes*)—First prize, M. DEFRASSE; second, M. LOUVET; third, M. SORTAIS. Painting (*The Nomination of Claudius as Emperor*)—First prize, M. LEBAYLE; second, M. LAVALLEY; third, M. SINIBALDI. Sculpture (*Tobias*)—First prize, M. CAPELLARO; second, M. LARCHE; third, M. CHAVAILLAUD. Engraving—First prize, M. PATRICOT; second, M. CRAUK. The principal prizes mean residence in Rome. How many among them are destined to gain renown as artists? The Vicomte DELABORDE, the secretary, afterwards delivered an eulogium of PAUL BAUDRY. It is well known that the painter was born in a humble position and was discovered by a prefect of his district. An interesting letter from the painter to that functionary was read. In it BAUDRY said:—"I can see myself, a peasant boy, as I stood before you in 1844 and raised my eyes to your kind face. I was trembling all over, but a couple of words you spoke filled me with gratitude and confidence. You will not guess what they were. You simply said to my mother, 'Will you be seated, madame?' I have never before mentioned to you how much I was impressed by the words, but they were suggestive of so much good-nature that they became magnetic for me, and I still hear them." It will be remembered that the scene occurred in the reign of LOUIS PHILIPPE, when a prefect was supposed to be a very great man, and from whom courtesy to a peasant woman was not to be expected. Although peasant-born, there was not a figure by BAUDRY without elegance, and hence his works were well adapted for the *salons* of princes.

THERE is some dissatisfaction among the surveyors of Birmingham about the appointments of surveyors for the new Assize Courts. The custom in Birmingham, as elsewhere, is for one quantity surveyor to be appointed by the building owners, and another quantity surveyor by the builders, who have to make their tenders and base their liability on the quantities submitted. The usual commission for getting out these quantities is divided between the two surveyors, so that no additional expense is incurred by the arrangement. Mr. COUDERY has been appointed at the nomination of the architects, and will represent the building owners, who in this case are the Corporation. But without giving the builders any voice in the matter, the Corporation have appointed the second surveyor, who is Mr. HARRIS. This is a departure from the usual custom, which has no apparent advantage for the builders, who in a work of that kind naturally desire to have their own representative, and it resembles too much the MARTIN-CHAMBERLAIN monopoly to be acceptable.

THERE are shrewd people who believe that they can save money by dispensing with an architect when they are erecting a building. A firm of that kind have had an unpleasant experience in the Scottish courts. Messrs. STUART & Co., of Glenspey, in 1883 erected a distillery. The contract for the ironwork was given to Messrs. SMITH & Co., of Inverness. What could be more satisfactory than to allow Mr. JACK, a member of the firm, to offer suggestions on the work, and to give instructions from time to time? If a man had a hobby of that kind, it was friendly to afford him an opportunity to gratify himself; and moreover, 220*l.* could be saved, for that would be the percentage on a building costing 4,400*l.* But the distillers were amazed when they received a claim from Mr. JACK for 140*l.*—that sum being calculated at the rate of $3\frac{1}{2}$ per cent. on some work, and 5 per cent. on the remainder. They refused to pay on the ground that Mr. JACK was not employed by them; that when at Glenspey he was looking after his own workmen, and that any obligation was satisfied as they had presented him with a gratuity of 10*l.*, at which munificence Mr. JACK was greatly pleased. The Sub-sheriff, when he heard the case, decided in favour of the distillers, as he considered the acceptance of the 10*l.* was a proof there was no claim. He also applied the doctrine of *quantum meruit* to the case, and said it was based on the principle of implied contract; and with regard to certain classes of professional persons and others—architects, engineers, and the like—established a presumption of employment in the case of persons falling within any of those classes. The Sub-sheriff regarded this as the case of a man who was competent to act as an engineer, but who was not recognised as such in the profession, by the public, or by the defenders. Mr. JACK was dissatisfied, and brought the case to the Court of Session, where three judges combined to decide it. This time he was more fortunate, for the Court held that employment had been proved by letters, the evidence of the tradesmen who had charge of the carpenter work, and the expression of the defendants, "under JACK's direction." Messrs. STUART & Co. have the gratification of paying their friend's bill, and the expenses of two courts, and apparently no allowance is to be made for the gratuity. When next they build we hope they will act more economically by employing an architect and paying him 5 per cent. in full.

WE regret to learn that Mr. WILLIAM SCOTT is compelled, from want of support, to suspend the publication of the *Venice News* for the present. When the paper was started it seemed to be a promising venture, but the apprehension of cholera kept back visitors from the city, while the English and Americans who were residents deserted it. Venice in consequence suffered unexampled depression, and we often wondered how, under such circumstances, Mr. SCOTT could keep his journal afloat. He anticipates that he will be able to renew the experiment in the spring, and the *Venice News* was so well conducted that a temporary cessation of its appearance must be a loss to English and American visitors. Mr. SCOTT honourably announces that subscribers who have paid their subscriptions for the whole year can, if they wish it, have the balance corresponding to the period during which the paper does not appear returned to them on application at the office, otherwise the same will be carried to their credit account for the ensuing year.

THE late Sir GEORGE HARRISON was, it appears, an estimable citizen of Edinburgh, and of course it becomes necessary to raise a memorial to him. But, in spite of the esteem in which he was held, not more than 600*l.* can be obtained for the work. With such a sum there is necessarily a limit to the character of the memorial, and the best thing that could be discovered was a stained-glass window in St. Giles's Cathedral. But a building into which a visitor cannot enter without paying threepence—that is, a penny more than was charged for a sight of St. Paul's in the old days—is hardly a suitable place to display a record of one's virtues. So on consideration the window is given up. What kind of substitute is to be found? That question has to be decided by the Committee. The friends of the defunct say he was as good a man as ADAM BLACK, whose colossal effigy is in Princess Street, but no sculptor is forthcoming to produce a statue to correspond at a third of its value.

AMONG the recent discoveries in Rome may be mentioned a cylindrical altar, which was exhumed in the old gardens of Sallust. It is embellished by four small amorini in high relief, typical of the Seasons, and which are separated by ornament of an exquisite kind. *Spring* holds in one hand a basket of flowers, and with the other appears to scatter them. *Summer* has a weeding-hook in the right hand, and in the left is a cornflower. *Autumn* has the breast covered with the skin of a deer, which hangs from the left shoulder; the left hand rests on a basket of grapes and the right holds a stick. *Winter*, unlike the other figures, is robed; the left arm rests on some object which is not clearly defined, and the right on an amphora—a suggestion of the wine which is prepared in autumn for use in winter. From the purity of the style and the quality of the marble it is inferred that the altar belongs to the age of HADRIAN.

THE OPENING MEETING OF THE INSTITUTE.

IF tested by the standard which has had to be endured of late there was much to be thankful for in Monday's meeting at the Institute, and as things go now it may be said that the session began auspiciously. We need hardly say the proceedings were suggestive of a state of transition, for that appears to be the chief characteristic of the Institute during late years. The past is steadily ignored, the present is of little consequence, and attention is made to turn upon a future that somehow contrives to be evasive if not illusory. This time there is some ground for hope. The Conservatives are in office, and the Honorary Secretary can boast that he has acquaintances among them. He has promised to begin the exercise of this influence on the arrangements for the new Admiralty and War Offices, but when one is permitted to ascend the backstairs it is allowable for one's friends to let their imagination revel in blissful dreams.

The past could not be altogether ignored on Monday, for a bust of the late Mr. STREET had to be presented. But it was generally forgotten that as late as 1879 he was sacrificed to the new arrangements for finding officers, and apparently because he was less of a *viveur* than some other gentlemen. There is no doubt that Mr. STREET felt the disappointment, and the letters he wrote to us at the time made it plain that he suffered acutely when he was forced to resign his seat on the Council. The Presidentship would have been taken by him as a proof that his great fight against officialism received the approval of his brother architects, and at that time the duties of the office would have afforded a change from work of another kind. He could then have prepared his address without any strain on himself. Wiser counsels afterwards prevailed, and the office came to Mr. STREET, but he was a different man. It is unnecessary to allude to the end of the tragedy, but when the Honorary Secretary was drawing a moral from Mr. STREET'S career, the occasion might well be improved by suggesting that, while Mr. STREET was over-generous in his loyalty to the Institute, the recollection of his treatment in 1879 should give rise to compunction in some breasts.

The speech that was delivered by Mr. BLOMFIELD in presenting the bust on Monday was well adapted to such an occasion, and although brief was suggestive. He paid a tribute to the generosity of Mr. ARMSTEAD, R.A., the sculptor, for it has become the custom to substitute applause for coin of the realm when settling with artists for portraits of presidents, a circumstance which should be recorded for the information of the members of a later age.

Mr. I'ANSON'S address was excellent. Unlike some of his predecessors he never departed from firm ground, and kept himself to his own experience. Mr. I'ANSON did not pose as a legislator or an autocrat. There was no suggestion that he was to rule with a rod of iron. Something of old-world simplicity was about him when he expressed his gratitude for having attained the office, after nearly half a century of membership. It was the address of an architect who had led an honourable and prosperous career, who believed that his success was owing to a right guidance of himself, and which others could imitate. It was exactly the kind of address that a London citizen should deliver, and that fellow-citizens of the old school would heartily cheer. The applause at the close testified how well it was appreciated.

There was a sturdy confidence in Mr. I'ANSON'S way of making little of the existing depression that could not fail to invigorate a good many of those present. After fifty years of practice in the City, a man is bound to observe that there are ups and downs in life, but on the whole there is a chance for the prudent. The City, as the President told us, is not entirely rebuilt; there are suburbs apparently without limit, and in the provinces new buildings are also needed. On hearing Mr. I'ANSON, it was difficult to resist the conclusion that the young architect has better prospects now than existed in his own early days. It was shown also that our time demands buildings of a special class, which are opportunities for the competent. But the young architect was advised to be always ready for anything that might turn up, and one of the ways that was suggested to satisfy himself was by passing the examination that is necessary to gain a certificate of competency for a district surveyorship. It was useful as a test of knowledge, even if office were not sought. But a post of the kind, according to Mr. I'ANSON, was not to be despised. He has held one himself, and knowing the advantage of it he feels he ought to advise others to follow him. Sound common sense of this kind pervaded the address, and suggested a time when the wisdom of DEFOE and FRANKLIN was admired in London, and the golden rules of life were hung up in houses. So much has been said about architects becoming apostles and confessors of art, it is a relief to hear a few words that are inspired by good sense and knowledge of life.

As was to be expected, Mr. I'ANSON in what he said about education did not advocate any of the new-fangled systems for creating architects, and which are only of use to enable young folks to build castles in the air. The President insisted on pupilage as being the right introduction to architectural work, and it was noteworthy that he used the old-fashioned and more proper word apprenticeship. He did not, however, suggest that it was sufficient to allow a youth to breathe the stuffy air of an office during a certain number of years in order to make him an architect. We spoke lately about the want of courage that was exhibited by the Institute in avoiding any recommendation to architects upon the education of their pupils. In his first address Mr. I'ANSON proposes the insertion of a clause in every indenture stipulating a submission to the Institute examination by the pupil, and this will entail "due care from the master to whom he has been articled." It might also have been proposed that the names of the architects who are the masters of successful pupils should be published. It would be an acknowledgment that duty was done towards pupils, and in time a distinction would be made between careful and indifferent masters.

Mr. I'ANSON, when talking of education, announced the probability that financial support would be given to the Architectural Association, and he gave unstinted praise to the members who undertook the supervision of the classes. It was inevitable that something must be said about the Royal Academy, but Mr. I'ANSON did not suggest that architects had any claim on the Academicians. He simply expressed the hope that as the Institute helped the Association out of goodwill, without any question of bond or instrument, so the Academy might help the Institute. But the President, as a man of business, must know that such a course is impossible until the Institute imitates the Association, and does something towards education.

It is gratifying to find that by his visits to Paris, Mr. I'ANSON'S eyes were opened to what can be done by the Société Centrale des Architectes with a revenue that seems small when compared with the Institute's. How is it that in France everybody connected with the building trade is proud of recognition by the Société, while among practical men in England the Institute is supposed to be a sort of compound of a circumlocution office and dilettanti society? That is a question which the Council of the Institute would do well to resolve, especially when it is found that the whole contracting class in England is endeavouring to persuade the public that architects are no longer a necessity. Mr. I'ANSON says that the French system of recognising what is done by contractors and workmen must confer exceptional happiness on a large number of people; it does more, for it makes them and others be loyal to the cause of architects. The Institute, on the other hand, began by asking builders to give them the benefit of their experience in a tabulated form, and, having secured the information, the builders and their successors were ignored.

A different state of things may exist when federation flourishes among us. Mr. I'ANSON is the chairman of the Institute Committee, and he acknowledged that less is cared about the subject in London than in the provinces. He could not reveal the nature of the report which is in preparation, but we can judge of its nature when we know that it will relate to uniformity of practice, examinations, and interchange of "communications relating to the art, science, and profession of architecture." Members cannot be got to read the Institute Transactions; are they likely to give more attention to the papers from a provincial town?

As a City man who must believe in the value of

utilitarianism, Mr. I'Anson could not help expressing satisfaction that the Battle of Styles was over. He knows there is no accounting for tastes, and it is the business of London to provide for everybody. What was the use of Tite and Scott fighting over the shape of a window or the slope of a roof when it was impossible for one to convert the other? If people will have two styles why not accommodate them, since it is by rivalry in taste that business is promoted? The President, although a Classic, could not therefore agree that Gothic was extinct—or he hoped that it would not become so until something else took its place. Business does not admit of prejudice. Go to Brittany and Holland, if you like, but do not forget that there is something to be found in Italy and Greece that can also be turned to account.

There is a possibility that Classic may have the upper hand before long—indeed, it may be said to have it now—but Mr. I'Anson, as a Classicist, did not crow over the fallen style. It was out of fashion, that was all. If its votaries had failed, there was more to be learnt from honest failure than from immature or superficial success, for the fortunes quickest made do not last the longest. His own school had its revenge at last, but as far as he was concerned, it was one of goodwill.

An address which takes so broad a view of life is somewhat of a novelty in the Institute, and it can hardly fail to do good. We sincerely congratulate Mr. I'Anson upon his success in the President's chair, and we are glad to think that his year of office will be signalised by the reception of a dignity from the Sovereign.

TRADE AND FINANCE.*

In the present condition of affairs there are no books that are likely to have more fascination for a reader than those relating to finance. Everyone cannot help asking himself whether in the pages he may not find something that will reveal the great mystery of our time, and explain how it comes to pass that business should be as flat and unprofitable as the uses of the world seemed to Hamlet. Are we in a time of transition, as the Socialists say, and is it necessary to have a reshuffling of the cards before one can expect to make out a balance-sheet that will be gratifying? Is the cause of the stagnation to be found in Bulgaria, as some will urge, or in the enormous quantity of vacant houses, as others maintain; or is it due to some influence external to the earth which acts in systematic periodicity, as the meteorologists declare? Just now it is open to all the world to hold the most heterodox opinions on the subject, for apparently the wisest cannot reveal to us how the gold (or what serves for it) which is lying in bank cellars is to be allured from that safe but inglorious retreat. Our own opinion is that it is mainly due to a feeling of panic which is none the less real because it is persistent. It is always easy to convince the world that danger is near. If caution were listened to, there would not be a herring found on a breakfast-table, for, as Shylock says, ships are but boards, sailors but men, and there is the peril of waters, winds, and rocks. In the same way it is to be explained that in speculation there is a risk of failure, and that no branch of commerce should expect to escape foreign competition. But it can also be shown that there is another side to the question, and that courage can become as successful in business as in war. With a better knowledge of the theory of trade there would be less of the panic, and for this purpose it would be difficult to find a more serviceable work than the "Trade and Finance Annual." It has been compiled from official documents and authoritative works, and the information is brought down to the latest time. It is also distinguished by its practical character, and in this respect it differs from the financial speculations of most political economists, who treat of trade and money as if they were abstractions.

The volume rightly begins with a series of chapters on the "Money Market," in which banking, bill-broking, circulation, panics, the clearing-house, &c., are specially considered. London being the financial centre—the clearing-house of the world—it can show an infinitely bigger deposit of money than any other capital. In 1873, Mr. Bagehot estimated the loan fund or relative deposits of the banks in the great cities as follows, the numbers being millions:—London, 120; New York, 40; Paris, 13; Germany, 8; and the proportion remains the same. The figures do not represent the money in London banks which do not publish accounts, and which are greater. The City is, therefore, not only able, but does, lend more than all the others put together. The money may not be lent by the banks directly, but it is, as Mr. Bagehot says, "lent to those who lend." In these operations much depends on the Bank of England, which, according to some financiers, serves the part of a brake on enterprise. The "Annual" tells us "private and joint-stock banks never borrow directly from the Bank of England." If they want money they go to the bill-broker, "who obtains the required money from the Bank." The greater part of the business of the country is, however, conducted with the private and joint-stock banks, among which there is much variety. In the London district their constitution is affected by the Bank of England, which retains certain privileges in respect of paper money. One of the anomalies of banking is that Scotch banks are more leniently treated in that respect than others. According to the "Annual," "When an English county bank wishes to enter London, or sixty-five miles round, it is compelled to give up its note circulation; but a Scotch bank can go to London and do business there, and yet retain its note circulation."

The difference between the old and the modern systems of finance is marked by the growth in importance of the bill-broker. According to Mr. Bagehot, bill-broking in the sense of the word now accepted was unknown in London in 1810. The broker now is an embodiment of credit, and is accepted as a guarantee of the credit of others. When Cassio cries "my reputation" so often, and says that in losing reputation he lost the immortal part of himself, he was a type of a City bill-broker. He is a power according to the extent of the trust that is reposed in him, and he fulfils the double office of being the chief agent of a bank and the chief surety for advances.

It is inevitable that, as time runs on, the value of speculations will be more and more determined by the bill-broker's opinion of them, and as profits are the same to him no matter where they may arise, he will of course be disposed to look more favourably on foreign investments if they return larger sums than on those which may exist at home. Hence building as investment runs the risk of being misprized. It may be secure, but there is not that nimbleness about the operations which financiers desire. It holds, for example, no place among the numerous industries that are considered in the volume before us. Agricultural produce, dairy farming, ensilage, fruit culture, wool, coal, copper, lead, tea, and the like, all come under financial gaze, but building is passed over; iron may be said to be the only building material that holds a recognised place in what is called "Lombard Street." With a banker of the old-fashioned type the case may be otherwise. The financial world is not, however, ruled by men of his class, but by the broker, and unhappily, as we have said, he looks askance at building in general. Why this state of things should exist is a large question, which it would be difficult to treat in a reasonable compass; but one thing is certain, that what is called financial opinion cannot be ignored henceforth in productions of any kind, and if it is to be favourable in respect of a building, that building must bring in a profit on the outlay.

It is too generally supposed that finance cannot see beyond settling-day, and that a jerry-built house is an ideal type of the speculative building. This is a delusion. Finance considers profit, and naturally prefers one that endures. Besides, with jerry-building it is difficult to fix a standard. We find, for instance, a supposition in the "Annual" about one of the consequences of a partial reform of the leasehold system in towns, and it is that with a lease of nineteen years it might be possible, by using inferior materials and workmanship, to build a house that would just last that time. This suggests what is thought of the possibilities of building by an important class of judges.

We find in the "Annual" that the system of land tenure is condemned, by which so much of England is

* *Barker's Trade and Finance Annual*, 1886-1887. A Book of Reference to Matters relating to Trade and Finance. Effingham Wilson.

rendered less productive than it should be. It is shown from the Lords' report of 1870, "that of the twenty million acres of land in the country requiring drainage, only three million had been drained," and it is pertinently asked, "How can home trade flourish whilst the whole of our agricultural population is thrown into a condition verging upon ruin?" It is remarkable that to financiers the ideal solution lies in the distribution of the ownership among the mass of the people. Nor is this remarkable when we read in the "Annual" that forty years' purchase is given for land in France, and the large capitalists are outbid by the small in that country.

There is not a page in the volume that does not give an opportunity for reflection. The book is, at it were, a map of the financial world, of which London is the capital. It suggests how the desire to possess wealth is overcoming national distinctions more efficaciously than any other power has done. The financier cannot afford to be troubled by differences of race or climate. He wishes to make money and for that purpose the world serves better than a part of it. Messrs. BARKER'S "Annual" suggests how many reforms have still to be carried out before trade and finance can pursue their way unimpeded, while, as a book of reference, it stands in the front rank.

FRANCOIS RUDE, SCULPTOR.

AT Dijon a statue of François Rude, the sculptor, has been unveiled by M. Turquet, the under secretary for Fine Arts, who delivered a discourse on the occasion. In the course of it M. Turquet said it was exactly half a century since the scaffolding was removed from the Arc de Triomphe de l'Etoile in Paris, when Rude's *Departure of the Volunteers* was revealed to a crowd. Was there ever a work of sculpture more virile, exciting, and epic; a Genius of War more irresistible, or a piece of stone more eloquent? It must have been a like feeling which could produce such an expression of tranquil resolution. And the same hands which wrought the *Departure* gave us the exquisite *Neapolitan Fisherboy* and the *Mercury*. It has been said that Rude did not believe in inspiration. What he must have meant was that inspiration was insufficient to create a perfect work of art. It should be accompanied by obstinate labour, exact science, constant and profound study of nature. Every day he repeated the saying of Marcus Aurelius, "O Nature, all comes from thee, all is in thee, all returns to thee!" and from Nature he sought the secret of beauty. He also sought it in the ancient poets and historians. It was his custom to elevate his mind while at work by having something read to him out of an ancient writer. His companion was the "Maxims of Epictetus." Full of admiration for the ancients, and especially for the Greeks, he maintained that every artist should study them in their history and customs. He imposed a rigid discipline among his pupils, but he regarded as a crime any attempt to overcome their originality or shackle their fancy. His advice to them was to seek freedom, and he had too much care for his own independence to interfere with theirs. Moreover, he was aware that it is the duty of a master to aid in the unfolding of the faculties of those youths who have placed confidence in him. Rude was not only a great artist, but possessed a great heart. Of his goodness much could be said, but one circumstance will suggest his character. He was awarded the Prix de Rome, and it was thus possible for him to live for some years in that Italy of which every artist dreams, and among the masterpieces of art. But he renounced all this happiness in order that he might follow a benefactor into exile, and nearly thirty years had to elapse before he could gratify his eyes with a sight of Italy. He was disdainful of celebrity. If my works are worth anything, he used to say, they will survive; if they are not, all the puffery in the world will not save them from oblivion. In this spirit he avoided putting his name on statuary on which he laboured single-handed. If they are worth signing, he said, my name will be put on them at a later time.

In addition to what was said by M. Turquet, it may be worth reprinting some of the recollections of Rude from the "Artistes Vivants" by Théophile Silvestre.

Having known the celebrated sculptor Rude during the three or four last years of his life, it seems to me, says M. Silvestre, that I still see him and hear him speak. He was a fine old fellow of seventy-two, straight as an arrow, and with the frame of the *Farnese Hercules*. His powerful limbs seemed ready to force their way through his clothing, and his massive neck expanded with vigour while his great hairy hands hewed the marble or modelled the clay. In stature he hardly exceeded middle height, but he appeared tall, and his bearing revealed his courage.

A patriarchal beard descended to his waist, and it was of a luxuriance that attracted attention in the streets, and gave rise to a good deal of raillery among members of the Institut. They offered as an excuse for refusing him their votes that they could not receive such a bearded man amongst them, for it appears that only cleanly-shaven candidates are eligible for the Academy. The story is told that the first wife of Ingres imagined Rude to be a model when he called one day at the house of the painter. She asked him to sit down while she informed her husband. "Who is it that wants me—who comes to persecute me?" growled the painter. "It is a model of the River God," replied madame. The painter was taken aback when he saw Rude, who had thrown himself into the reclining posture suited for such a figure, and laughed at the mistake until tears ran down the famous white beard.

Black, well-defined eyebrows imparted an air of hardness and passion to a countenance that might be called gentle and paternal in expression. The forehead was depressed at the base, arched in the middle, and tapered at the sides; from the temples to the crown was bare and shining. The eyes were small but expressive. The nose was short and round, and was without character; jaws, mouth, and chin were obscured by the mass of hair; the parts of the cheeks that were visible were marked by traces of smallpox. There was something above the ordinary type of the *bourgeoisie* in this manly and fine figure. With more energy it had recalled the type of Tintoret, with more nobleness that of Titian.

His life was calm, retired, solid, and pure, although he lived in an age that was frivolous, corrupt, and sickly. His simple and upright manner seemed to be after an antique model. Rude was a Roman who smoked a pipe. But this austereness of another age limited his intelligence and closed it against much that was luminous in modern life. A man may belong to his own time without losing the memory of the great ages. Ancient heroism, the French Revolution, and the wars against all Europe moved his spirit, but his Napoleonic-democratic sentiments needed lucidity and direction.

Like all great men who spring from the people, he possessed probity, prudence, family spirit, and laborious energy. While at work he loved to hear read a translation of Homer, or of Plutarch, Livy, Ovid, or of the "Memorial from St. Helena," and interrupted the reading by exclamations of admiration for the heroes. Then he would take up his pipe and smoke.

His pleasures were of a simple kind. He talked to people in his shirt-sleeves in the street, and for twenty years the Rue d'Enfer served as his salon. He washed his hands and arms at one of the public fountains, as if he were a blacksmith who had completed his day's work. Rarely he quitted his quartier of Paris, and it was difficult to make him pay a visit of etiquette.

Rude had a high idea of his own powers, but he did not care for honours. It may be that when he slighted them he was only expressing his bitterness that he was not adequately recompensed. But, unlike some of his contemporaries, he never sought by artifices and intrigues to augment his prestige. For many years the doors of the Institut were closed against him, through the jealousy of artists. They implored him to put down his name as a candidate, and promised to support him, but failed at the right moment.

It was at Dijon on January 4, 1784, that François Rude was born. His father was a maker of German stoves. In his childhood he blew the bellows and hammered iron on the anvil. During the rare moments that could be spared from the forge he attended the classes of the art school, which at that time were directed by Devosge, the master of the illustrious Prudhon. In course of time the old stove-maker was struck down by paralysis, the business was at an end, and young Rude was obliged to take employment with a firm of house-painters.

He had tried his hand in modelling some busts; one was of Monnier the engraver, who was the father-in-law of a tax-collector named Fremiet. Under the pretext of having facilities to execute the bust, Rude was invited to stop in Fremiet's house, and there he was treated with a generous affability. When Rude drew a number for service in the army in 1806, Fremiet sacrificed a part of his modest fortune to provide a substitute, in order that Rude might be preserved to art. Artists are not always free from ingratitude, but in this case the generosity was never forgotten.

In 1807 Rude left Dijon for Paris, furnished with a sum of 200 frs. and a letter of introduction to Denon, the Director of the Museums and the art adviser of the Emperor. At that time the Vendôme Column was in preparation, and Rude was employed to model a great part of the arms and uniforms that are seen in relief on the pedestals. He did not forget his studies. In 1812 he obtained the first prize of the Ecole des Beaux-Arts, which gave him the right to a place in the school of Rome. He was, however, kept back by Denon, who confided to him the commission for four bas-reliefs that were to be placed on an obelisk for the Pont Neuf, which was to occupy the site of the equestrian statue of Henry IV.

It is not necessary in this place to follow out the entire

career of the sculptor. At a later time, when he was surrounded with pupils, he was deeply respected because he was good, just, firm, and disinterested. In order to encourage one of them, he brought him to work on the monument of Godefroy Cavaignac, and engraved the name of the pupil along with his own. He asked only 6,000 frs. for his model of the statue in silver of Louis XIII., but the Duc de Luynes insisted on his accepting 10,000 frs. When his affairs were so arranged that he was assured an income of 1,500 frs., or 60*l.* a year, he declined an offer of M. Thiers, who wished to give him 30,000 frs. in order that he might visit Italy. "I am very sensible of your generosity," he wrote, "but I am in want of nothing."

Rude arrived at the age of seventy-two without having much experience of illness; at the most it was a feeling of oppression in the chest. But something like a presentiment was evident when he said that if sufficient time were allowed him to finish his statue of *Hebe* he would go out of the world without regret. One day a letter was read to him from a friend in Burgundy. He listened to some of the lines; then he put down his pipe, and fell into a sleep from which he was not to waken.

The inspired work, *The Departure of the Volunteers of* 1792, which is in high relief on a pier of the triumphal arch in the Champs Elysées, is by itself sufficient to gain immortality for Rude. The genius of the country, with extended wings, dishevelled hair, and outstretched arms, cries "To arms!" Warriors of every age at the command are seen hurrying to the frontier. We seem to hear the soul-stirring revolutionary chant mingled with the sound of trumpets, the clash of arms, the neighing of steeds, and the rustling of banners. In the enthusiasm of departure there is a prediction of victory. The *Departure* is not depicted in historic characters but in the style of allegory. In order to avoid the poverty of modern costume, the sculptor has represented his personages as semi-nude, with helmets and arms of an antique fashion. They march to battle with the stoic energy of Leonidas, Phocion, and Philopœmen, rather than with the fury of Frenchmen. Such austere warriors are not to be moved by alarms, while their measured blows cannot fail to be mortal.

This robust group puts all the neighbouring sculpture in the shade. From the character of the execution and the glory of the subject it will always be impressive to every manly soul. It is a worthy representation of one of the noblest examples of the enthusiasm of Frenchmen.

THE INSTITUTE AND THE SOCIETY OF ARCHITECTS.

THE following is a copy of the memorial and petition to the Lords of Her Majesty's Privy Council, submitted by the Society of Architects. An almost similar document was submitted by the Federation Committee:—

Sheweth—1. That a charter of incorporation was granted to the Royal Institute of British Architects in the seventh year of His Majesty William IV., whereby certain privileges were conferred upon that body.

2. That the said Royal Institute of British Architects is now petitioning for a new charter of incorporation confirming the privileges it enjoys under the existing charter, and seeking further privileges, namely, to admit to membership of the said Royal Institute of British Architects such persons only as shall have passed a certain examination or examinations imposed by the members of the said Institute.

3. That at a conference of all existing societies and members of the architectural profession of the United Kingdom, which was publicly convened, held at the Freemasons' Tavern, Great Queen Street, on Tuesday, April 26, 1886, the following resolutions were passed:—

"That in the interests of the architectural profession and of the public alike, it is desirable that all architects in the kingdom should be united in one body, having branches in the provincial cities and towns, and a central council in London, including amongst its members representatives from the provinces."

"That a committee be formed without delay to give effect to the foregoing resolution, and to facilitate the formation of committees in the provinces."

"That it is the opinion of this meeting that instructions should be given to the committee to consider the means necessary in order to obtain an Act of Parliament making it compulsory to hold a Government diploma."

4. That a committee has been duly appointed for the purpose of carrying into effect the objects of the said Conference, and a form of declaration has been issued to about 2,500 of the members of the architectural profession throughout the kingdom, in order to obtain their respective opinions as to the desirability of applying for legislative power compelling all persons hereafter entering the architectural profession to be duly qualified by examination, as in the case of the legal and medical professions. That during the past two months such form of declaration has been signed by 1,257 members of the architectural profession in all parts of the United Kingdom in favour of the legal incorporation of architects, and the definite regulation by law of the profession as regards examinations and otherwise. That further signatures are being daily added, and from the progress made during so short a period, the above number of signatures will be largely increased.

5. That the provisions of the said proposed new charter of the Royal Institute of British Architects will only provide for the examination of persons entering the said Royal Institute of British Architects, but will not affect the whole of the architectural profession, or be a bar to unqualified persons entering the profession of architecture.

6. That the number of architects in the United Kingdom according to the census returns for 1881, was 8,063, but the number of Fellows and Associates of the said Royal Institute of British Architects is only 1,108.

7. That there are sixteen metropolitan and provincial architectural societies in the United Kingdom besides the Royal Institute of British Architects, of which next to the said Institute (and the Architectural Association—a students' society) the Society of Architects which your memorialists represent, though founded only in 1884, is the largest, numbering 290 members.

8. That no provision is made for affiliating or including these societies, or for the representation thereof, in the said proposed new charter of the Royal Institute of British Architects, nor for the registration of the very large majority of architects in practice in the United Kingdom who do not belong to any society.

9. Your memorialists are respectfully of opinion that the compulsory examination of all persons entering the architectural profession is, at the present day, of the greatest importance to the general public, and would eventually be the means of protecting them against the faulty construction and defective sanitation of buildings, drainage, and other works, and that until examination be made compulsory upon all who desire to enter the architectural profession, no benefit can be gained by the public. Your memorialists, therefore, respectfully submit that no new charter giving power to hold examinations should be granted to the said Royal Institute of British Architects, or to any other body which does not represent the whole of the architectural profession, and that an Act of Parliament on the lines suggested at the above-mentioned Conference, attended by architects from all parts of the United Kingdom, and about to be carried out by the committee appointed by the said Conference, should be obtained for the registration of all architects at present in practice in the United Kingdom, and for the institution of an examination or examinations, which all persons in future entering the profession of architecture should be compelled to pass.

10. That your memorialists are supporting the measures which are now progressing with the object of promoting a Bill in Parliament for the purpose of obtaining such an Act of Parliament, and which are being carried out at the instance of the large body of the profession, and your memorialists are respectfully of opinion that the tendency of the said proposed new charter, which only affects a small body of the architectural profession, and does not in any way secure the protection of the public as above referred to, is to clash with the comprehensive and necessary public reform in the matters aforesaid.

Your memorialists therefore pray—

That no new or additional charter of incorporation be granted to the said Royal Institute of British Architects, or that the further consideration of the proposed new charter, so far as it relates to the registration and examination of architects, be postponed.

And your memorialists will ever pray, &c.

Sealed by Order of the Council of the Society of Architects.
October 29, 1886.

(Signed) Hugh Roumieu Gough, F.R.I.B.A., President.
G. A. T. Middleton, A.R.I.B.A., Secretary.

TESSERÆ.

Lions' Heads in Decoration.

F. W. Moody.

THE head of the lion exhibits a very remarkable combination of lines. In the profile the general line of the forehead and nose is parallel with that of the lower jaw. The line from the nose to the corner of the mouth is curved like an S. This is very clearly marked in the admirable lion-hunts in the Nineveh bas-reliefs. There is hardly anything in nature that I find so difficult to model as a lion's head; it seems Proteus-like—to be now like a man, now a hound, now a monkey. The least change in the length of the nose seems entirely to alter

the character; and yet if you compared examples you would find them of every length. Even Landseer, who knew lions well, and in some respects succeeded out of doors, has modelled for the jambs of the doors of the Royal Academy galleries heads which, though intended for lions, look much more like dogs. There is hardly anything that shows so radical a difference in treatment as lions' heads. After studying them all we should be puzzled to say what constituted a lion; yet the great majority of ornamental examples from the Assyrian, Egyptian, and Greek downwards, differing as they do in almost every particular, are somehow or other unmistakably leonine. The Nelson lions, admirable as they are, are too naturalistic. The larger the work the more necessary is it that it should be generalised and severe.

Flues in Dwelling-houses.

G. F. ECKSTEIN.

Kitchen chimneys with small fireplaces should not be less than 14 by 9 inches; and if the opening of the fireplace exceed 3 feet 6 inches in width, the chimney should be 14 inches square, or 18 by 9 inches, whichever way be the most convenient in the arrangement of the building, only providing that the flue have an area of 200 square inches. But the square chimney is preferable, it being more suitable to the brush for sweeping than is 18 by 9 inches. If the opening of the fireplace exceed 6 feet in width, the chimney-shaft should be 18 by 14 inches, or of an area of about 250 square inches. If the chimney-shaft be less than 36 feet in height, the sizes should be severally 14 inches square, 18 by 14 inches, and 18 inches square, in lieu of the above dimensions. Dining-room or ground-floor, and drawing-room or first-floor chimneys in lofty houses, may be built in the usual way, 14 by 9 inches. Upper storeys, the chimneys of which are usually 10 feet or more shorter than the drawing-room floor, should have them 14 inches square. Attic chimneys should be still larger till near the top, where they should be reduced, to keep out the weather, or to receive a chimney-pot. Cottage buildings, or detached houses, which are usually low, should not have any chimney less than 14 inches square, and the upper floor 18 by 14 inches. When chimneys are exposed to the air and damp by being in an external wall, it will be a considerable advantage if the brickwork can be left 9 inches thick between the flue and external air, instead of 4½ inches as is usual. If a kitchen fireplace be required in the upper part of a house, and consequently the chimney cannot be long, it must be made up in size. I would recommend two flues of the dimensions given for low buildings, or one flue of double those given dimensions; the top to be reduced about 150 square inches, or if two flues about 150 square inches for the two.

English Tapestry.

J. C. CRACE.

The English and Flemish were the first in Europe who excelled in tapestry, and are supposed to have brought the art from the Crusades; the workmen in France, from this cause, were called Sarozins. The well-known Bayeux tapestry, representing the invasion of this country by William the Conqueror, is supposed to be the oldest existing specimen. Turner, the historian, says that our Anglo-Saxon ancestors had wall hangings, some silken, some with figures of golden birds in needlework, others woven, and some plain; and in various illuminated manuscripts, dating from the fourteenth to the sixteenth centuries, I have found the material frequently introduced as a covering for the walls, and particularly as a canopy for thrones and chairs of state. It is in the reign of Henry VIII. that I have been first able to trace the distinct manufacture of the wove tapestry; and Dugdale, in his "Warwickshire," affirms that it was *now first* introduced into England by William Sheldon, Esq., who brought over workmen from Flanders about 1540, and employed them in drawing hangings, of which I believe specimens still remain at Weston. Notwithstanding the authority of Dugdale, I think the art was merely then revived; for Lord Arundel, by his will in 1392, tempore Richard II., bequeaths to his wife Philippa the hangings of his hall *recently* made in London; and even ten years previously Richard II. granted a license to Cosmo Gentilis of six pieces of tapestry, of a green ground, powdered with roses, which the king sent as a present to the Pope. However, the art seems in the reign of Henry VIII. to have been brought to a perfection it had not before attained, and the great Holbein is supposed to have furnished various designs for it. About this time the use of tapestries was not confined to the nobility, but it was not uncommon to see abundance of arras, rich hangings of tapestry, silver vessels, &c., in the houses of persons of much meaner quality. In the reign of James I. a very extensive manufactory of hose tapestry was established at Mortlake, in Surrey, by Sir Francis Crane, which was munificently patronised by that king and his son Charles I., who granted an annuity of 2,000*l.* towards the maintenance of the undertaking. Francis Cleyn, a painter of considerable reputation in the service of the King of Denmark, recommended by Sir Henry Wotton, was employed in this manufactory, and gave designs in both history and grotesque. Indeed, the beautiful hangings which then adorned the British palaces were much admired by foreigners of distinction, who visited this country, and the manufacture was held in high repute abroad. The civil wars, however, ruined this large manufactory to which I have just alluded, and it does not appear to have been again carried on to any extent. A Monsieur Pariport, in 1720, made a spirited attempt to compete with the celebrated Gobelins at Paris, and founded a considerable manufactory at Fulham, in which he was nobly encouraged by the then Duke of Cumberland, who assisted him with a gift of 6,000*l.*, but this soon failed, and in 1759 a set of designs for tapestry, painted by Zacharelli, and executed by Paul Saunders for the Earl of Egremont, for a house he built in Piccadilly, were the last made in this country. Connected with tapestry are the silk and satin damasks and the rich figured velvets, and another material much employed in this country for hangings, and other purposes, was the stamped and painted gilt leather, on which was represented sometimes in relief divers kinds of grotesques, relieved with gold and silver, vermilion, and other colours. Many suppose it to have been invented by the Spaniards, and by them communicated to the Flemings, who excelled in it, and introduced here about the time of Henry VIII. The writers in the French Encyclopædia confess, even in 1762, that though the stamped leather of France equalled that from Flanders and Holland, yet that made in Venice and England was superior in both beauty of design and durability.

Architecture and Music.

QUATREMERE DE QUINCY.

A passage of Vitruvius, in which he recommends an architect to have some tincture of the knowledge of music, has made people suppose that music and architecture had a reciprocal system of harmony. However, if Vitruvius thought it proper that an architect should understand music, he has given his reason for it, and has pointed out to what purposes this knowledge should be applied: he says it is necessary to enable the architect to manage the repercussion of the actors' voices in the structure of a theatre; and, likewise, to judge by the sound of the degree of tension of the cords of ballistas or other war-like engines. Theories established on passages like these are as false in their principle as in their application. Nevertheless, several clever men may be quoted (the great Blondel among others), who, in treatises upon architecture, styled by them "Harmonical Treatises," have taken pains to create purely nominal analogies. For example, according to their fantastic parallels, the Attic pedestal (who could ever doubt it!) signifies the key-note, the 4th, the 6th, and the octave, thus forming a chord; and, when a plinth is added, it is considered as a 7th, and the chord is thus changed into a fundamental discord, which is still conformable to the laws of harmony. So far all is clear, but there are the two fillets that terminate the upper and lower part of the scotia; and then two mouldings are here, as elsewhere, in the way of their whimsical system. What name is to be given to them? and how do they contribute to the harmony? Blondel and Ouverard are not discouraged by this difficulty. These mouldings, they say, must be considered as fugues, which, by their modulation, serve to prepare and resolve the chords, and to connect and soften the whole into perfect harmony.

Obstruction of Light.

D. GIBBON.

Where a party brings an action for the obstruction of his light, he must prove that he has had the uninterrupted use of the light for the twenty years immediately preceding the action. The usage must have been uninterrupted, but no act or matter is deemed an interruption, unless it has been submitted to, and acquiesced in, for one year after the party interrupted has had notice thereof, and of the party making or authorising the same to be made. Thus, if windows have existed for twenty years, an occasional obstruction will not affect the prescription; but if any such obstruction has continued unabated for a year, the prescription will be wholly destroyed. In like manner, if the owner of the house has pulled down his house, and not rebuilt it with windows in the same situation within a year, or has blocked up the windows for a year, his right will be gone, though a disuse of the right for a shorter period would not, I apprehend, be deemed an abandonment thereof, so as to interrupt or destroy the prescription. A prescription for the use of light may be destroyed by an alteration of the manner in which it is enjoyed, as by altering the size or situation of the apertures through which it is received. Thus, where a party, having the right to light, carried out the wall of his house, and made a bow window in the new wall, in the same elevation as the former one, it was held that the easement was gone, since he had no right to receive the light through the new window. But it has been considered that the enlargement of an ancient window will

not of itself destroy the prescription, so as to entitle the owner of adjoining land to obstruct the passage of light into any part of the space occupied by the ancient window. And where a building which had been a malt-house was converted into a dwelling-house, Macdonald, C.B., ruled that it was entitled to so much light as was sufficient for the purpose of making malt, though not to any greater quantity. And where a party was entitled to light by means of blinds fronting a garden, and took away the blinds, and thereby opened an uninterrupted view into the garden, Lord Kenyon held that the proprietor of the garden was not justified in making an erection which diminished the light heretofore coming into the house through the blinds.

French Rolled Beams.

SIR W. FAIRBAIRN.

In the manufacture of malleable iron beams in France, sufficient attention has not been paid to form, in order to attain the section of greatest strength. The French philosophers and engineers are fully aware of the experiments made in the year 1845, for investigating the strength and form of iron beams, in order to establish the principle on which the Britannia and Conway and tubular bridges should be constructed. The formulæ deduced from these experiments are well known in France, and up to the present time have been used for similar constructions. They proved that wrought-iron beams followed a totally different law in the resistance to strain to cast-iron; that in wrought-iron beams the area of the bottom flange requires to be little more than one-half that of the top; while in cast-iron beams the area of the bottom flange should be six times that of the top flange. This difference arises from the great resistance which wrought iron offers to a tensile strain, and its comparatively inferior resistance to compression. Cast iron, on the other hand, possesses a high power of resistance to compression and defective resistance to tension. The following table of resistance will show how the material should be distributed in order to obtain the maximum of strength with the minimum or least required quantity of material:—The resisting power of—

	To tension, in tons.	To compression, in tons.
Wrought-iron plates is	23	12
Copper ,,	16	3
Cast-iron ,,	8	51

From the above it is evident that to obtain the maximum strength in a wrought-iron beam from the least quantity of material, the area of the top flange should be nearly double that of the bottom; but as this is difficult of practice, it is desirable to make the top flange as broad as possible, for the purpose of giving the beam lateral strength.

Absolute and Relative Strength of Timber.

M. COWIE.

In ascertaining the strength of timber, two points must be kept quite distinct, viz., the constant expressing the relative strength, and the constant to be used in the formulæ, such as those given in Turnbull, which we may call the constant representing the absolute strength. If a hundred experiments are made on a particular kind of fir, the breaking-weight in each case being taken under exactly similar circumstances, the 100th part of the sum of all these weights represents fairly enough the mean strength of that particular wood, *i.e.*, it will do to compare with a number determined in the same way for another kind of fir, and the greater this mean weight is, the stronger the wood. So far, then, as scientific research is concerned, this method is fair; but the same constant will not do for the practical man. I say that for this we must take the least weight that broke the beam, and not the mean; for the workman wants to know not what the average strength of the wood is, but how much he may trust to a particular specimen of it; and therefore he wants to know what is the least weight that broke a fair, uniform, sound beam under given circumstances. The first set of constants will guide him in the choice of his material, but if he begins to calculate the dimensions from the formula, as in Turnbull, he wants a different constant, viz., the one I have above pointed out. My attention was drawn to this subject by reading the following passage in Professor Barlow's book on "Strength of Materials," p. 26:—

> Since the strength of direct cohesion must necessarily be proportional to the number of fibres, or to the area of the section, it follows that the strength of any iron rod will be found by multiplying the number of square inches in its section by the corresponding tabular number as given above. This, however, gives the absolute strength, or rather the weight that would destroy the bar; and practical men assert that not more than one-fourth of this ought to be employed. I have, however, left more than three-fourths of the whole weight hanging for twenty-four or forty-eight hours without perceiving the least change in the state of the fibres, or any diminution of their ultimate strength.

It will be seen that Professor Barlow uses the expression "absolute strength" in the way in which I have proposed to use "relative strength." I say that if he proposed the smallest weight instead of the mean, the result would be one which practical men ought to trust. As to the arbitrary "one-fourth," it only shows that we have not yet succeeded in proving to practical men that we can do them any good, and Mr. Barlow justly intimates that there is a great sacrifice of the powers of the material in this very arbitrary reduction.

Timber Scaffolding.

T. GRISSELL.

In adopting the principle of timber scaffolding for buildings, in preference to poles and ropes, Messrs. Grissell & Peto, the contractors, were influenced by considerations of saving both time and expense. They had long been impressed with the want of scientific principle exhibited in the ordinary scaffolding. The system had been employed, in rather a rude form, by Mr. Tomkinson, of Liverpool, in his quarries and stone yards, for moving stones of large dimensions. Scaffolding of a somewhat similar kind was used in the erection of the Arc de Triomphe, Barrière de l'Etoile, and at the Eglise de la Madeleine, at Paris. The first time it was used by Messrs. Grissell & Peto was for the erection of the Reform Club (Pall Mall), under Mr. Barry, in 1838; then at the large graving-dock at Her Majesty's Dockyard, Woolwich, under Mr. Walker in 1832, and it was employed very extensively at the new Houses of Parliament. In these constructions its general applicability was proved, and in the erection of the Nelson Column (commenced in 1840), where it was carried up to the height of 180 feet, its stability at a considerable elevation was fully tested. Its usefulness is manifested by the facilities which it affords to the workmen particularly in buildings of stone. By its aid, and with the travelling machine at its summit, one mason or "setter" can set as much work in one day as was formerly done in three days, whilst at least six labourers are dispensed with who, with the old mode of scaffolding, were always required to be in attendance. It is also well known that scaffolding poles and cords are not only expensive but are subject to rapid decay, and after a few years' wear become useless; in fact, the scaffolding of a moderately extensive building costs a large sum when first purchased, but it is almost valueless after a comparative short period of time. Such is not the case with the timber scaffolding, which may be said to be of no greater cost to the contractor than the expense of its erection. It is not secured together by either bolts or spikes, so that the waste is trifling, and after having performed its duty as a scaffold it may be removed piecemeal into the building at the level of each floor, and be used directly for constructing the roof and the internal carpentry of the structure. The timber having been seasoned by its exposure to the weather is consequently better fitted for immediate use.

Doorways of Irish Round Towers.

G. WILKINSON.

In remarking on the features of round towers the doorway, which is common to all, first demands attention. The circular arch is by far the most prevalent, and the masonry in several of the structures is of the exact character peculiar to Norman buildings. A more conclusive argument, and one that is more evident to the general reader, is, however, the elaborated execution of the masonry in some of the doorways, displaying some of the finest examples of Norman architecture and construction, and of a character exactly similar to that of doors of later churches in the localities of those buildings, whose construction in the style of Norman architecture, I presume, is not to be disputed. It may, however, be asserted, and I believe it is considered by many, that these peculiar features of the round towers, which are in common with the architecture of the Continent, and, moreover, in common with the style of architecture in those early churches which by gradual change succeeded the round towers, are architectural features resulting from later causes, viz., the appropriation of these peculiar buildings to Christian purposes, and the insertion of doors and other features before remarked on in a style of architecture different from that originally belonging to them. It is, however, considered that such cannot be the case. For, first, the masonry around the doors shows no sign of disturbance, and reasoning is altogether against these features having been altered; and, doubtless, the masonry of these towers is as originally constructed, except in some of the tops which, from decay or otherwise, required renovation. The ground on which it is contended that the doorways are original is the universal custom of the Normans of using sandstone in their buildings, and of expending considerable labour in erecting their doorways—the chief feature in their structures. In the round towers the door-jambs are formed of sandstone, or very rarely of limestone; and always the former where there is any work on them. The later churches of the country are the same, and there is scarcely an instance in Ireland of any Norman remains in which any doorway or decorated portion is of the common limestone of the country, although for the common walls it is used, as being the material of the locality.

NOTES AND COMMENTS.

According to the statement prepared on behalf of the Society of Architects and the Federation Committee, there are 8,063 architects in the United Kingdom. It is, however, an error to suppose that so large a number are adults in independent practice. Architect is only a general term under which various kinds of assistants are comprehended in a tabulated form by the officials. If we take the census of England and Wales, it will be found that 23 of those "architects," although over five years old, have not reached the ripe age of fifteen. There are 847 "architects" who are under twenty years of age, while 1,378 are under twenty-five years. Two "architects" are described as blind, and one as dumb. Now, it is evident that the figures relate to pupils, draughtsmen, clerks, and messengers, that is, to paid and unpaid assistants, rather than to architects in the accepted sense of the word. If deductions are made for individuals of the foregoing classes, the balance representing men to whom a building would be entrusted by a client will be found to have much less numerical importance.

The competition between the sketching clubs of the metropolitan art schools is now an established institution. In the last one, which was held in the rooms of the Society of British Artists, there were representatives of the Gilbert (St. Martin's), Lambeth, Birkbeck, South Kensington, Royal Academy, St. John's Wood, and West London schools. Messrs. J. W. Waterhouse, A.R.A., Charles W. Wyllie, and Thomas Brock, A.R.A., acted as judges. The first award for figure subjects was taken by Miss Alice Woodward, of South Kensington, Mr. A. C. Weatherstone, of the same club, taking the first design. Mr. Champion Jones, of the Gilbert Club, was the winner of the first prize for landscape; Mr. Harland Fisher, of Lambeth, for animals; and Mr. C. Allen, of the same school, for sculpture. In the last-mentioned subject a second and an "extra" second prize were awarded respectively to Mr. A. S. Walker and Mr. W. Stevens, of the Academy schools; and Mr. W. Margetson, another Academy student, took the second prize for design. Mr. D. Porter, of the Birkbeck School, won the second landscape prize; and Mr. F. Mann, of the Gilbert, the second for figure composition.

An important case relating to valuation and the duties of an umpire has been decided in the Court of Appeal. Two valuers of timber on an estate in Westmoreland under a will could not agree, and Mr. Tewson, of the firm of Debenham, Tewson, Farmer & Bridgewater, was called by them as umpire. He valued it at 3,364*l*. The vendor considered the amount should have been 6,500*l*., and he applied to set the valuation aside on a legal ground which would be applicable to it if it were to be considered as an award, viz., that the umpire had not awarded upon all the matters submitted to him; that he had delegated part of his duties to an assistant, who took measurements, &c.; that he had made a mistake in the value and quantity of the timber; and that he had not been duly appointed as umpire. The Divisional Court, when the case was tried, held that there was no jurisdiction to set aside the umpire's valuation, as the umpire was not an umpire in the sense of an arbitrator, but was a mere valuer, not having been appointed to determine matters in dispute, but only in the usual way to make a valuation in case the valuers should differ who had been appointed under the conditions of sale. From that decision the vendors appealed. The decision was, however, upheld by the Court of Appeal, which consisted of the Master of the Rolls and Lords Justices Lindley and Lopes. Lord Esher said that Mr. Tewson would be an arbitrator if he had to determine a dispute on evidence, but as he came to prevent a dispute arising he was a valuer. There was to be a valuation of the timber in order to fix the price to be paid. At the time the valuers were appointed there was no dispute between the parties. It was before any dispute had arisen that the valuers were to act. And as to the so-called "umpire," if the valuers could not agree, he was to value—that is, before any dispute had arisen between the parties. The price was not then ascertained, so there was nothing for the parties to dispute about; the valuers had not agreed as to the price; perhaps they had come to the conclusion that they could not agree as to the price; their notions as to the price were not known, even if they had arrived at any; but, finding that they could not agree as to the price, they had agreed to appoint a third person to ascertain the value. It was urged that there was no contract between him and the parties, but why not? They might delegate the duty to a third person, and if so, then there would be a contract between them. The reason why he held that in this case the third person appointed was in the position of a valuer, and not of an arbitrator, was that he was merely substituted for the valuers to do what they could not do. Lord Justice Lindley adopted the same principle, for he said that a valuer in one sense may be an arbitrator, but not in the proper legal sense. The distinction is that the valuers appointed under such conditions are not to determine disputes between the parties, but to prevent disputes from arising. There was no "dispute" between the parties when the valuers were appointed. Lord Justice Lopes also concurred, saying that the umpire was merely appointed in the place of the valuers. It would follow from this that the umpire must not be made aware of the respective valuations, and is expected to make an independent one of his own.

M. Edel has prepared the designs for all the costumes that are to be worn in Verdi's forthcoming opera "Otello," with the exception of Iago's, which will depend on the choice of M. Maurel, who takes the part. It was no simple commission, since 358 designs had to be made. For the armour worn by the principal character M. Edel has followed the apocryphal pieces in the arsenal of Venice, which the cicerone asserts once belonged to the Moor. It is needless to say there was some discussion over the costume of Othello. Was he to wear the airy robes of a modern Algerian, with a few fanciful alterations, or was he to be clad as a Venetian gentleman? Neither Signor Verdi the composer, nor Signor Boïto the author of the libretto, would hear of their Othello being in any way suggestive of the malignant and turbaned Turk. He will, therefore, be in the garb of a Venetian, with the addition of a cuirass in the galley scene of the first act, with which the opera opens, and which seems to have been derived from Shakespeare's "Tempest." In the last act he will wear a sort of tunic which will allow his arms to be bare. The scenery will surpass anything previously seen in the Scala.

The Edinburgh Exhibition, like the Liverpool, has given rise to complaints about the awarding of medals, and some strange stories are related of the way in which the investigations were conducted. The exhibitor of cutlery fancies that the medal must have been awarded for the way in which the articles were arranged, for, the cases being locked, it was impossible for any judge to handle one of the specimens. The cutlery of Messrs. Joseph Rodgers & Sons (Limited), which always holds the highest position, was in consequence only awarded a bronze medal, appearance through a glass case being the only quality that was tested. There are many complaints of the same class. In all large exhibitions it is almost an impossibility to expect justice. The work of a judge is extremely onerous, and it has to be discharged gratuitously. All that can be done, therefore, in most cases is to give as equitable a decision as can be obtained from a cursory examination. What is meant by jurors' duties is suggested by a statement of Mr. Parslow, the architect, who officiated at Liverpool. He says:—"We jurymen for the most part consented to act under the impression that we should finish our work in a few days, yet the work proved so laborious that we found it needful to continue at it for eighteen or twenty days, often again and again individually or collectively re-examining an exhibit, anxious to do the best we could." And yet in spite of so great a sacrifice of time and convenience few exhibitors at Liverpool are satisfied.



DINING HALL, I

FROM A WATER COLOR DRAWING IN

By JOHN R

5th 1886.



INK PHOTO SERIES 22 MARTINS LANE CANNON ST LONDON E C

LE TEMPLE.

OSSESSION OF Mr CHADWYCK HEALY.

THER.



FRESCO IN CHURCH O

By SIGNOR B



T SPIRIDION, TRIESTE.

M CATTANEO





INK-PHOTO. SPRAGUE & Co 22, MARTINS LANE, CANNON ST. LONDON E.C

PORCH OF MOSQUE OF SULTAN HASAN, CAIRO.

Drawn By R. PHENÉ SPIERS.

ILLUSTRATIONS.

MIDDLE TEMPLE HALL.

THE water-colour drawing from which this illustration is taken was exhibited this year at the Royal Academy. It belongs to Mr. CHADWYCK HEALEY, barrister. The artist is Mr. JOHN CROWTHER, of Doddington Grove, whose name is not associated with work of this class; but his drawing was recognised as among the best in the architectural room, and his style is well suited for reproduction.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 34.—PORCH OF MOSQUE OF SULTAN HASAN, CAIRO.

FIGURES FROM ST. SPIRIDION, TRIESTE.

THE EDINBURGH MUNICIPAL BUILDINGS.

A MEETING of the Lord Provost's Committee of the Edinburgh Town Council was held on Friday last, when the question of the New Municipal Buildings plans and the extraordinary alteration of them recently disclosed came up for discussion. According to the *Scotsman*, very general indignation was expressed at the blunder which had been made in reference to Messrs. M'Laren's premises, first in including them in the plans, and next in withdrawing them to the great inconvenience of the competing architects. The question was asked who was responsible; but, like the people in the parable, all who might have been saddled with responsibility began with one consent to make excuse. The town clerk, it is said, promptly repudiated responsibility, and held that he was only the hand of the Corporation or its committees to minute what took place, and for anything that he had done he must have had authority. An immediate call for the production of the minutes was made upon him, but this did not result in anything. A print was, however, produced by the town clerk in which it was made abundantly plain that Messrs. M'Laren's premises were included in the answers to architects who wrote about the plans; but no information could be elicited as to who was responsible for this change from the original intention to finish off at Warriston Close. Mr. Steel and others indicated that the matter could not be allowed to rest where it was, but that it would have to be fully threshed out on another occasion, and the responsibility for what had occurred put on some one's shoulders. There the matter for the present rests.

The following letter from Professor Baldwin Brown on the subject of the competition appears in the *Scotsman*:—

When an artist gets part of his picture into a "fog," it is sometimes better to take up the razor and, scraping the whole passage away, to paint it in anew. If something like this could be done in the matter of the new Municipal Buildings, it would be of no small advantage. The whole question needs, apparently, to be faced afresh with spirit and determination. Regard must, of course, be paid to those gentlemen who have been prepared to come forward and help the city with designs for the new structure, and who have been engaged for some time upon drawings made in accordance with certain conditions intimated some months ago. It now appears that these conditions have been materially changed within the last few days, and for the moment the work of the competing architects has practically been brought to a standstill. This being the case, would it not be a satisfaction to everyone if the whole question were taken up anew in a somewhat larger spirit than that in which it seems hitherto to have been treated? Those architects who have already done work, for which they should be suitably compensated, would not consider themselves badly treated if a new task were offered to them of more importance than the somewhat meagre one with which they have hitherto been entrusted.

So far as one can judge from your own remarks on the subject, and by the various letters which have appeared in your columns, the one desire on the part of the citizens at large is to have a thoroughly good building, or group of buildings, which shall be an honour to the city for centuries to come. There seems no disposition to complain of the necessary expenditure involved; and this being the feeling abroad, why should not the work be carried through on a large and generous scale? I venture to say this, because there are signs of a desire for half measures on the part of the present managers of the undertaking.

One instance is the unfortunate condition reserving to the Council the right to entrust the carrying out of plans to other hands than those of the successful designer. To say the least of it, this condition falls grievously below the dignity of the situation. It is not pleasant to hear it said that this looks like a desire to buy the brains of the foreigner, and then to deprive him of the credit and satisfaction of carrying out his own work. It is certain that the Town Council cannot have any such desire, but the "saving clause" is just an example of the half measures which one would like to see avoided.

Let the competition be either one thing or the other. If it is open, let it be open to the world; and let the successful architect, wherever he comes from, be secured in his undoubted right to superintend the carrying out of his own plans, with the assurance of local support loyally given. If the competition is restricted, let the limits of the restriction be clearly understood.

Another instance of what appears to suggest "half measures" concerns the present back wall of the Municipal Buildings. The endeavour to preserve this could only be justified if the question of cost were felt to be a very pressing one, and this is evidently not the case. Anyone possessed of common intelligence can see that the retention of this wall would greatly cripple an architect in his attempt to do justice to the magnificent site at his command. If all that the city is prepared to do is to provide an extension of office accommodation, then the wall may be preserved; but even then it would have to be extensively pulled about, and part of it at any rate must come down if any architectural effect is to be secured in the altered structure. It seems clear, however, from the present state of public feeling that much more than this is contemplated, and it admits of no question that no really satisfactory result can be arrived at unless the architect has a free hand in dealing with the site.

With regard, then, to this question of the site. In your leader of this morning you do not consider it settled, and it would be a pity if an irrevocable decision were arrived at without fullest consideration. The balance of opinion seems decidedly in favour of at any rate the neighbourhood of the present locality of the buildings. To move the buildings to the west end would be a calamity to Edinburgh. We cannot move St. Giles's or the Parliament House, which form with them, and with other civic buildings, a cluster of important public edifices in the real heart of the city, and in the midst of all its historic associations. To break up this group of buildings would be to inflict a serious blow on the most important and interesting part of the city. The particular spot to be chosen in this central locality, however, is a matter which has to be considered from many sides. From the artistic point of view the present site has, I venture to urge, not a little advantage over that recently suggested at the corner of Bank Street. The ground between the Lawnmarket, Bank Street, and the Mound is already occupied by buildings which, in the mass, are good examples of characteristic Edinburgh houses—not of the oldest date—and it would be a pity to disturb them. Again, taking the view from Princes' Street as being the one chiefly to be considered from the artistic standpoint, one may say that the architectural effect of this particular point of the ridge of the Old Town is fully provided for by the imposing Bank of Scotland, and the Free Church College, with the Assembly Hall spire in the background. On the other hand, from St. Giles's eastward to the Canongate there is little to break the masses of houses clustering on the ridge. Here a grand public building, occupying the site of the present municipal offices, would supply a needed element to the general architectural effect. Working on such a site, the architect would have more freedom than if his design had to be in relation to an already existing public building of repute, like the Bank of Scotland. In itself, as has often been pointed out, the present site is a grand one, which it would be hard to match either in this or in any other town. If more ground is needed, either for municipal offices or for a town hall—if, as may be hoped, this can be included in the scheme—is it impossible to provide it here by the same means that would have to be employed if the Bank Street site, or any other site now occupied by houses, were decided on?

May I be allowed to suggest, in conclusion, that it would be a graceful act if the Town Council should see fit to invite a small number of universally-respected citizens of high standing, acquainted through long familiarity with the needs of Edinburgh, and with the views of their fellow-townsmen, to act with the Council or with a committee of the Council in dealing with this most important subject? The matter in question is one which concerns not the Town Council alone, but the whole Edinburgh community; and not the present generation, but also generations to come, whose interests we have in charge. It is a matter on which we need publicity and the free expression of opinion, and, above all, the practical aid of leading citizens, both within and without the municipal body. Whatever may be the fate of this suggestion for forming a Municipal Buildings Committee, on which when the time came a professional assessor might, if desired, be invited to serve, I may express the hope, which I am sure all will share, that this weighty and difficult question will be dealt with in an open spirit, and with that pluck and hardihood without which great undertakings cannot succeed.

THE HOFBURG THEATRE, VIENNA.

THE exterior of the new theatre on the Ring is now finished, and the scaffolding was removed a fortnight ago. The inside will not be completed till next October, but it is already possible to form an idea what the house will be. In its mechanical appliances for scenery, warming, and lighting, and in its arrangements for the comfort of actors and spectators, the new theatre will be without its equal in the world. It will hold 2,000 persons, and every person will have a clear view of the stage, as there is not a single pillar to obstruct the view. Every private box will have its vestibule opening on to a passage 20 feet wide, and this passage opens in its turn through countless doors into a *foyer* 30 feet wide, which goes all round the building. This arrangement, repeated on every floor, will give spectators in the gallery a *foyer* as large as those on the lower tiers. Twenty-four doors from each of the *foyers* open on to wide staircases, which lead out of the theatre, so that in case of a fire alarm there cannot be any crowding or difficulty about exit. Wood has been used as little as possible in the construction, all the staircases being of stone, the girders and framework of iron, and the ornaments in the *foyers* of marble, polished stone, or enamelled tiling. All the wood used is impregnated with incombustible chemicals. The stage is completely separated from the auditorium by a wall of brick and iron, and, according to the rule now enforced in all Austrian theatres, there is an iron curtain, which can be lowered in two minutes when required.

All the mechanism for scene-lighting is of iron, and by a new system peculiar to this theatre, the whole stage and different portions of it have been made movable, so that set scenes with furniture can be prepared below the boards and sent up all ready, without any work on the stage or in the slips. The space under the stage is part of the moat of the old fortifications, and is of immense depth. Three storeys of private rooms for the actors and actresses give the space all round the stage the appearance of a large hotel. Every performer above the rank of chorus-singer will have his or her separate dressing-room, and even the "supers" will not be more than twelve in one large room. The theatre will be lighted throughout by electricity. Baron Hasenauer is the architect of the new house.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE first ordinary meeting of the Institute was held on Monday evening, Mr. Edward I'Anson, F.G.S., president, in the chair.

Mr. Fletcher Moulton, honorary associate, attending for the first time, was presented to the President; also Mr. Thomas Williams as fellow, introduced by Mr. Charles Barry, past president; Mr. Newman, fellow, and Mr. Stephen Box, associate.

The decease was announced of the following members:—Mr. Oswald Adshead, Mr. Thomas Farrer, and Mr. Harry Saxon Snell, jun.

Mr. WHITE, secretary, announced the gift by M. Charles Garnier of his work on the new opera house, Paris; also that M. Daumet, the architect of the château of Chantilly (presented by the Duc d'Aumale to the French Institut), had lately paid a visit to the Institute, and presented plans and sections of the château, and two volumes of a work on an archæological mission in Macedonia, conducted by M. Daumet and M. Heuzey.

Mr. OCTAVIUS HANSARD proposed a special vote of thanks to M. Charles Garnier, which was passed, as also votes of thanks to the several other gentlemen for their donations.

A ballot was then taken, and the following were elected:—As Fellows—Messrs. G. M. Alexander, Cape Town, Cape Colony; Philip Herapath, Auckland, New Zealand; G. E. Grayson, Liverpool; F. Usher Holme, Liverpool; John S. E. Ellis, Sydney; and Arthur Young, Queen Anne's Gate, S.W. As Associates—Messrs. William Dunn, Crouch Hill, N.; E. A. Coxhead, Eastbourne; and W. G. Smithson, Idridgehay, near Derby.

Bust of the late G. E. Street, R.A.

Mr. BLOMFIELD, in presenting a bust of the late Mr. Street on behalf of the subscribers, said the memory of Mr. Street was still green in the hearts of his friends and admirers, and no eulogy was required to claim for it a just title to the honourable distinction of being preserved in visible form within the walls of the Institute. Few among them had listened to a better or an abler address from the chair than that with which Mr. Street had opened the session five years ago. No one could have failed to recognise in it the promise of a brilliant and useful career as President which, had he been spared, would have been amply and nobly fulfilled. As to the bust itself, and its merits as a work of art, he hesitated to speak in presence of the distinguished sculptor, Mr. H. H. Armstead. That gentleman, in addition to the other well-known qualifications he possessed for the work, had enjoyed a friendship of most intimate kind with Mr. Street, without which a posthumous bust would have been almost impossible. Mr. Blomfield concluded with a regret that so long a time had elapsed since the death of Mr. Street before they could present the memorial, and with the hope that the memorial would long serve to recall the friend they had known so well, and the high aims and lofty aspirations which animated the career of that great and good man.

Mr. MACVICAR ANDERSON, hon. secretary, said that while it required no marble bust for Mr. Street's memory to live within the walls of the Institute, it would be strange indeed if they did not welcome the living likeness of one who was so diligent a student of architecture, so great a lover of their profession, and so loyal to the Institute and proud of its membership. Mr. Street was proud of his position in the Royal Academy, being one of the very few members of the profession who was entitled to write R.A. after his name. But he was still prouder of his position as President of the Royal Institute of Architects. Mr. Anderson then alluded at some length to the presidential address of Mr. Street as illustrating the principles of his professional career.

President's Address.

The PRESIDENT said:—It is my duty this evening to address you, not only on the subject of the body corporate of which we are members, but also in respect of matters which interest generally all British architects throughout the empire. I cannot, however, hope to impress you with the same weight of argument and personal quality as the majority of my predecessors. I am simply a man who for many years has sat as a member of your Council and worked to the best of his ability for the welfare of the Institute, with the hope of rising in the position of an ordinary member of Council to attain that of a vice-president, and then that of president; and, gentlemen, I thank you with all my heart for having permitted, and having assisted me, to gratify my expectations and desires.

The absorbing work of the past session lay in the preparation of a draft charter. The draft in question occupied many months of careful thought, both by your Council and by the general body of members; and, if I may express a personal opinion, the draft includes an enlargement of functions and a series of progressive developments which, if granted to us and duly carried out, will conduce to the lasting and best interests, not only of the body corporate, but also of the profession of British architects. Moreover, our petition has raised the hopes and aroused the sympathies of our brethren, not in the mother-country alone, but also in Canada, Australia, New Zealand, Cape Colony, and many other smaller though not less valued sections of the British Empire.

During the consideration of the supplemental charter a happy proposal was made by one of our senior members. It was to organise, for what the original charter calls the advancement of architecture, four departmental committees, to be appointed by the general body of members, and each to have its own honorary officers and its own departmental action. This important step, which, in my opinion, is quite in the right direction if only kept within certain limits, was considered by a special committee, whose report enabled the new standing committees to be appointed at our last annual meeting, namely, one for art, one for literature, one for practice, and one for science.

Another step, which I think is fraught with more possibilities of accident than is the former—a step towards the professional federation of architects—has been taken by a special committee, at whose meetings I have presided, and where I have had opportunities of hearing the opinions on the subject of the several societies in Glasgow, Liverpool, Manchester, Leeds, Leicester, Nottingham, and Bristol, as well as of individual members from various parts of the country. They have led me to believe that the desire for federation, or, in other words, systematic organisation, is stronger and more pronounced in the provinces than it is in London. Our next meeting takes place to-morrow, when we are to discuss as a whole a series of tentative propositions, put together from time to time, after much consideration. That there should be difficulty in settling the conditions under which such organisation can be carried out is, I think, easy to understand. But there are principles which may be established as a basis, not the least of which are the desirability of maintaining uniformity of practice, the necessity of examinations, and a constant interchange of communications relating to the art, science, and profession of architecture.

The closing meeting of the past session was one of a highly gratifying character, as much to the members generally as to myself. The presentation of the royal gold medal was witnessed by distinguished members of our body from America and France, attracted by the presence of M. Garnier, whose name has long been favourably known to us as the architect of the Paris Opera House. That, too, was the evening on which

the medals and prizes annually awarded by this Institute were distributed, and as I had previously assisted at a similar distribution of prizes in Paris, I could hardly fail to note the difference between an important annual event as it is carried out in the two countries.

In Paris the distribution is held in the handsome theatre of the Ecole des Beaux-Arts, filled by friends of the prize-holders, who testify by their applause to the interest they take as the various prizes are distributed, and an important officer of State presides. One special feature of the meeting also attracted me. Prizes were not only distributed to students in architecture, but to master-artificers and to foremen of works. Many of this latter class of men were veterans, and, in their sphere, of wide reputation; and the cordial enthusiasm with which they were greeted formed a scene of peculiar interest to an Englishman. At the close of the proceedings the Société Centrale des Architectes invited every prizeman—architect, master-artificer, and contremaître—to join the members' dinner.

Whether we could do the same thing here I will not stop to inquire, but certainly such a public and solemn distribution of honours must promote an enthusiasm which cannot but tend to incite all student-workers, both of manual and of mental capacity, to attain distinction in their career, and must, moreover, confer exceptional happiness on a large number of meritorious artisans, who at different social levels are labouring with us, and without whose intelligent co-operation the work which the architect designs cannot be properly realised.

After referring to the members who died during the year, the President continued:—

When I was a young man my feelings used to induce me to think that the only really important part of architecture was art, and that artistic power was wholly an instinct, that in fact the highest quality of an architect was to be an artist. But, depend upon it, art-power does not suffice to make an architect. The grandest effects in architecture have depended quite as much upon constructive as upon artistic knowledge. The composition of a plan, its adaptation to the purposes for which the building is intended, is rather a mental than a manual exercise, and though artistic feeling may undoubtedly enhance the effects to be obtained by thoughtful arrangement, it is study and practice and experience that combine to render an interior workable, and fit for everyday use. I am, therefore, an advocate for the systematic teaching of art, as far as it can be taught, and of all those sciences pertaining to the theory and practice of building construction. The traditional custom of apprenticing young men to a practitioner, whereby they can closely follow and assist in the work done in an architect's office is, I still think, a right system, advantageous to the apprentice if he be worth anything at all; but it is far, very far, from being enough, and the more often this is emphasised by those who occupy the position I have the honour for a time to hold, the better it will be for the profession, at least until the subject of architectural education is better understood than it is at present, or until people cease to repeat the formula that architects, like French cooks, must be born, and cannot be made. Surely the old and true saying, that the three things necessary to make a successful man in any profession are nature, study, and practice, may be safely applied to our own, and surely two out of these three items are distinctly within the area of teachable things.

Indeed, they require a great deal of teaching, and any attempt to teach, if it is to be successful, must be tested by constant examination. I feel that it is an absolute obligation on the senior members of the Institute to personally bring this matter to the notice of those in their employ, whether as assistants or pupils. I venture even to recommend the insertion of a clause in the indentures of every articled pupil, that he should engage in due course to present himself before our Board of Examiners, and pass, or at least try to pass, the examination in architecture.

Every pupil who has devoted himself in a reasonable manner to his studies, and whose professional education has received due care from the master to whom he has been articled, should be able within a year after he is out of his time to pass that examination, for in its present range it comprises merely the minimum amount of knowledge which a young professional man should early possess. But it is too much to expect that young men, who see their predecessors successful in practice without having undergone what some may call the drudgery of this educational course, will voluntarily subject themselves to such a test, at least in large numbers, and it is only by the direct personal influence of masters and employers over their pupils and clerks that the advantages derived from passing the examination can be brought home to young men.

However great, though, may be our exertions in this respect, both corporate and individual, they must be frustrated for some time to come by the lamentable deficiency, in too many cases, of early education among those who seek to enter and who do enter our profession. The fact has not escaped the attention of the Special Education Committee, and I trust that the report will enable you to see your way to devising some important measures for the furtherance of professional education in conjunction with the Committee and members of the Architectural Association.

And while preparing in all good faith to lend a hand, or at least to offer one, to a junior and distinct body, working for objects which if not identical are identified with our own, may we not hope that a higher educational institution, far older, infinitely richer than we are, and invested with extraordinary powers, which it derives direct from the sovereign, may in like manner hold out a hand to us? May we not hope that the Royal Academy will see its way not only to carry out the provisions relating to architecture as laid down at its foundation, but also to develop the educational powers with which it has been specially entrusted? I hope that no one will misinterpret my meaning, or fancy that I am in the slightest degree inimical to the Royal Academy, or that I wish it the smallest harm. On the contrary, I look back to its Antique school with gratitude, for in my time it was the only institution in England which offered any help or encouragement to art-students. At the same time I feel bound, as the President of this Institute, to offer a remark on the present incomplete representation of architecture at the Royal Academy, and an expression of regret that the careful recommendations of the Royal Commission of 1863, which were intended to improve the character of that representation, have been totally disregarded.

Before leaving the subject of the educational means provided for architectural students I should like to refer to the examination which, for the last thirty years, has been entrusted to us by statute. Although but slight artistic acquirements are necessary for those who have to fulfil the duties of district surveyor, a large amount of practical knowledge is necessary, and I hold that these appointments, some of which are of considerable value, offer opportunities for professional employment which form a valuable incident in our profession. The emoluments differ greatly in different districts, and I think that the Metropolitan Board would act wisely and to the public advantage if it promoted the most meritorious of its surveyors, as vacancies from death or resignation occur in the busier and consequently more remunerative districts—a proceeding which, in the cases respectively of Mr. Aitchison, A.R.A., and Professor T. Roger Smith, has already afforded cause for satisfaction. Anyhow I venture to recommend young men not to neglect the means of advancement secured, in more ways than one, by passing the examination for certificates of competency to act as district surveyor in London, or as building surveyor under local authorities; for although such positions offer but little scope for the attainment of artistic distinction they confer substantial advantages, both practical and pecuniary, which an exclusive devotion to art often fails to provide.

I hear a general complaint that professional employment is conspicuously lacking, but there is still a considerable amount of metropolitan building going on. The wonderful extension of the suburbs still goes on, and looking to the old part of London—that comprising the greater portion of the City—although much has been pulled down and rebuilt, there still remains a very large number of buildings which must find work to do for metropolitan architects for many years still to come. In the provinces also there are municipal and other large works commenced and contemplated, and though I have heard some of my younger brethren say that they are fighting the battle of life in our profession somewhat in the guise of an army of martyrs—and in our early years success seems long deferred—still, as a rule, it comes to those who fight for it well and honestly, and with perseverance. Indeed, I have lived to see many of my contemporaries of fifty years ago realise a full result for their early labours, and I do not doubt but that, fifty years hence, more that one juvenile martyr of the present time will, in all humility and thankfulness, admit the same.

Many changes, too, have come over the spirit of the time of which I am speaking. The strong feelings to which utterance was given after Augustus Welby Pugin published his "Parallels," and when Sir William Tite disputed with Mr., afterwards Sir Gilbert, Scott as to the shape of a window or the slope of a roof, have considerably softened; and when I remember that one of the most distinguished architects of the century once expressed to me his opinion that St. Paul's Cathedral was only fit to be converted into a railway station, I confess to some surprise, tempered with satisfaction, at seeing quite lately the details of Sir Christopher Wren's masterpiece illustrated in the Architectural Association's Sketch-book—a work fairly representative, I think, of the youthful sentiments of the day. And, though I do not agree with that Minister of the Crown who, two years ago in this room, stated his belief that, as far as public buildings were concerned, the Gothic style was extinct, yet there can be no doubt that the too literal application of Mediæval forms has recently received, from various causes, a very decided check. In what direction the present desire for freedom in the choice of models and in the application of precedents may lead, I do not attempt to predict. But I remember that this very year, through the energy and

zeal of my friend Mr. Blashill—who, in this particular, followed almost in the footsteps of the late Edmund Sharpe—some twenty English students accomplished a visit to Rome during their Easter vacation. To visit Rome and Athens was an indispensable part of an architect's education in my youth, when the Classical buildings of Sir John Soane, of Sir Robert Smirke, and afterwards of Sir Charles Barry, were objects of admiration; but at a later period the "Classic" ground of British architects seemed for many years transferred to the old province of the Ile de France, then to that of Brittany, and until recently, I am told, to Holland. But now that Italy has had another chance at the hands and pencils of our students—and I am sure that they did not find her cities wanting in those qualities of picturesque effect which they are taught very properly to admire—I have every hope that the gloom and monastic austerity, the labyrinth-like arrangements of stair and corridor, of which the people who pay for our public and municipal buildings complain as characteristic of too many recent interiors, will disappear.

That visit to Italy seems to me to be a sign of the time pregnant with meaning; and I am the more glad of it because men who go there, and who make any stay there, are sure to yearn for opportunities of studying on the spot the more refined monuments of Classical art which Athens and ancient Greece can alone afford. The recent erection of a British School of Archæology under the hill of Lycabettus may in due course supply such a want, and I cannot veil the significance of the fact that, a day or two hence, my friend, Mr. Penrose, will be on his way to Athens to take charge of the new school as its first director. Thus "The whirligig of Time brings in his revenges"—revenges not of a hostile or bitter nature, but teeming with goodwill and satisfaction.

Mr. FLETCHER MOULTON proposed a vote of thanks to the President for his charming and interesting address. He might have been selected for this pleasing duty because he possessed, in a large degree, that faculty of wonder with which the very uninstructed looked on erudite subjects; if so, the address had defeated the object, for one more simple and more calculated to go home to the hearts of educated men he could not imagine.

Mr. G. AITCHISON, A.R.A., seconded the vote of thanks. No one could doubt, he said, that a more artistic feeling pervaded nowadays the whole of architecture in this country as also in all European nations. It had been his good fortune quite lately to have seen in a town in the south of France a beautiful Romanesque cathedral. It was true it was devoid of all ornament, but the proportions were so exquisite that he did not know any among the ornate buildings of France which had given him greater pleasure, or impressed him more with the evidence of the extraordinary skill of those architects who had left them such examples of their powers in producing elegance with perfect plainness and simplicity.

The vote of thanks was carried by acclamation and duly acknowledged by the President.

Mr. CHARLES BARRY said he had been asked to request them to perform the very pleasing duty of expressing their thanks for the result of the artistic labours of Mr. Armstead in the bust of Mr. Street which had been presented to them. They were not unaccustomed to feel under deep obligations to painters and sculptors who had helped to embellish their rooms, and Mr. Armstead by his beautiful bust of their lost friend had enabled them to transmit the memory of a great and good man to those who were to come after them, and to add to the list of worthies who had gained a noble place in their art, and who deserved to be remembered for many a long day. Mr. Armstead had responded to the somewhat limited means of "us poor architects" by giving them a grand work of art at, he understood, very much less than they had the right to expect. Therefore they ought not, as all would agree, to separate without giving Mr. Armstead their most cordial thanks.

When the applause which rang through the room had ceased, Mr. BARRY said, after this, he was sure it needed no seconder to the proposal, and he formally tendered the thanks of the Institute to Mr. Armstead.

Mr. ARMSTEAD, in replying, begged to thank them for allowing him to make a bust of one of their distinguished Presidents. The work had been a labour of love.

Mr. G. AITCHISON, A.R.A., said that in returning from the South of France he had seen M. Paul Sédille in Paris, by whose courtesy he had been enabled to see the remains of the Palace of Darius at Susa—the remains which were just being made ready at the Louvre for the inspection of the President of the Republic. He had to wait, of course, till the President's visit was over, when he was admitted before any of the public to view the remains. Mr. Aitchison described the remains as walls or portions of walls in brickwork, enamelled, with figures in bas-relief, the ground being partly of pale turquoise green and partly of crenellated work. Among the figures he described some soldiers, who were represented with upright spears, strung-bows, and quivers on an ornamental frieze.

LIVERPOOL ARCHITECTURAL SOCIETY.

A MEETING of the Liverpool Architectural Society was held on Tuesday. Mr. Grayson, the president, occupied the chair. An address on the subject of the Mersey Tunnel was delivered by Mr. F. Fox, C.E. He alluded to the efforts made twenty-one years ago by his late father, Sir Charles Fox, and himself to secure underground communication between Liverpool and Birkenhead. He briefly sketched the history of the undertaking which had resulted in the present tunnel, and referred to the difficulties which the promoters had to encounter in the construction of the tunnel. All the details in connection with the work were minutely described, and the address was listened to throughout with lively interest. Incidentally Mr. Fox referred to a rumour which was prevalent in the town that the amount of water in the tunnel was increasing. He said the probability was that the people who had got that notion were somewhat alarmed by the fact that an additional pump was being put down in Liverpool. There was not the slightest cause, however, to be alarmed, for the pump was being erected merely that they might have more than ample pumping power to provide for all emergencies.

At the conclusion of Mr. Fox's address, which was illustrated by several diagrams, a short discussion ensued, after which a hearty vote of thanks was accorded to Mr. Fox for the valuable information he had conveyed to the members.

MANCHESTER ARCHITECTURAL ASSOCIATION.

THE inaugural meeting of the session of the Manchester Architectural Association was held on Tuesday evening in the Diocesan Chambers, South King Street.

Mr. Lawrence Booth, the president, in his opening address, said it was greatly to be desired that more of the older architects of the city should recognise what he conceived to be their simple duty by giving an active and personal support to the efforts of the Association at improvement. There were, he was happy to say, some indications of the approach of brighter days in that respect. It was by no means certain, however, that the Association would in the long run be much the worse for having had to depend in a great measure on their own exertions. The Royal Institute of British Architects, as the recognised head of the profession, was at last bestirring itself and seeking further powers of usefulness. By prescribing a curriculum of study and establishing examinations for admission to its ranks it was safeguarding its own portals at all events against the whole tribe of the incompetent; and propositions of an even more drastic nature had been made by a committee in London to place the practice of architecture on the same level with that of the so-called learned professions, and thus make it substantially a close corporation. The proposal appeared to many of those most entitled to express an opinion as somewhat premature and too ambitious to be capable of immediate realisation, but "the handwriting was on the wall," and the younger members of the profession especially should be careful to equip themselves at all points. The public were becoming alive to the fact—which was a fact—that the life and health of the community were as much in the hands of the architect as in those of the doctor, and they would not be long before they arrived at the conclusion that by increasing the efficiency of the one they would diminish the numbers of the other, and would be prepared to give instructions to their representatives to restrain all incompetent practice of a profession involving such a vital question as that of sanitary science. "Artistic" monstrosities they had endured, and would probably be prepared to go on enduring even to the extent of professing to like them; but when they fully appreciated the question as being one of life and death for them it might be certain that the day of reformation was close at hand. It was to that branch of their profession he desired to direct attention. In ancient days great monumental and other buildings were erected by powerful potentates, who almost boasted as one of the glories of their achievements that so many hundreds or thousands of human lives had been sacrificed in the effort. It should be the boast of those present that in what they had been privileged to accomplish they had been the means of preserving the life and health and increasing the happiness and well-being of their fellow-creatures. Nothing of importance had happened in the immediate locality during the past year to furnish matter for professional comment except the confusion—not to designate it by a stronger term—of the public conscience on the subject of the Victoria Hotel, and the circumstances attending the initiatory proceedings of the promoters of the Jubilee Exhibition. In regard to the first question a committee of the Corporation had been appointed to investigate and report upon it, and they must await that report with the hope that the result would not injuriously affect their profession in public estimation and confidence. The other

subject was one which could not be so easily dismissed, because he was constrained to declare in his representative capacity that in a matter so essentially public the action of the early promoters of the Exhibition scheme, in limiting their selection of an appropriate design to what could be produced by four firms of architects out of nearly 200 practising in Manchester alone, caused a feeling of surprise almost amounting to consternation in the public mind, and induced feelings of profound dissatisfaction and disappointment almost equivalent in their effect to a determined hostile attitude towards the project in its entirety on the part of numerous members of their profession. The soothing effect of time and the loyal character of his professional brethren would perhaps allow the other side of the picture to be presented from the point of view adopted by an uninspired observer. The pioneers of the Exhibition, standing on the threshold of a great undertaking, and with little time to spare, would naturally "be troubled about many things," and would seek to avoid the incursion of a whole army of architects all armed with the ability to advise them and carry out whatever they might or might not consider desirable. And whether the extemporised committee were discreet or otherwise in the character of their somewhat hasty selection, their wisdom in seeking to limit perplexity by diminution of numbers would probably have the approval of the business men of Manchester. The selection of competitors having been made, there is nothing but approval to be expressed of the manner in which the ultimate decision was arrived at. A competent professional adviser was called in to advise both as to the terms of the competition and the merits of the designs submitted, and his recommendation was frankly and unanimously accepted by the promoters. It appeared to him that the duty of the Association now was to join in the hope that their professional brethren who were severally engaged in the arduous task of preparing the new building and its appurtenances, might so utilise their opportunity as to enhance the character of their previously well-earned reputation, and that they should all combine in the determination to put the stamp of architectural progress on their several exhibits, and thus incidentally aid in the grand illustration which the promoters have invited.

A discussion ensued upon points raised in the address, in which Messrs. Hodgson, Mould (secretary), Mee, Ingham, Woodhouse, Ward, Chadwick, and Barker took part, after which the President replied. The customary votes of thanks were passed.

THE BERLIN EXHIBITION.

THE International Fine Arts Exhibition that was opened last May in Berlin was ceremoniously closed on Sunday with music, speech-making and banqueting in presence of the Ministers of Public Worship and Public Works, the Chief Burgomaster, and other high functionaries, and a great multitude of visitors. Professor Becker, President of the Senate of the Academy of Arts, delivered an address on the historical character of the Exhibition, which during a period of 162 days had, he said, been visited by no fewer than 1,200,000 persons. Though a venturesome enterprise, it had therefore been a very successful one. The income in entrance money alone had amounted to 660,000 marks, and this, after covering all expenses, would leave a considerable surplus for the benefit of needy artists and their families. The price of the works of art sold had amounted to a million marks, and of this sum 260,000 marks resulted from purchases by the State and the Emperor personally.

At the banquet, which was held in the huge restaurant hall of the Exhibition, Sir Frederick Leighton, who had been specially invited for the occasion, made an excellent speech in reply to the toast of his health, and in the name of the English nation wished all success to German art. Sir Frederick's remarks, delivered in fluent German, were received with enthusiastic applause.

THE AMPHITHEATRE OF LUTETIA.

AT the last meeting of the Académie des Inscriptions et Belles Lettres, M. Charles Robert gave some account of the remains of the old amphitheatre at Lutetia, within the last three years dug up and examined in Paris. A committee had been appointed to superintend the excavations. These had been carried out, under the direction of M. Ruprich Robert, the General Inspector of Historical Monuments, by M. Maurice du Seigneur, architect, one of the secretaries of the committee, who had classified the different objects and placed them under a temporary covering. They consist of fragments of sculpture, cornices, capitals, fluted columns, fragments of inscriptions and statues, Gallo-Roman pottery, fragments of amphoræ, fibulæ of bronze, bone and ivory, needles, and lastly, numerous Roman coins. A meeting of the committee was held on the spot where the relics had been dug up, and the progress made in examining and classifying them was reported.

It appears that the amphitheatre of Lutetia belongs to an earlier period than the baths near the Hôtel de Cluny. M. Robert proposes that the relics shall be collected in a permanent building as national monuments of special interest to Frenchmen, and that handbooks like those to be had at the galleries of the British Museum shall be prepared and sold at a low price, giving an account of the remains and explaining the nature of the circus games and interludes performed in the amphitheatre, and of the great assemblies sometimes held in the vast space usually reserved for the performances.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

THE opening meeting and conversazione of the present session took place at Queen's College, Paradise Street, on Tuesday night. Mr. F. B. Osborn (president) occupied the chair; and amongst those present were the Mayor (Alderman Martineau), Messrs. J. Everard (president of the Leicester Architectural Association), J. Jackson (secretary, Leicester), T. Camm, H. R. Smith, A. Churchill, J. A. Cossins, Victor Scruton (secretary), &c. There was a large attendance. Letters of apology for non-attendance were received from the Royal Institute of British Architects, the Architectural Association, London, and from the Liverpool, Nottingham, Manchester, Edinburgh, Leeds, York, and Northern Architectural Associations.

The President, in his address, congratulated the Association on the work of the past, and said he looked forward to the future with very great confidence. The Association was making steady and useful progress. It was twelve years since the Association was formed, and there were sixty-three members. It was quite clear that in the future it would be necessary for architects to pass an examination, and obtain a diploma before they would be considered qualified by the public. The finances were now in a fairly satisfactory state, and owing to the economy exercised the Association would have, when all the arrears were settled, a small balance in hand. One of the most important matters of the year was the proposed new charter of the Royal Institute of British Architects, which would inaugurate a new era in their profession. They had had two important competitions in the town during the last year—the Assize Courts and the Workhouse Infirmary. Much as they wished that the competition could have been confined to Birmingham architects, yet they had in the Assize Courts a subject for congratulation, namely, the employment of a professional referee, and the perfect fairness with which the competition was conducted. With regard to the competition for the Infirmary, he regretted that, although representations were made as to the importance of appointing a professional referee, the guardians ignored the suggestion. Only five sets of plans were submitted, whereas, if a referee had been appointed, he thought as many designs would have been submitted as for the Assize Courts. On the motion of Mr. J. A. Cossins, a vote of thanks was accorded to the President. A promenade concert followed.

Correspondence

Federation.

SIR,—As there appear to be a large number of architects anxious to have the profession closed to all but licensed practitioners, I should like to ask what they exactly mean. Do they wish to prohibit the use of the name of architect, or do they wish to prohibit the exercise of the functions of an architect by all but the duly qualified? The latter would require an Act making it penal for any one to erect any building whatever without the supervision of an architect, and would be somewhat in the nature of the Medical Acts. This is surely too grotesquely impossible to be thought of, and the restriction of the name seems a very little matter indeed to make such a fuss about. Indeed, the effect would probably be to withdraw entirely from architects a large class of business.—I am, Sir, faithfully yours,

RALPH NEVILL.

November 3.

Glasgow Barony Church Competition.

SIR,—The esteem and respect in which Mr. Honeyman is so deservedly held, as well as the good cause he is fighting for—justice in architectural competitions—act as strong deterrents from controversy with him; but these reasons do not in any way protect Mr. William F. McGibbon, whose letter

appears in your issue of the 29th ult. This gentleman professes to be in a fix as to whether his number in order of merit is 1 or 3 (the decision of the assessor as published puts it at least double the latter number); but one point I desire to make clear to him, by emphatically contradicting his statement that "Mr. Honeyman and I were the only competitors who complied with these conditions." I affirm, as one of the competitors on the short leet, that my design was in every respect in accordance with the conditions, not in the opinion of "several eminent architects" who have cursorily looked at the plans, but in the opinion of those best qualified to judge, viz., myself and measurers acting with full information of my intentions, aided by actual prices for similar work I am at present executing. Mr. Honeyman, whose opinion is of value, has said to me (in another case) that he does not attach much importance to the estimate of a measurer unaided by the architect's instructions; how much less shall we think of the estimate of those who have merely seen the designs on exhibition? On the question of the accepted designs I do not intend to touch—Messrs. Burnet can fight that for themselves—beyond wondering why they sent at all a design which on their own statement would cost 15,600*l.*; but I desire to express my opinion that the Barony Church Committee have acted most fairly and honourably with the competitors. They have accepted the assessor's decision, which they were not bound under their conditions to do, and which unfortunately is not always done; and if we have a grievance it is against Mr. Pearson, R.A., the assessor. At the same time, I do not see why they should not give the competitors access to Mr. Pearson's report, which I have also asked to see. The reason given is that the criticisms, being meant for the committee only, are more free than flattering on many of the designs; but I for one should welcome such criticisms from an acknowledged master of Gothic architecture. The report would hardly have such public interest as to warrant occupying your columns, but I hope the committee will yet see their way to placing it in the hands of the competitors.

I am, &c.,

JOHN B. WILSON.

112 Bath Street, Glasgow: Nov. 2, 1886.

CHURCH BUILDING AND RESTORATION.

Worcester.—The new church of St. Paul has been opened. The materials used in the building are local red and black bricks, with Bath stone dressings. The work has been carried out by Mr. Inwood, contractor, Malvern, from the designs of Mr. A. E. Street, M.A., London.

Kilmarnock.—St. Marnock's Church has been reopened after undergoing extensive repairs. St. Andrew's free church has also been reopened after alterations to provide additional accommodation. The works have been carried out in each case from the designs of Mr. R. S. Ingram, architect.

Clydebank.—The memorial-stone of a new Wesleyan church has been laid. Mr. W. F. McGibbon, of West George Street, Glasgow, is the architect.

Eastdown, Devon.—The parish church of Eastdown, near Barnstaple, has been reopened after restoration. Mr. Wm. White, F.S.A., London, was the architect, and Mr. Dart, of Crediton, the builder.

Heigham.—The foundation-stone of a church for the district of St. Thomas, South Heigham, has been laid. Mr. Ewan Christian, of Whitehall Place, S.W., is the architect, and Mr. T. E. Hawes, of Norwich, the contractor.

Stone.—The memorial-stone of the new chancel for St. Michael's Church has been laid. Messrs. R. Scrivener & Sons, of Hanley, are the architects for the restoration, and Mr. N. Barlow, of Stoke-on-Trent, is the contractor.

Glasgow.—The Govanhill public school, which has been erected from the designs of Messrs. H. & D. Barclay, of Glasgow, has been formally opened. Mr. Samuel Preston was clerk of works.

Newcastle-under-Lyme.—The Catholic church has been reopened after renovation and repairs. The work has been done by Mr. J. Gallimore, builder, from the plans of Messrs. Dempster & Heaton, architects, of Birmingham.

Mr. J. Cobeldick, member of the Lambeth Board of Guardians, publishes an appeal for subscriptions to enable the artist, Mr. Nathan C. Hughes, to end his days outside a workhouse. It will be remembered that Mr. Hughes has, through illness and misfortune, been an inmate of Lambeth Workhouse for some time. Mr. G. Howlett, the chairman of the Board, will receive subscriptions, which may also be sent to the master of the Lambeth Workhouse; or to Messrs. Herries & Co, 16 St. James's Street.

GENERAL.

The Art Treasures Exhibition at Folkestone was closed on Saturday night. During the five months it has been open to the public the visitors amounted to 242,519.

The Fine Art Gallery Committee of the Leeds Corporation held a meeting last Friday afternoon, but no definite decision was come to in respect to the designs sent in for the gallery, and no further action will be taken in the matter until the re-election of the committee on November 9.

Mr. Morton Edwards, the Californian sculptor, has modelled several figures on a colossal scale for the Flood Building, San Francisco, which are to be cast in bronze. Mr. Augustus Laver is the architect of the building.

An Anonymous Donor has promised 1,000*l.* towards a school of art which it is proposed to erect at Poole to mark the Queen's jubilee commemoration.

Mr. William Hepper has been elected president of the York Architectural Association. It is intended to hold weekly meetings during the winter session.

A Club is proposed to be formed in Aberdeen on the lines of the old Spalding Club, having for its object the printing of works illustrative of the history and archæology of the North-Eastern counties of Scotland.

The Leamington School of Art has been closed by reason of a lack of public interest in the institution.

A Bust of Sir Alexander Grant, executed by Mr. Charles M'Bride, is to be placed in the Senate Room of the Edinburgh University, to perpetuate the memory of the late Principal.

The Belgian Chamber of Representatives, which was destroyed by fire, has now been rebuilt on improved lines.

Lady Edwards has contributed 750*l.* to the Bradford Infirmary for furnishing and endowing a children's cot.

Mr. Arthur Loader, architect, headed the poll for the Pier Ward with 350 votes at the Brighton municipal elections.

A Committee has been appointed to raise funds for a new parish church, which it has been decided to build at Hove.

The Glasgow Barony Parochial Board have approved of a committee recommendation that plans should be prepared for a pavilion hospital to accommodate 300 patients at Barnhill.

The Guildhall School of Music will be opened by the Lord Mayor on December 9.

Designs by Mr. S. Denman, of Brighton, under the motto "Simplicity," have been awarded the first place in competition for the proposed alterations at Lewes Town Hall; and designs by Mr. M. J. Lansdell, of London, were awarded the second prize.

Mr. T. R. Richards has been appointed assessor in the competition for the Slough Public Hall and Leopold Institute.

The Dean of Winchester will this month give a course of four lectures on the "Early History of England and Winchester," ranging from Cerdic to the eve of the Conquest, and the profits will be devoted to completion of the stonework of the great screen in the cathedral.

St. Paul's Church, Colwyn Bay, was totally destroyed by fire last Sunday morning.

The Wolverhampton Board of Guardians have approved of plans by Mr. Veal, architect, for alterations to the vagrant and receiving wards.

Mr. R. J. Thomas has been appointed county surveyor of Carnarvonshire, in place of the late Mr. J. Thomas, his father.

The Salary of Mr. Davis, borough surveyor, of Stratford-on-Avon, has been raised from 220*l.* to 280*l.* per annum. Since Mr. Davis's appointment three or four years ago, the work has much increased.

A Stained-glass Window is to be placed in the parish church at Newbury in commemoration of Her Majesty's jubilee. The position of the memorial will be next to that raised to the late Bishop Wilberforce. The cost of the window will be about 200*l.*

The Candidates for the post of Surveyor of Dilapidations for the Diocese of Manchester numbered thirty. Mr. T. H. Myres, of Preston, and Mr. A. W. R. Simpson were selected out of this number, with Mr. R. K. Freeman, who was, as mentioned last week, ultimately appointed.

The Ecclesiastical Commissioners announce that they are willing to sell that part of the Highgate Woods known as Churchyard Bottom Wood, for 25,000*l.*, and to accept the purchase in one hundred half-yearly payments, with interest at the rate of 3*l.* 12*s.* 6*d.* per cent. A Bill is to be introduced by the Hornsey Local Board to carry out the arrangement.

The Architect.

THE WEEK.

It was to be expected that Mr. H. Roumieu Gough should treat of the questions of federation and registration in the presidential address which he delivered to the Society of Architects on Tuesday. Mr. Gough was rather friendly towards the Institute, and was willing that it should take the lead in dealing with the questions. But if it is advantageous to admit architects within the pale of respectability in such a free and easy mode, why should a bar in the shape of an examination be set up to impede architects who happen to be a few years later in the world? We cannot see how the registration would serve architects who are living, and as to the public they are well able to take care of themselves. Apart from federation, the Society of Architects merits more support than it appears to receive. The President acknowledges that the increase in numbers does not correspond with his expectations. We are not assured about the advantages which an architect gains by belonging to a society; but if the Institute can exist in London, there ought to be room for a society in which it is not necessary for the majority of the members to be extinguished to gratify a few.

A statue of J. B. Dumas, the French chemist, is to be erected at Alais. A competition was opened, and nineteen models were submitted. On Saturday the jury examined them. The first prize goes to M. Gabriel Pech, one of the pupils of MM. Mercié and Falguière. He has been already commissioned for memorials. M. Gandès, who is apparently a new man, won the second prize. Visitors to the Ecole des Beaux-Arts, where the models were on view, could hardly fail to be struck by the number of placards on the quay front of the school. The disfigurement of public buildings by advertisements seems to have no limits. Coloured bills are stuck with impunity on palaces like the Louvre, on the pedestals of statues, and on every public building. A London vestry would prosecute such advertisers without mercy. In Paris defacement is allowed, probably because every placard acquires dignity from having a stamp upon it.

The annual report of the Manchester Architectural Association states that during the last session there were elections of fifteen ordinary and three honorary members, bringing up the total membership to forty-three ordinary and ten honorary. The average attendance at the meetings has much improved, but the committee greatly regret the want of interest on the part of the junior members in the classes of construction and design. No answers were received in the class of construction, and only one member sent in sufficient drawings to entitle him to compete in the class of design. At the visits there was an average attendance of nine members. The library has been much more used during the past session than previously, although it has been added to very slowly of late years. During the past session the registrar of the Association has been able to obtain engagements, temporary and otherwise, for thirteen members. The year's income was 49*l.* 12*s.* 6*d.*

The practice of traders seeking custom under the guise of a society or an institution with a sounding name has extended to America. The *Art Amateur*, of New York, in its last number, has the following remarks on the subject:—"The recent fashion of New York picture-dealers advertising themselves 'art associations' and 'art societies,' and their shops 'art galleries,' makes such old-established concerns as Avery's, Schaus's, Knoedler's, and Reichardt's the more reputable under their straightforward business names. The new practice is certainly misleading to the general public, and especially to strangers in the city, who, for instance, confound the American Art Association with the Society of American Artists (a purely artistic organisation), and mentally connect every picture exhibition held at 'the American Art Galleries' with the enterprising proprietors of those really splendid rooms. The commercial advantage of such a proceeding as here indicated is so obvious that small fry auctioneer dealers will not be slow to follow it. Already we read of 'the Bucken Art Gallery'—the new name for the Broadway picture auction rooms which used to be 'Leavitt's'—and there is no reason why, by-and-by, the proprietor should not get himself and his partners—if he has any—'incorporated' by the State legislature and receive pictures from Europe free of duty." When they receive invitations to send pictures to one of those American societies, painters will do well to remember that they are simply asked to aid a dealer, who finds it more convenient to assume a title of the kind than to appear under his own name.

There will be satisfaction in Westminster drawing-offices at the following resolution of the Metropolitan Board of Works:—"That the engineer is authorised, when copies of plans or drawings of an ordinary or simple character are required, or when drawings have to be enlarged, or cartoons have to be prepared, to cause such work to be done out of the office by some firm." Work of the kind can be executed at a much cheaper rate outside Spring Gardens. But there is a slight cast on the offices when it is implied that they are only competent to produce works of a simple class. It will not, however, be advantageous if the work is handed over to "some firm" of stationers to be carried out in a mechanical style by law writers. The danger arising from that course is not trivial, and the Metropolitan Board should oppose what is becoming a dangerous custom. It is well known that, for the sake of a little saving, plans of estates for conveyances are now prepared by incompetent men of the law-writing class, and hereafter many an action will arise from such records. The Board's work should be entrusted to competent firms, who have draughtsmen in their employment.

There is an end to the imbroglio between the Paris Municipality and the ecclesiastical authorities of the City on the subject of the disused church of the Assumption in the Rue St. Honoré. We have already explained that it was proposed to convert the church (which was designed by Errard) into a hall for meetings, but when the case was brought before the judges it was decided that as long as the Concordat was respected the building could not be laicized. The Municipality being unable to accept defeat with contentment, the struggle was not abandoned. It is now arranged that the church will continue to be recognised as a sacred edifice, but the adjoining buildings, in which monks teach the children of the neighbourhood, are to be made over to the City. When it is remembered that the premises are enclosed within railings, that they cannot be separated, and moreover that the school buildings are out of repair, we cannot see that the Municipality has gained much by the transaction. At the same time it is a pity that the church should be allowed to remain without a congregation, for it is a good specimen of seventeenth century work.

Mr. George Devey, who died at his residence in Hastings on Thursday in last week, was a man of retiring habits, and, in consequence, was little known except to a few of his fellow-workers; but all with whom he came in contact can testify to his extremely sensitive nature and natural artistic feeling. As an architect he had a large and representative *clientèle*, and his works bear witness to his exceptional capabilities. He was a most competent draughtsman, and his sketches were admirable. Mr. Devey was one of the first revivalists of the modern mode of Domestic architecture, and his work will still repay careful study by the younger members of the profession.

Mural paintings to which much interest is attached have been discovered in the church of Nieuport. The figures are about one-third the size of life. A part of the decoration is a Flemish translation of the Credo, and the work appears to have been executed some time in the fifteenth century. The church is ancient, and part of it is supposed to date from 1163. It has been subjected to many transformations; but, as the central part was generally respected, the Belgian archæologists anticipate that more examples of native painting are veiled under the numerous coats of distemper.

RICHARD WAGNER.*

IT is not necessary, we hope, to offer any apology for printing a review of a biography of RICHARD WAGNER in a journal like *The Architect*. If the composer could be said to have a speciality, it was in the resemblance between his work and that of most architects. WAGNER, like them, was a man who tried to unite the present with the past. Music is of all arts the one that is alike independent of past or of future. When we hear a piece by a great master, or even a simple song, we always suppose it to have been the product of the author's inspiration; we never care to inquire if any part of it is derived from tradition, and it is fatal to the work when we are able to detect a resemblance between it and something that is more ancient. The old humorist who said that music was "like an hostess that hath no arithmetic but her brain to set down her reckoning," had this idea of the independence of the art. It does not require book-learning, and is as indifferent to the almanack as to arithmetic.

WAGNER could not help the inevitable. His music had to be modern and Wagnerian, but he tried to bring it into relation with the dim past by means of the subjects he selected, and the archæological accuracy of costume and surroundings. The *mise en scène* of the Bayreuth would be an impossibility in any other theatre, for nowhere else could a manager be found with so much reverence for that ever-enduring Time which we call fleeting because we are so ourselves. WAGNER endeavoured to atone for the shortcomings of his own art by calling others to his aid. If Fate had made him an architect, he must have been the most rigorous stickler for accuracy in the imitation of periods and styles.

But in the same way as architects try to accommodate existing wants when they are thinking of antiquity, WAGNER was a man of our time. With all his enthusiasm for the past he never allowed himself to be fettered by it. He swayed it like a king. The odd position that he holds in France is due to WAGNER's unique combination in himself of what is old and young. The majority of Frenchmen do not pine for a return of antique times, and if the past were wiped out, with its cut-and-dried formulas, they would not grieve. Artists and authors believe that this century of ours should be sufficient to give inspiration, and there is no need to rake among the ashes of a bygone world in order to gain a spark of fire. In spite of all the drawbacks that come from his German origin, WAGNER is appreciated by Frenchmen of that class. From national feeling (which they admit to be a form of weakness) they may keep his operas from representation on the Paris stage, but they will agree with the musician in "L'Œuvre," that in his works we may hear the "Alleluia sublime du nouveau siècle," and his compositions are like a colossal arch, uniting all the arts in one.

A quarter of a century ago, when the great fight over Wagnerism was raging in Paris, we find so advanced a writer as BAUDELAIRE also recognising the comprehensiveness of the composer, by which his dramatic art became the "coincidence of several arts," and the most synthetic of all. According to the critic, while WAGNER approached antiquity by the passionate energy of his spirit, he is actually the truest representative of the modern manner. This dual character may enhance WAGNER's reputation as time goes on.

It is only just that a book on the composer should be also suggestive of the modern spirit. That spirit is not simple in its manifestations or marked by unity. It can be reverential on occasions, but it is not afraid to mock the persons or things which to many are worthy of reverence. WAGNER was made to know all its varieties. He had his worshippers and his caricaturists; he was at the same time regarded as a charlatan and a demigod. In the splendid volume by M. JULLIEN, which appeared this week in Paris, we have before us a record of the diversities of thought and feeling to which WAGNER gave rise. M. JULLIEN, as a Frenchman, knows that thought is, or should be, free, and that a great man may be serving some most useful purpose when he is turned to account by wits and satirists. He does not, therefore, write a defence of WAGNER. That he considers is unnecessary. What he wishes to give is a history of the valiant struggle of a man of genius to express his ideas and to explain the difficulties which had to be overcome. A caricature in a humble periodical may suggest what was before WAGNER more clearly and concisely than a pamphlet. That form of representation has become as M. JULLIEN says, an historic document and a gauge of celebrity. WAGNER knew its value, and, however he might be irritated, he never set himself against it. In this book we have English, French, and German caricatures side by side with copies of the works by which painters expressed their reverence for the master.

The *bourgeoisie* having supplied nearly all the great men of France, a French writer must feel satisfaction when he is able to record that RICHARD WAGNER sprung from the lower ranks of that class—the *petite bourgeoisie* of Leipsic. His grandfather was a Custom House clerk, and his father belonged to the police. WAGNER was reared in poverty. He once said that he grew up without other guides than life, art, and himself. He was not a tractable student even when he was placed under a teacher of music. The sight of WEBER appears to have been the first influence over his latent power, and he contemplated the author of "Der Freischütz" with "a religious terror." But beyond the impression that was made on him by his works, WAGNER was not indebted to WEBER. As he was able to rhyme WAGNER fancied he was born to be a poet, and to gratify himself he attempted tragedies on the model of "Hamlet" and "King Lear." He was prodigal of life in them, and in one scene he contrived to get rid of over forty of the characters. Happening to hear a symphony of BEETHOVEN, he was so overcome that he fell ill, and on recovery he resolved to be a musician. The master believed him to be a feather-brained student that was never likely to gain a sound knowledge of the art. WAGNER, however, produced an overture of so mazy a kind that, in order to make it intelligible, the part for strings was written in red ink, for the brass instruments in green, and for the reeds in black. He was able to get it rehearsed to the great amusement of the performers. The public could distinguish nothing except the rolling of the kettle-drums, and the piece was withdrawn after one hearing.

Fortunately for WAGNER he became acquainted with a cantor in a church, a man named THÉODORE WEINLIG, who was capable to understand a student with so much originality. He educated WAGNER, not by forcing him into a mould, but by drawing out his individuality. He started with the student's attempts at composition, and taught WAGNER by explaining his defects. As soon as the right road was reached WAGNER was told to depend on his own strength.

WAGNER felt that, unlike WEINLIG, his sympathies were with the theatre rather than with the church. He was much impressed with AUBER'S "Masaniello" and BELLINI'S "Romeo and Juliet," two works that have nothing in common with any of his own styles. But he found that the success of both depended greatly on the acting of Madame SCHRŒDER DEVRIENT, and henceforth he wrote some parts exactly as if they were intended for that singer. In his twenty-first year he was fortunate in obtaining the post of conductor in the Magdeburg Theatre, and there he acquired experience in mastering an orchestra. It is needless to say he was also made to know something about the precariousness of theatrical life, and he did not mend matters by marrying an actress. WAGNER was not captivated by what is to be found behind the scenes, and in his desire to be kept apart as much as possible from it he elected to live as far as he could from the theatre.

WAGNER had met old SPONTINI, a composer whose works are now more neglected than they deserve, and was struck with the scientific precision of the Italian master. He was also captivated with the melody that is spread over BELLINI'S operas, but had the good sense to feel that a gift of that kind must come from nature, and is not to be acquired. Probably he felt depressed when he compared their styles with his own, but the success of MEYERBEER, which was not due to melody, revived his hopes. He

* *Richard Wagner: Sa Vie et ses Œuvres.* Par Adolphe Jullien. Ouvrage orné de Quatorze Lithographies originales, par M. Fantin-Latour; de Quinze Portraits de Richard Wagner; de Quatre Eaux-Fortes, et de 120 gravures; Scènes d'Opéras, Caricatures, Scènes d'intérieur, Vues de Théâtres, Pièces autographes, Costumes d'acteurs, &c., &c. Paris: J. Rouam. London: Gilbert Wood & Co.

worked hard at his "Rienzi," and when two acts were complete resolved to try his fortune in Paris. There Wagner suffered much, but the three years' visit was of advantage to him. Next week we shall return to the subject, and meanwhile we take the opportunity of recommending M. Jullien's volume to every lover of music and of art in general.

(*To be continued.*)

A HISTORY OF STREATHAM.*

It was well said by Southey that whatever strengthens our local attachments is favourable both to individual and national character, and whenever a man cares no more for one place than another we may assume that he has no small amount of care for himself. There is little doubt that the local histories which come from Mr. Stock's press will do much to promote that form of attachment. Each of the authors has, or appears to have, a notion that his subject is more interesting than those taken up by the remaining writers, and this kind of championship is certain to end in producing a valuable series. Hitherto the histories treated of counties, but an experiment has been tried with a parish, and for that purpose Streatham was selected. We must say it is not a parish that can possess much interest for the historian or archæologist; but probably it was thought that, if Mr. Arnold's volume gained success, there could be little doubt about the fate of the histories of such parishes in the environs of the metropolis as happened to be the scenes of events that are worth recording. Mr. Arnold tells us that preceding attempts of the kind are "few in number and meagre in detail." Hundreds of books have been searched, he says, in order to cull the slightest information, and still he supposes there are omissions. We are unable to point them out, for we are surprised to find that Streatham could have a history. The only memorable event of the place we imagined was its connection with the Abbey of Bec, in Normandy. Among the inhabitants of the district were, we suppose, many admirable citizens who were men of mark on the Exchange and in the parish church; but goodness is a difficult subject to treat or to enjoy in a book, although it may be well suited to the epitaph-maker and the stonecutter.

But if Streatham is not rich in records, it can be supposed to be as important a parish in an historical sense as any in England. Nowadays archæology has become a science in which everything is allowed to be taken on trust. The great thing is to push the hypothetical as far as the available reams of paper will allow. This method is equally adapted to the history of an individual or of a district. Take the case of Shakespeare. There are hardly half a dozen circumstances told about him that are supported by an approach to evidence, but if we say to ourselves what would a dramatist, who lived in that age, be likely to do, and allow imagination a slack rein, it is easy (as we can see) to make out a big book. It may not be a whit more truthful than Henri Konig's romance, of which the poet is the hero, but readers will be sure to accept it as historical and rejoice in its possession. Streatham used to be considered by students of history to be as barren as any place between Dan and Beersheba. But under the new mode of treatment it becomes almost too fertile.

We are to suppose, in the first place, that Streatham means the ham or dwelling at the side of the street, which we are to take as one of the great Roman roads. It is not clear whether such a road was there, but that is of no consequence in our inquiry. We know that a well was found under the asphalte near the Streatham post-office, and what else could such a well be unless it was "the public drinking-place for thirsty wayfarers as they journeyed along the great highway, and it is just probable that it dates back to the great king of Deira's time." If we once can believe that the well belonged to the seventh century we have then got very near the Romans. It is as easy for the imagination to jump over nineteen centuries as twelve, or, as Shakespeare says, to turn the accomplishment of many years into an hour glass. Besides, three small brass Roman coins have been found in Streatham, and what more is needed to prove that the place was a military station?

There is no doubt that the land of Streatham parish has existed for a good many years, and that there was the usual variety in the ways of spelling its name when it had acquired one. In A.D. 675 it was conferred upon the Abbey of Chertsey. According to Dugdale the monks of Canterbury afterwards acquired it for their sustenance, Sandwich being set aside at the same time for their clothing. It is described in Domesday under the name of Estreham, and was among the land bestowed on Richard of Tonbridge. He made over Streatham and Tooting to the great Abbey of Bec, in Normandy, and Tooting-Bec is a record of the arrangement. The meaning of Tooting is one of the puzzles still left for the entertainment of archæologists, and it is open to the reader to suppose that it relates in some way to the Egyptian Thoth. Henry I. seized Streatham and Tooting, with other property belonging to Norman priories, and bestowed them on his brother, the Duke of Bedford. The manor often changed hands, according to the whims of successive kings. It was purchased at the rate of twenty-two years' value in 1553 by the Earl of Warwick. It was again and again sold, until finally it became a part of the Bedford Estate. Lord William Russell, who was murdered in 1840 by Courvoisier, becoming owner by gift, sold the manor in 1816, and at the present time some of the manorial rights are possessed by the Metropolitan Board of Works.

There is not a substantial memorial of antiquity in the parish. A succession of churches may have stood on the site of the parish church from time immemorial, but they have been cleared away without leaving a trace. The most that can be assumed is that the lower part of the tower has survived from the fourteenth century. An effigy of a knight which exists in a mutilated state is also supposed to belong to that time. The present church was rebuilt in 1831, under the direction of a Mr. Parkinson. There were complaints that he gave little attention to the work, and as the churchwardens were held responsible for the management, they were compelled, in self-defence, to issue a statement of affairs among the parishioners. When the works were completed the prejudice was not to be got over; the church was supposed to be dangerous to the worshippers, and it was found necessary to prop the roof with a large number of scaffolding poles before a congregation could be persuaded to attend the services. Afterwards Mr. Cubitt, the builder, took the building in hand, and there could be no doubt about his work being secure.

The secular buildings are not representative of any high antiquity. The manor-house is supposed to stand on the site of a house that was erected for the Abbot of Bec or his representative in England. Bec was one of the greatest of the Mediæval schools, and as late as the fourteenth century it possessed ten thousand students, numbers of them coming from this country. It was founded as a hermitage by an illiterate soldier in the eleventh century, and when Lanfranc, who was afterwards Archbishop of Canterbury, joined him, he saw the brethren were so poor that, as William of Malmesbury relates, he set up classes of logic for all comers, in order that he might support the needy monastery by what he received from the students. In those benighted days it was believed that a teacher was of more importance than apparatus or prizes, and, in some mysterious way, the intelligence of Lanfranc's experiment immediately spread throughout Europe. One of the chroniclers relates that not only princes and the sons of great nobles wended their way to the remote Bec, but also the masters of rival schools. It was from Bec that Vacarius came to Oxford in order to teach the principles of law. According to Wood, "rich and poor gathered around him," and Leland says that "he left no stone unturned to make the British youth flourish in the sacred tongues." Bec was, in fact, the headquarters of the old scholastic logic, which is now unfortunately a lost art, and there is nothing in the history of Streatham of which the inhabitants should be so proud as the connection between the great school of dialectics and their manor. Never was money better laid out than when the rents of the lands were applied to pay the teachers in the Norman abbey. Mr. Arnold is more oblivious of what was done in Bec than we expected from an author who presides over a school.

The Streatham manor-house, that may have been the successor of the abbot's lodging, has been so much altered

* *The History of Streatham.* By F. Arnold, jun. Elliot Stock.

that probably no part can be considered to be older than the seventeenth century. The eighteenth-century Russell House is now a reformatory. THRALE's house has disappeared. "The Shrubbery" was in JOHNSON's time occupied by a clergyman named TATTERSALL, who was an enthusiastic imitator of the fashion of the time for consecrating "temples" and busts to virtue and friendship. The clever Madame D'ARBLAY was unable to understand how any one could have a passion of that kind unless they were possessed of extensive grounds. She tells us that "he had so furious and so absurd a rage for building, that in his garden he had as many temples and summer-houses and statues as in the gardens of Stowe, though he had so little room for them that they all seemed tumbling one upon another." It is erroneous to describe a taste of that kind as a rage for building; it was rather a rage for gardening of a peculiar kind, if not simply a rage for "taste." According to the canons of gardening in those days, a rural scene was imperfect without something artificial, if it were only "a scar of rockwork," and the Rector of Streatham was merely doing on a small scale what other amateurs were able to do with acres. It is time we passed to some other notabilities of the place.

The patron spirit of Streatham is not one of the Norman owners of the place, but the old purblind representative of Grub Street, SAMUEL JOHNSON. When, in 1765, he made the acquaintance of THRALE, the brewer, who owned a big house in Streatham, JOHNSON had entered on a new period of life. He had outlived most of the friends and rivals who, like himself, were dependent on the precarious income which is the common reward of writers, and he was separated from the remainder by the dignity that belongs to a State pensioner. The dictator of the Literary Club could not be regarded by any of his old associates who contrived to survive as the man who was hunted by bailiffs, and lived on fourpence-halfpenny a day. Personally, there was no change in JOHNSON; but when he had ceased to be a literary hack, and was without any anxiety about the next day, something was needed to keep time from becoming a torture. He found what he needed in Streatham Park. JOHNSON looked on THRALE's friendship as an act of mercy, for which he was to be grateful. In his hypochondria he could turn to the honest brewer as a refuge, and it was no wonder he kissed the walls of Streatham Church when he had to depart from the place. During the greater part of sixteen years the THRALES afforded him a refuge from himself.

It is, therefore, proper that in the "History of Streatham" much should be allotted to Dr. JOHNSON and the THRALES. But the house in which they lived no longer exists. It was removed in 1863, and the whole of the grounds have been transformed. THRALE's mansion was described in 1778 as "a white house very pleasantly situated in a fine paddock," and we are informed that it had three floors, and the centre slightly projected from the wings. The gardens were on a sumptuous scale. Sir JOSHUA REYNOLDS suggested their abundance when he said that if every guest made a run upon one kind of dessert, there would still be some of that sort left. THRALE not only kept open house for the great men of the time, but he commissioned the President to paint portraits of twenty-four among them for the library. The pictures were sold in May 1816; the highest price, 378*l.*, was given for JOHNSON's portrait.

It must be owned that it is not difficult for JOHNSON to hold the topmost place among the celebrities of the district. The chapter on the "Worthies of Streatham" in the book before us will not send any reader to explore the district. THRALE comes first. Then we have BENJAMIN HOADLEY, D.D., a "celebrated divine," who held the living from 1710 to 1723. He was the fortunate author of pamphlets on Church government, for his theory of the absence of any right among the clergy to temporal power while princes possessed ecclesiastical power exactly corresponded with the ideas of the first GEORGE. The third and last worthy is a quack doctor named RUSSELL, who used to dress as a woman. Streatham has not attracted celebrities, and it is therefore difficult to make a history of such a place.

It was not selected by them as a residence while living, nor as a place of sepulture. The Streatham monuments are not interesting, unless to men who can be fascinated by the tombstones which are records of the most commonplace lives. One recumbent figure does exist in the part of the church that is dignified by the name of "the Crusaders' Porch," because of the tomb. The name of the subject was forgotten. At last a sketch of the figure was found in a manuscript book dated 1623, with a sketch of the armorial bearings. A further investigation brought to light a coat of arms in the Heralds' College resembling one on the tomb, and the arms were those of Sir JOHN WARD, of Surrey, in 1367. But who was the knight? The reader may imagine that Sir JOHN rebuilt the church, and took part in all the great events of his time. "It is highly probable," says Mr. ARNOLD, "that he served at Crécy and Poictiers; perhaps even he helped the Black Prince in his Spanish campaign." That is a typical specimen of the modern method of treating such subjects. It seems to have been derived from the historical novelist, who, as he is no longer needed for composing pleasing romances, appears to have turned an archæologist. There is a memorial of a rector in the sixteenth century named MOWSURTH. In the south-west vestibule is the monument of one TYLNEY, who was Master of the Revels to ELIZABETH and JAMES, and, according to the inscription, no less than eighteen earls could boast of descent from him. Another royal favourite was a MACNAMARA, "of the ancient family of Ardelauney," who was one of the privileged companions of GEORGE IV. before he came to the throne, for Streatham has had the honour of being the scene of "many of the disgraceful scenes and orgies which tarnish the memory of the Prince Regent." The epitaph on the exiled representative of the ancient MACNAMARAS could not be composed by any poet but the family bard. A few lines will suggest its affecting character:—

> At length, resigned to the great general doom,
> Here Macnamara consecrates the tomb;
> By Bedford patronised, to Moira dear,
> And even the Prince embalmed him with a tear.

There is something approaching the sublime in so novel a mode of embalming, but the zealous Royalist may doubt whether there was much that was preservative in a tear of GEORGE the Magnificent. Here we may fittingly end.

We consider that Mr. ARNOLD deserves a good deal of credit for making so much out of Streatham, which, if respectable, is a dullish sort of place. The next parish or manor may afford more scope for the historian's efforts. Surrey and Middlesex are too important to be each treated with a single volume, like a common county, for as an old writer says, "a little plot of ground thick sown is better than a great field which for the most part of it lies fallow."

THE EDINBURGH EXHIBITION BUILDINGS.

THE Council of the Edinburgh Exhibition having offered the great hall and other buildings to the Edinburgh Town Council, with sufficient funds for their conservation, the subject was referred for report to Mr. Morham, the superintendent of the works, and Mr. Cooper, the burgh engineer. The officers have presented a report, in which they say they have carefully examined the structure of the Grand Hall. The walls of the building are of brick, rough-cast outside, and lined with wood. The general roofing is glass at middle part, and corrugated galvanised iron at lower parts of slope, with boarding below, and supported on a system of cast-iron pillars and rolled steel roof principals and purlins. The reporters beg to submit that, in their opinion, the following works are required to put the structure in a state of efficiency for the purposes of a public hall. The removal of the other parts of the Exhibition building necessitates a wall being built to close in the end of the east transept of the Grand Hall, having a suitable façade towards the outside, which might consist of a portico somewhat in the form of the present vestibule, but of more durable material and construction, with two flank buildings, having furnace rooms for heating apparatus below, and lavatories above. The small towers flanking the entrance on the west side are of wood, and should be reconstructed in brickwork, finished with cement cornices and beltings of the same material. The straight parts of the roofs, which, as before mentioned, are of glass and corrugated galvanised iron, should be carefully gone over and put in thorough repair. How far this iron roofing may be relied on for durability, the reporters have not the requisite information to enable them to form a decided opinion. At present it appears sufficient, and may reasonably be expected to last, say, for ten years. The central dome and those at the angles are covered with plain galvanised sheet-iron, which, from

the manner of fixing, may be expected to be injuriously affected by changes of temperature. These should have the present coverings removed and sheet lead substituted. The outsets from the gutters have been found insufficient in times of very heavy rainfall, and should be enlarged or increased in number, and the gutters should be provided with a proper arrangement of snowboards. The entire space within the building should be covered with asphalte, to keep down damp and preserve the floor timbers from decay. The present floor, which is formed with spaces between the boards, should be covered with 1½-inch grooved and tongued close boarding, care being taken to preserve sufficient ventilation below. To render the hall fit for occupation in winter, an effective system of heating would be required. The hall is at present fitted up for electric light, on the removal of which a system of lighting by gas would be required, and this could be so arranged to aid the heating and ventilation. The entrances would require to be protected by suitable screens, to break the connection with the external air and prevent draughts. The manager's office and model houses, though not specially mentioned, are understood to be included in the remit. These are in good repair, and though the walls of the office are of wood, they are well protected both above and below. Some alterations internally would be required to adapt the office buildings as a dwelling-house. The probable cost of the works immediately required to put the buildings in a proper state of repair and efficiency, exclusive of furnishings, the reporters consider cannot be stated at less than 3,500*l.* With regard to the second portion of the remit—the prospective cost of maintenance—from the nature and extent of the structure it may be assumed that a sum of not less than 200*l.* a year would be required, exclusive of the expenses incidental to heating, lighting, and oversight, which, however, would probably be chargeable to the revenues to be derived from entertainments. The reporters are of opinion that the works they have suggested would all be required, in view of the buildings being permanently taken over; but even in the event of a tentative arrangement, say for three years or less, a considerable outlay—rather more than one-half the sum above mentioned—would be required. The Town Council have declined to accept the buildings.

THE ORDNANCE SURVEY.

A SERIES of Ordnance sketch maps on the large scale of Birmingham and the neighbouring district may now be seen in the Council House. During the past two years the survey of the town has been in progress, and it is not yet complete.

In many respects, says the *Birmingham Post*, Birmingham is peculiarly situated in regard to the survey. By its proximity to the border lines of three counties it is materially interested in the Boundary Department. The preparation of the boundary maps is totally distinct from other branches of the survey, and the work is directed from the head office in London. Application is first made to Quarter Sessions, and the justices appoint suitable persons called meresmen for each parish to assist in ascertaining the boundaries. These men are not necessarily surveyors, but are well informed in regard to their parishes. When all the appointments are made, a thoroughly experienced surveyor, called "the ascertainer," is sent down, and he traverses the boundaries in the district allotted to him. Great assistance is of course afforded him by the meresmen, and his work is materially facilitated by the information derived from the tithe and parish maps, which are produced for his guidance. Having made his examination, he records the results in a book, indicating by different methods the disputed, doubtful, and defaced boundaries, concerning which he obtains the best evidence he can, and embodies it in his report. The dubious points are then settled by the boundary officer in London, after which sketch maps are drawn and forwarded to the parish authorities for public inspection, before they are adopted as final. From this outline it will easily be seen how important it is that the sketch maps should be carefully inspected by every one possessing or interested in property upon or in proximity to the border lines of the counties.

Coming next to the detailed survey of Birmingham and the suburbs, it may be remarked that the operations are of a singularly interesting character. A great deal of preliminary work had to be accomplished before the labours of the surveyors, plotters, and examiners were reached. It is now about two years or more since trigonometrical observations of Birmingham were commenced. With the tertiary triangulation before referred to as a basis, more points had to be fixed, so as to still further divide the triangles. The observing parties first established their stations upon the highest points in the town and neighbourhood. One of the first stations noticed was the one erected on the summit of Moseley Church, and this for a long time was a great object of curiosity, and there was considerable questioning as to what was going on. This station—or "crow's nest," as it is also designated—remained on Moseley Church, from which a good view of the town and surrounding country may be obtained, for two or three months; and then a second was observed on the top of St. Paul's Church, Balsall Heath; while yet a third appeared on St. George's Church, Birmingham. Doubtless there were other "nests" in different parts of the town, but the three mentioned were the most conspicuous, both on account of their great height from the surface of the ground and the long time they were maintained in their somewhat perilous positions. The observers from these stations were able to fix their points, which they marked by means of good stout poles, bearing small flags, upon the particular spots they had decided upon. Some of these poles were also a novelty in their way, their singular appearance exciting the interest and wonderment of all who saw them. They were stationed on some of the principal public buildings and highest factories in the town, such as the Council House, the turret of the Exchange, and Messrs. Cartland's factory in Constitution Hill. They remained in position a very long time—sufficiently long, in fact, to enable the observers to fix upon a large number of intermediate points, lying within from one hundred to three hundred yards of each other, all over the town. These smaller points were marked by means of iron bolts fixed in the ground. The streets are dotted with them at the given distances, but so quietly and unostentatiously was the work pursued that very few people even now know of the existence of such marks. Sometimes they were inserted in the pavement, where they still remain part of the surface; but, generally speaking, they are to be discovered in the roadways. After the town had been carefully marked out in this way, the distances were calculated, and then the detailed labour of measuring, plotting, and examining began. This branch of the work devolved upon the officials connected with the two divisions to which, as previously stated, Birmingham and the neighbourhood belongs. The greater and most important part of Birmingham is in the division commanded by Captain Hellard, R.E., whose head office is at Derby. The remainder of the district is in the Ipswich division, under the superintendence of Captain Sykes.

A short explanation of the work done from the Derby office will suffice as a description of the operations carried on. The detail survey was first begun at the end of June 1885. With Birmingham is included Aston and parts of Handsworth, Smethwick, Balsall Heath, &c., the total area to be surveyed on the maximum scale being about 11,250 acres. With a staff of three superintendents, with thirty surveyors and their labourers, this area would have taken nine months to survey had the work been carried on continuously; but the work in towns is, as a rule, only carried on, as far as the surveyors go, in summer for the three or four months when crops prevent their working in the agricultural districts. In consequence of this their work has extended over two summers.

In carrying out this work, a superintendent first carefully traces lines from one observed point to another, and then a triangle or block thus enclosed by main lines is allotted to each surveyor, who first chains these lines, and then proceeds to chain such other lines inside his block as the detail may require; the ends of each such line being fixed by references on two other lines already chained, offsets being taken and the details being sketched in on the ground in a "field book" as each line is run. Two illustrations may be given of the manner in which the work is done. A fairly good triangle is obtained in Bell Barn Road and Great Colmore Street, with Grant Street at the third side. The surveyor, first of all, finds the bolts, and, guided by them, measures each side of the triangle in a straight line with the chain, and if any projection from a house or building intervenes to prevent the line being straight then that obstruction is marked by what is known as an "offset." Having got his main lines correctly, the surveyor cuts up the triangle into smaller triangles or blocks, always, however, proceeding in a straight line. The surveyor is ignorant of the actual length of the sides of the triangles or blocks as calculated from the trigonometrical observations, and, therefore, he has to observe great care to insure accuracy, or his work will not be accepted. Of course, where so much detail is required the surveyor frequently has occasion to enter upon private property; but in this respect he is more fortunate than the examiner who follows him, and whose work is still more of a detailed character. Each surveyor is supplied with a certificate indicating the nature of his business, and when he has occasion to enter a court or yard, he frequently is called upon to produce his authority. It is his duty, too, to measure the gardens attached to residences, and he, therefore, has often to ask permission to go through a private house. For the credit of Birmingham it may be said that the officials have of late met with little difficulty in these matters. The surveyor includes in his measurement all gardens at the rear of a house, the extent of the garden walks, even to the ornamental paths round the shrubs. In addition he distinguishes the rows of houses, the avenues of trees, or even single trees of tolerable dimensions. He takes note of the tramway lines, obtains the width of the canals and streams, and adds all structural outbuildings—in fact, he includes every piece of

important detail on the ground. As each surveyor finishes his work, his field-book is forwarded to Derby, where the work is "plotted." Each triangle or block, it should be borne in mind, is completed before another is begun, and therefore within about three months from the commencement of the work the plotters can enter upon their duties. The surveyor's field-book is first given to a "line plotter," usually a man of great experience, who lays down the surveyor's lines on the plan according to scale. He sees that the main lines as measured agree with their lengths as calculated, and then he lays down the subsidiary lines; but if the work will not plot with accuracy, it is returned to the surveyor for correction. The lines having been found correct, however, a fresh plan is prepared and handed to the "detail plotter," who fills in all the offsets along the lines laid down, and also the details from the field-book. A staff of fifteen plotters, if engaged solely on the Birmingham work, could complete it in nine months; but here also the staff is necessarily engaged on other work at the same time.

The plans, after leaving the plotters, are traced, and a copy supplied to an examiner, who immediately examines every bit of work done by the surveyor. He goes over the whole ground traversed by his predecessor, makes all the necessary corrections, and, in addition, fills in the plan in a more detailed manner. He indicates the manholes, fire-plugs, lamp-posts, water-plugs, ventilators, pumps, sewer gratings, verandas, mile-posts; he enters on the plan all projections, all the gravel paths and ornamental grass plots and trees that may have been omitted by the surveyor; he distinguishes glass from brick and stone structures, marks out all fences and ornamental shrubberies; he sees that the streets and terraces are accurately named; he inserts the names on the plan of all important residences, indicates all bay windows, and particularly specifies the pavements and the ordinary roadways. In short, the examiner must not omit a single detail on the ground. A staff of thirty examiners, if employed solely at this work, could complete Birmingham in nine months; and similarly, if followed up by thirty-eight draughtsmen at an interval of three months, the plans would be drawn in nine months. When his work is finished the examiner sends the tracing back to the division office, where the corrections and additions are made on the plan, which is then coloured, and all the names and trees, and everything for which there is a conventional sign, are stamped upon it. After the plans leave the draughtsmen they are examined, and then passed to an officer, who takes them into the district, and personally tests a portion of the work. The work in the office at Derby is then concluded, and each plan is forwarded to Reading, where the levelling is done. The levels showing the height of the streets above the sea are inserted upon the plan, which is then despatched to the chief office at Southampton for publication.

It will thus be seen that the work of producing an Ordnance map is no short nor easy task. The detailed work is enormous, and as each process follows in the wake of its predecessor at intervals of three or four months, every department is soon busily engaged. Owing to the large extent of both divisions, however, the work in Birmingham could not proceed continuously. The actual surveying will be concluded in about two months, but the final process will not be reached before April or May 1888. The work generally in the country, it may be added in conclusion, is rapidly approaching completion, and it is hoped by 1890 the survey of the United Kingdom will have been successfully and satisfactorily accomplished.

TESSERÆ.

The Apollo Belvedere.

VIKTOR RYDBERG.

NERO'S age seems to have given rise to a peculiar type of Apollo which, in two or three works of art, has come down to our own days. The foremost of these works is also one of the most admirable that we have from the time of the later antique—the world-renowned *Apollo Belvedere*. For him who writes these lines this statue has a peculiarity apart from its æsthetic and art history. I am bold enough to think that it is evidence risen from the grave of Nero's struggle with his pangs of conscience. He wished to have before his eyes the assurance that blood-guiltiness can be atoned for, and with this silent purpose caused some prominent sculptor to create, or perhaps after a Delphic model to copy, an *Apollo Catharsius*. The statue was dug out towards the end of the fifteenth century at Antium, Nero's birthplace and favourite city, from the ruins of a villa, believed to have been his own. The figure then wanted the left hand and all the fingers of the right, and with them the attribute they bore has disappeared. Critics have, therefore, up to the present time been in doubt and have exhausted themselves in conjectures as to the action in which the god is represented. The commonest explanation is that the artist has thought of the moment when Apollo, to shield his sanctuary at Delphi from the plundering hordes of the Gauls, advanced in person, ægis in hand, to meet them and put them to flight with lightning and wirlwind. Overbeck, who approves this opinion, imagines the god placed in this action between the *Artemis* of Versailles and the Capitoline *Athena*. But recently Carl Bötticher has irrefutably shown that the figure must have borne in its right hand, lowered, the Delphic lustral whip, a remnant of the knotted lash of which he discovered on the tree-trunk that serves as a pedestal. Now the lustral whip was the Pythian Apollo's attribute in his quality of atoner of blood-guiltiness. There lies something of a suddenly-blinding revelation in this figure. With the left arm outstretched in menace or protection the god hastens with majestic wrath towards an object which has unlawfully approached his sacred precinct. Carl Bötticher thinks of the scene in the "Eumenides" of Æschylus, where Orestes, the matricide, pursued by the furies, has burst into the temple of Apollo and embraced its altar. He further thinks that the divinity sees at the moment the goddesses of remorse forcing their way into the sanctuary, and, with the boa in the left hand, angrily meets them and drives them from the temple; and after this completes, with the whip of purification, the act by which the blood-guiltiness is to be expiated. This does not entirely accord, no doubt, with the description of Æschylus, but meets it at the principal point, which it was enough for the artist to strike. No figure could better than one like this remind the new Orestes that a conciliation with the divine powers was possible, and none were better adapted in his dark hours to shine with a hope of peace.

Niches.

SIR W. CHAMBERS.

Niches being designed as repositories for statues, groups, vases, or other works of sculpture, must be contrived to set off the things they are to contain to the best advantage, and therefore no ornaments should ever be introduced within them, as is sometimes injudiciously practised, the cove of the niche being either filled with a large scollop shell, or the whole inside with various kinds of projecting rustics, with moulded compartments, either raised or sunken, or composed of different coloured marbles, for all these serve to confuse the outline of the statue or group. It is even wrong to continue an impost within the niche, for this is of considerable disadvantage to the figures, which never appear so perfect as when detached and backed on a plain smooth surface. An excess of ornaments round the niche should likewise be avoided, and particularly masks, busts, boys, or any representation of the human figure, all which serve to divide the attention, and to divert it from the principal object. The depth of the niche should always be sufficient to contain the whole of the statue, or whatever else it is to contain, it being very disagreeable to see statues or any other weighty objects with false bearings, and supported on consoles or other projections, as is sometimes done, and in the case of niches the side views become extremely uncouth, for in these a leg, an arm, a head, in short those parts alone which project beyond the niche, appear and look like so many fragments stuck irregularly into the wall.

Milan Cathedral.

W. WHEWELL.

The cathedral of Milan is so celebrated as a grand Gothic edifice (Madame de Staël says it is the masterpiece of Gothic art in Italy), that I shall, perhaps, be excused if I speak of this church in particular. I regret to have to dissent where others admire, but I am obliged to say that Milan has no claim to be considered as a good example of Gothic architecture. In order to possess excellence in this, as in any other style, a work must have the requisite parts clearly exhibited and well proportioned. Now, the principal parts of the interior of a cathedral are the piers, the pier-arches, the triforium, the clerestory, and the vaulting. At Milan scarcely one of these members can receive a critical approbation. The piers are of imposing bulk and height, but lose much of their due effect from having no proper capitals; and the group of niches which crowns each pier, displacing the capital, ruins entirely the relation of these supports to the rest of the edifice. The pier-arches, thus cut off from their pillars and thrown into obscurity, hardly catch the eye. There is not any attempt at a triforium; and the clerestory, also, is quite frittered away by being cut into two portions on each side. For there are five aisles, and of these the centre one is higher than the two immediately adjacent, and these again than the exterior aisles, the clear elevation of each higher part being pierced by small windows. In this way a single clerestory wall of sufficient elevation is replaced by two smaller descents, and thus this member loses all its characteristic appearance. Lastly, the vaulting is not striking as an architectural work, though very brilliant as to its painted decoration. If we pass from the interior to the exterior, we shall still find a defect of consistent architectural principle.

The west front, though fringed with pinnacles, is not formed of decided Gothic features; the sloping lines of the magnificent flying buttresses, strongly marked and often repeated, become the leading lines of the building, because they are not stopped and controlled by commanding masses of vertical pinnacles at their lower ends, as is the case at Cologne and other genuine Gothic churches which possess such members. Finally, even the forest of pinnacles which crowns this gorgeous edifice fails to give an upward character to its outline, for each of these pinnacles is a well-executed statue; and though such ornaments, in subordination to other upright masses, are quite consistent with the Gothic spirit, they are felt, in the present instance, to transgress this condition. The numerical strength of this marble army makes it the governing power; the statuary domineers over the architecture, and we collect, out of all this host of personages and attitudes, no definite lines and regular forms, such as alone can give architectural effect.

Brick Backing.

W. Hosking.

It will generally be found that a brick wall built with mortar and faced with ashlar has settled inward to a greater or less extent, as the work has been more or less carefully performed. Indeed, in the nature of things, it cannot be otherwise, unless the brick backing be worked in some cement which sets and hardens at once; for the outer face is composed of a layer of unyielding material, with few and very thin joints, which perhaps do not occupy a fiftieth part of its extent, while the back is built up of an infinity of small parts, with fully one-eighth its height of joints, which are composed of material that must both yield to pressure and shrink in drying. Some part of the ill effect attendant on this is obviated by the bond-stones, which tail in or run through the wall, and tend to keep the discordant materials together; but still much of it remains, and, besides this, the internal or cross walls, which have no stone in them, will either settle down or shrink away from the external walls or drag them onward, as they happen to be well or ill bonded or tied. For these reasons, brickwork built in this manner with masonry should be executed with exceedingly well-tempered mortar, made with no more lime than is absolutely necessary to cement the particles of sand together, and the sand again to the bricks, worked as stiff as it can be, and laid in as thin courses as may be to answer the purpose required of it. Above all, work of this kind must not be hurried, but allowed time to dry and shrink as it goes on.

Origin of Mural Decoration.

Gottfried Semper.

The earliest woven work would seem to be the fence, that is, branches of trees interlaced, serving the purpose of enclosure and of partition. The most savage tribes are acquainted with this method of construction. Thus the employment of coarse tissue or woven work (which was a mere fence) as a means of securing privacy from the world outside certainly far preceded the constructed wall of stone or of any other material; this last only became necessary at a much later period, for requirements which in their nature bear no relation whatever to space and its subdivision. New inventions soon led to different methods of replacing the primitive drapery, and every art was successively called in to contribute its part to these innovations, which may have been brought about by various reasons, such, for example, as the desire for longer endurance, for the sake of cleanliness, economy, comfort, distinction, coolness, heat, &c. One of the most ancient and most general methods of replacing the use of drapery or tapestry is the coat of stucco or of plaster furnished by the masons who built the walls. Another very ancient method of replacing the original tapestry is that of wooden panels, with which the wall was covered internally. The style of mural painting in Pompeii is only to be understood by the same ancient custom of covering and inlaying the walls, which they produced in appearance by divisions and painted draperies. The ceramic art was in its turn called on as a means of replacing drapery. It is certain that potter's clay painted, and even glazed, served at a very remote period as a covering for walls. It may even be admitted that the employment of the potter's art on the surface of walls preceded the manufacture of burnt bricks, and that the invention of burning bricks was the result of the custom cited above. The mural incrustations in baked clay were the precursors of brick masonry, in the same manner as the Assyrian slabs may be considered as the forerunners of constructions in hewn stone. Among the various methods of replacing the use of drapery should be also mentioned those furnished by metallurgic processes. Vestiges of metallic coverings on walls have been found on the oldest existing monuments, and the most ancient annals of mankind are filled with recitals of buildings resplendent with gold and silver, bronze and tin, respectively. As an invention of recent date may be cited, lastly, the use of slabs of marble or stone, granite, alabaster, &c., notwithstanding that we find traces of this custom, but generally effaced, on the most ancient monuments of the earth. In all the cases we have named, the character of the substitute followed that of its original type, and in the painting and sculpture, or rather the two united, in wood, plaster, burnt clay, metal, stone, or ivory, was, and traditionally continued to be, an imitation more or less faithful of the embroideries or variegated interlacings which ornamented the antique wall-coverings. It may be asserted that the entire system of decoration with the art of painting or sculpture in relief, up to the period of its highest application, which is that of the tympanums of the pediments in the Greek temples, proceeded from the manufactures of the Assyrian weavers and dyers, or rather from their predecessors in human inventions.

Qualities of Slates.

G. F. Richardson.

The quality of a good slate is that it should cleave readily, that the laminæ should be straight and unmixed with foreign substances, and the more finely laminated it is the larger plates will be obtained. Slate for roofs should be dense and not porous, and it is best judged, like other stones, by the sharpness of the sound. Porous slates are bad, because they swallow water. Sulphur is a dangerous ingredient, and sometimes exists in particles so minute as to be imperceptible. This mineral when mixed with water produces vitriolic acid, and so promotes decomposition. To detect its presence heat the slate with wood embers, and if it exists it will give forth a sulphurous smell. Oxide of iron mixed with slate has a sympathy for air and water, and so increases the quantity of oxide or rust. Calcareous matter is equally injurious, and may be tested by observing whether it puffs up when exposed to muriatic acid. Carbonaceous or coaly matter may be detected by burning. With regard to its colour, yellow or black spots indicate the presence of oxide, and black that of carbonaceous matter.

Robert Milne, Architect.

J. Elmes.

Robert Milne was a pupil, I believe, of Robert Adam; at all events, he was of the same country and school. Like Wren, he exhibited precocious talents; for, scarcely at the age of manhood, he triumphantly bore away the first prize in the first class of architecture at Rome. He had the honour of being the first Briton who obtained a premium for art in that city. Before he had completed his studies in Rome he sent over in competition, and conquered all his opponents, by his Blackfriars Bridge, a work of skill and some originality. Milne's style was too decidedly Roman for the day; but, to his honour be it spoken, his love and affection for our great metropolitan structure, St. Paul's, of which he long held the place of surveyor, was such that he never would see it defaced or altered, or spoiled in any way; and scarcely a week of his long life passed without his giving it a personal survey. Milne never did anything better than his Roman design, which was in every way worthy of one of the best disciples of one of the best architectural schools the world has ever produced. It formed a becoming ornament of his study, or *sanctum sanctorum*, at his residence at the New River Head, Clerkenwell. I have often admired it in my youthful days, with its Italian inscription, "Primo premio Roberto Milne, Scozzese, Roma," with its date and something else which I have forgotten, or perhaps never understood, Italian being in those days as great a stumbling-block to me as St. Paul's doctrine was to the Greeks; and I feared even to ask this architectural Aristarchus anything more than the mere subject before us. He was a man of austere manners, of violent temper, and appeared to have a contempt for every art but his own, and for every person but himself. In some of his ebullitions of temper he has been known to kick the clothes and tools of workmen, who have dared to reply to him, out of windows and into holes in the streets, and has been obliged to fly from the effects of their excited wrath. One of these, an Irishman, said that "Mr. Millen," as he called him, "was a rale jintleman, but as hot as pepper and as proud as *a* Lucifer." Peace be to his remains, which quietly repose by the side of his great predecessor, in that noble cathedral which was built by the one and sustained by the other. This architect is not known for many other works than his Blackfriars Bridge; a few bridges, and perhaps one or two mansions, in Scotland; the buildings and machinery of the New River Company; and a very commonplace elevation to the east front of Stationers' Hall, Ludgate Hill. The principal employment of his latter years was that of architectural curator to St. Paul's Cathedral, architect and surveyor of buildings to the Stationers' Company, and engineer to the New River Company; dividing his time between his two official residences at either end of that river—its spring or source at Amwell, near Ware, in Hertfordshire, and its other end in Clerkenwell, erroneously called the New River Head—it being the reservoir which supplies by steam machinery such parts of the metropolis that are served by the company.

NOTES AND COMMENTS.

THERE is some talk in Paris of forming a fine art museum for the city. Every year pictures and statues are purchased, which are soon lost to sight. They cannot all be placed in the Hôtel de Ville. Then there are constant competitions for the decoration of mairies which it would be well to exhibit in one place. The city also possesses one of the finest collection of tapestries in the world, but the pieces are known only to a few people. For the display of so many classes of work there could be nothing better than a special gallery, and it would he well to have it arranged before the world goes to Paris in 1889.

SKETCHING clubs are excellent institutions, for in them the amateur can work without any injury to himself or his neighbours. When he exhibits a picture that is supposed to be finished as much cannot be said. The Dublin Club has gained more success than was anticipated, for in a time like the present the majority of amateurs in Ireland are not in the mood to enjoy fine scenes in nature and to make transcripts of fleeting effects. The club lately invited a few of the English clubs to contribute sketches for exhibition, and, as Englishmen are always willing to respond to any rational request from Ireland, a great many drawings have gone across the Channel. The exhibition of them opened on Monday. About fifty examples are contributed by the Langham Sketching Club, the Bewick Club, Newcastle-on-Tyne, send thirty, and the Athenæum Graphic Club, of Manchester, a similar number. The Dublin Sketching Club deserves the goodwill of English artists in its endeavour to diffuse a love of art through the island. At present there is little. Any landscape painter who has gone to Ireland for subjects can testify to the want of understanding of art which is to be found there. The provincial in England is supposed to be backward in art, but he is an advanced critic if compared with an Irish country gentleman.

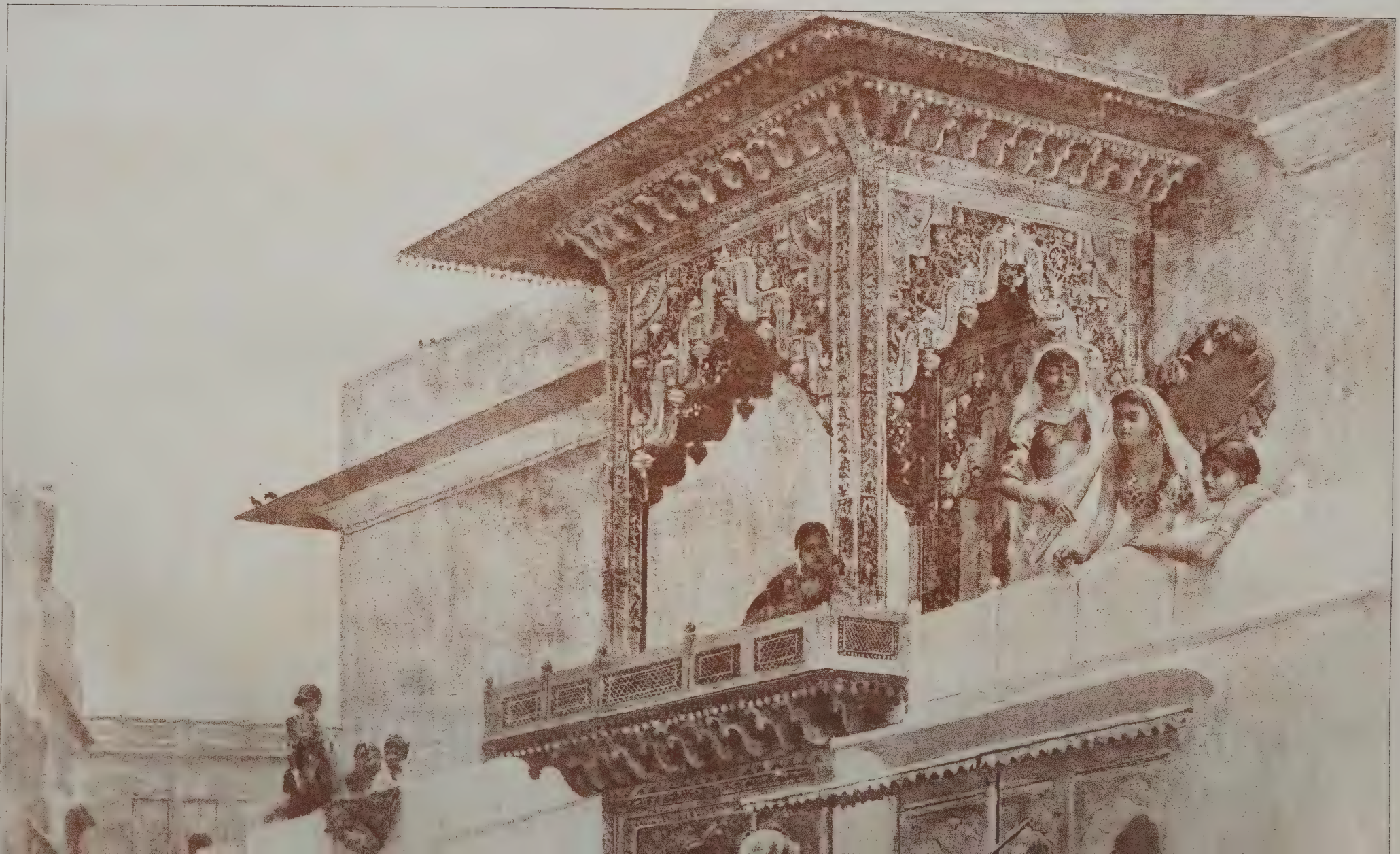
PEERS have of late tried their hands in many kinds of business, but what is to be said of one becoming a curator of a museum? The following remarkable epistle relating to an appointment of the kind was read at last week's meeting of the Bath Council:—"Lord TRURO presents his compliments to the Town Clerk of Bath, and begs to ask whether in his opinion the offer of a collection, comprising some 5,000 pieces of archæological (pre-historic) remains would be accepted by his Corporation. Lord TRURO is not in a position to make such an offer; but there is a collection in which he is interested, and he is, therefore, anxious to gather information with a view to its disposal. It may be added that the donor would make as a condition that he should receive the appointment of curator (with a salary)." At present Bath has not space in a museum to accept a proposal of the kind, and the objects will have to find their way elsewhere. But few corporations would care to invest in a collection of the kind unless it was obtainable at a nominal sum. Prehistoric archæology is not attractive, as may be judged from the scarcity of visitors to the Christy Collection.

EVERY year it becomes more evident that few of the art schools under the Science and Art Department can be made self-supporting if they are efficiently conducted. Nottingham, which is always successful in obtaining a large share of the allowances from the Department, shows a deficiency of 266*l.* in the accounts of the past year, and many other schools are also compelled to have an excess of expenditure over income. It is not satisfactory to have the addresses at annual meetings taking the form of charitable appeals, which is now a common case. A good deal of the indifference to the schools on the part of the public arises from want of confidence in the Department and its advisers. We have repeatedly said that if the schools are to be successful the examiners will have to be strengthened by representatives of the trades in which art is an element. Is a Nottingham manufacturer likely to be liberal in support of the Government system when he reads the following statement about the way in which the staple trade of the town is treated:—"Our designs for lace have again been unsuccessful. Some explanation of this is to be found in the desire of the examiners to encourage those classes of designs in which human and animal forms can be used, and to the great importance attached by them to colour. The figure and animals, so far as they have hitherto been used in lace, have been much more grotesque than beautiful, while the addition of colour, though it may be useful in the market as a novelty, must be condemned on artistic grounds. Thus, by the nature of the material they work in, our students are placed at a greater disadvantage than their predecessors." If in Nottingham it is well known that a combination of birds and flowers will not serve as a profitable pattern, the conclusion must be that the Departmental officials are either unaware of the requirements of trade or are indifferent. In either case the manufacturers must be chary of giving money to a school that is only useful in proportion as it evades the regulations of the authorities.

ACCORDING to *La Construction Moderne*, a new paving material is under consideration in Paris as a substitute for wood blocks. It is proposed to impregnate bricks with asphalte—probably bricks of an open grain would be used—and it is said that by the process they become elastic as well as impermeable. The roadway is solid and affords a foothold for horses.

M. DAUMET, the architect of the restoration of Chantilly, gives some account of the works in a late number of *La Construction Moderne*. They were commenced in 1876, and were completed in 1883, with the exception of the iron baluster rail and the bronze "torchères," which were recently fixed. The limestone used in the works was taken in part from the site, part was drawn from quarries in the neighbourhood. Local contractors were employed on the works as well as specialists from Paris. On the decoration which remains incomplete only a few artists were engaged. The bas-relief over the principal entrance is by M. MANIGLIER. The statue of St. LOUIS which crowns the façade of the chapel and the bust of HENRI IV. in the grand vestibule are by M. MARQUESTE. The figure of the Blessed Virgin with the surrounding angels, in the chapel, are by M. WATRINEL. The stained-glass windows have been completed and restored by M. BARDON, after the designs of M. LECHEVALIER CHEVIGNARD, who has also charge of the decorative painting in the Salon d'Europe. As we have already stated, it was the late M. BAUDRY who painted the *St. Hubert* and the *Psyche and Mercury*. M. BARTHÉLEMY modelled the "torchères" for the grand staircase.

THE increase in the number of fires within the metropolis is not easily explained. The firemen and salvage corps have enough to do without undertaking an investigation of the subject. A few weeks ago Messrs. BLADES, of Abchurch Lane, called the attention of the Metropolitan Board of Works to some remarkable circumstances connected with fires on their premises. The firm lately occupied part of a block in Skinner Street, which was divided by a party wall. On one side of the wall was a factory for making shot and shell. A fire occurred on July 28, and everything on Messrs. BLADES's side of the party-wall was destroyed. No cause for the fire could be discovered. In the course of a few days a second fire broke out among the *débris* left by the first fire. It was then found that on the other side of the party-wall were eight furnaces for casting shells and other purposes, and that the flue for the furnaces was against the party-wall. But whether the making of shot in such a place gave rise to the fire, or whether there was another cause, was not ascertained. Messrs. BLADES suggest that in every case of doubt an inquiry should be held, evidence taken, and the cause of the fire sifted, as is done in the case of sudden death. From the reply of the Metropolitan Board of Works, the obstacle to such an inquiry is found in the Home Office. In 1883 the Board informed the Home Secretary that it would be well that there should be an official inquiry held by some officer other than the coroner into the origin of fires in cases where the Secretary of State or the Board might consider necessary, and the Board was prepared to pay for any inquiries it might order. Nothing has been done by the Home Office, and the Board cannot move without authority.





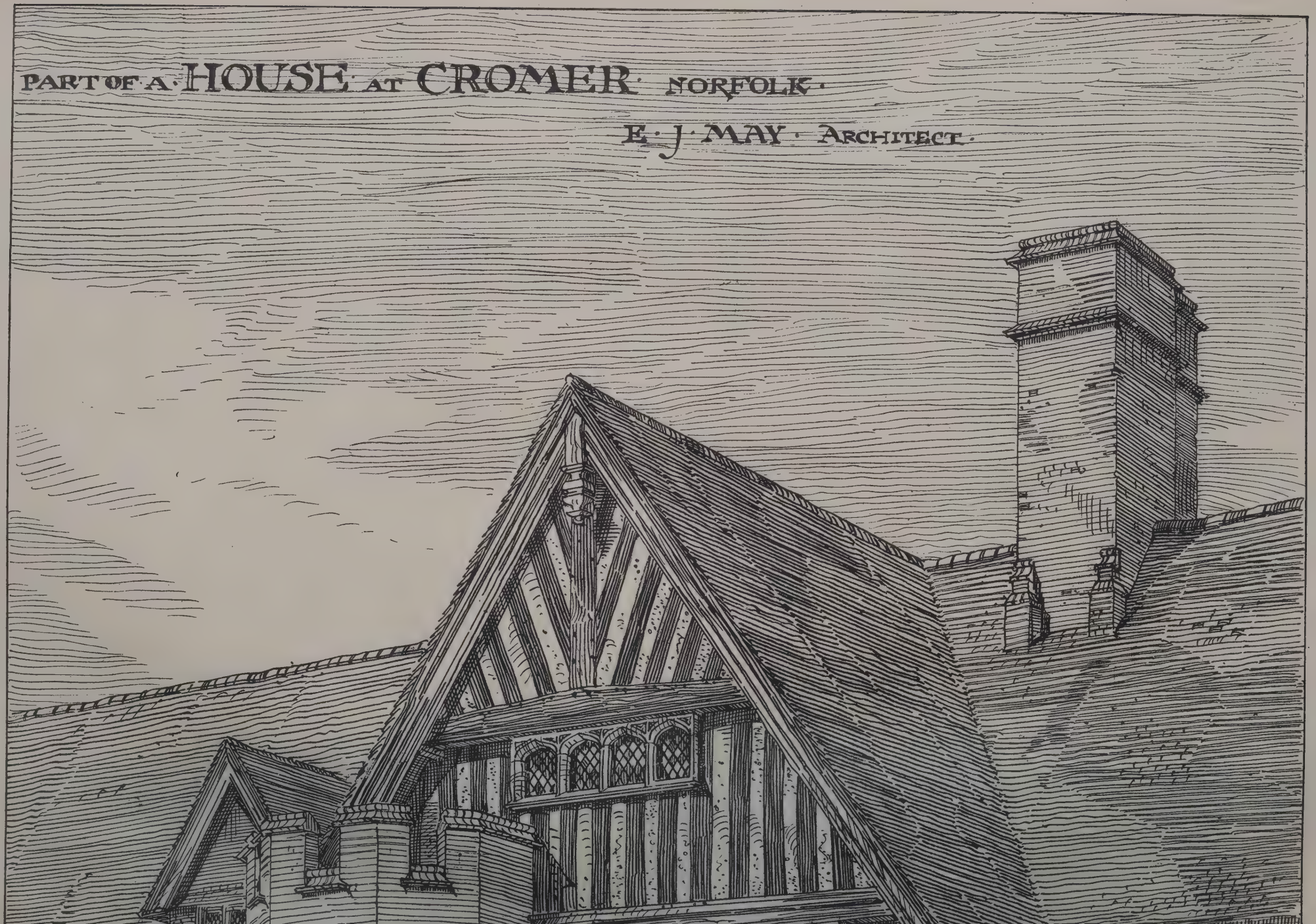
TRAVELLERS FROM CASHMERE, IN DELHI.

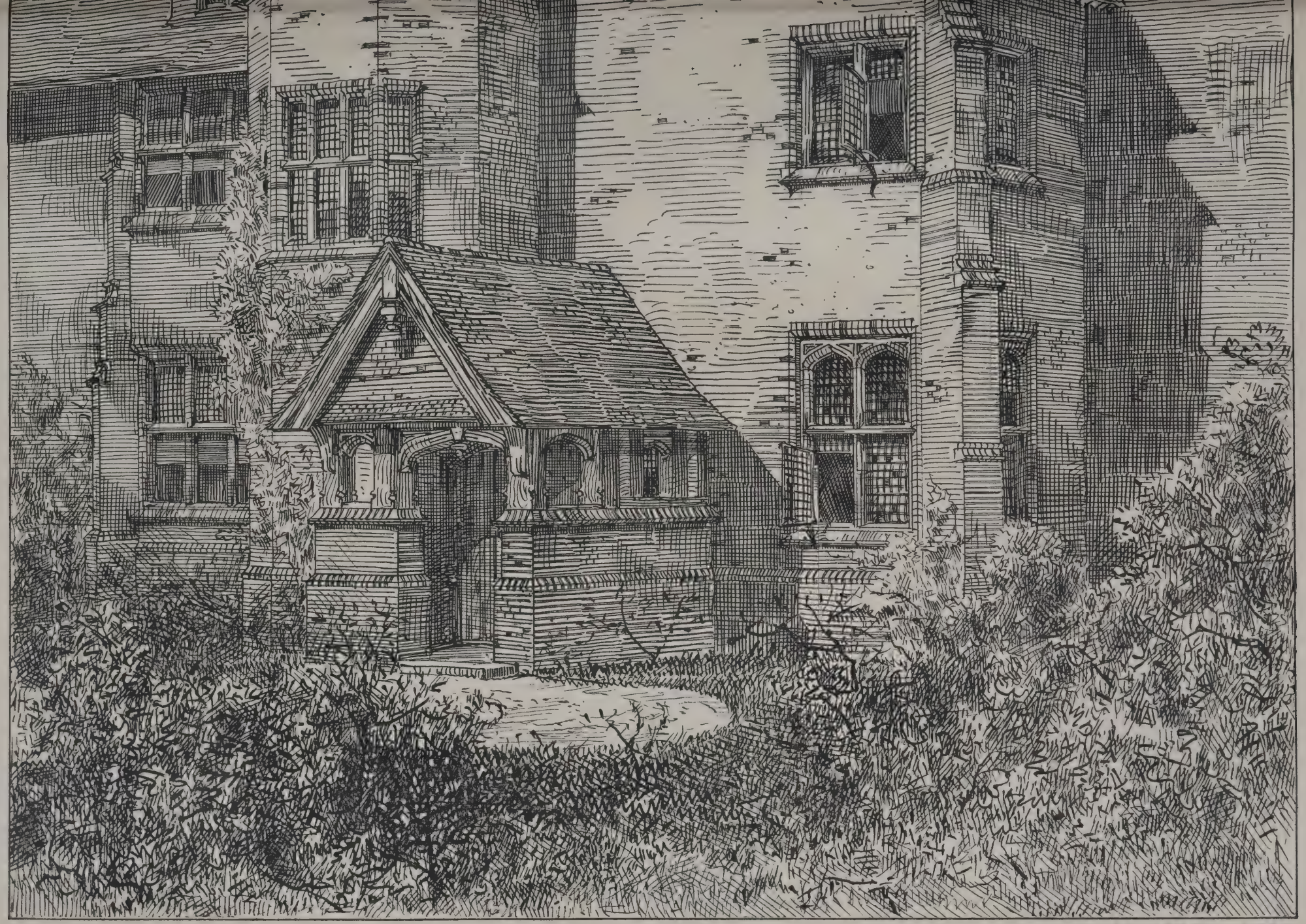
By EDWIN LORD WEEKS.

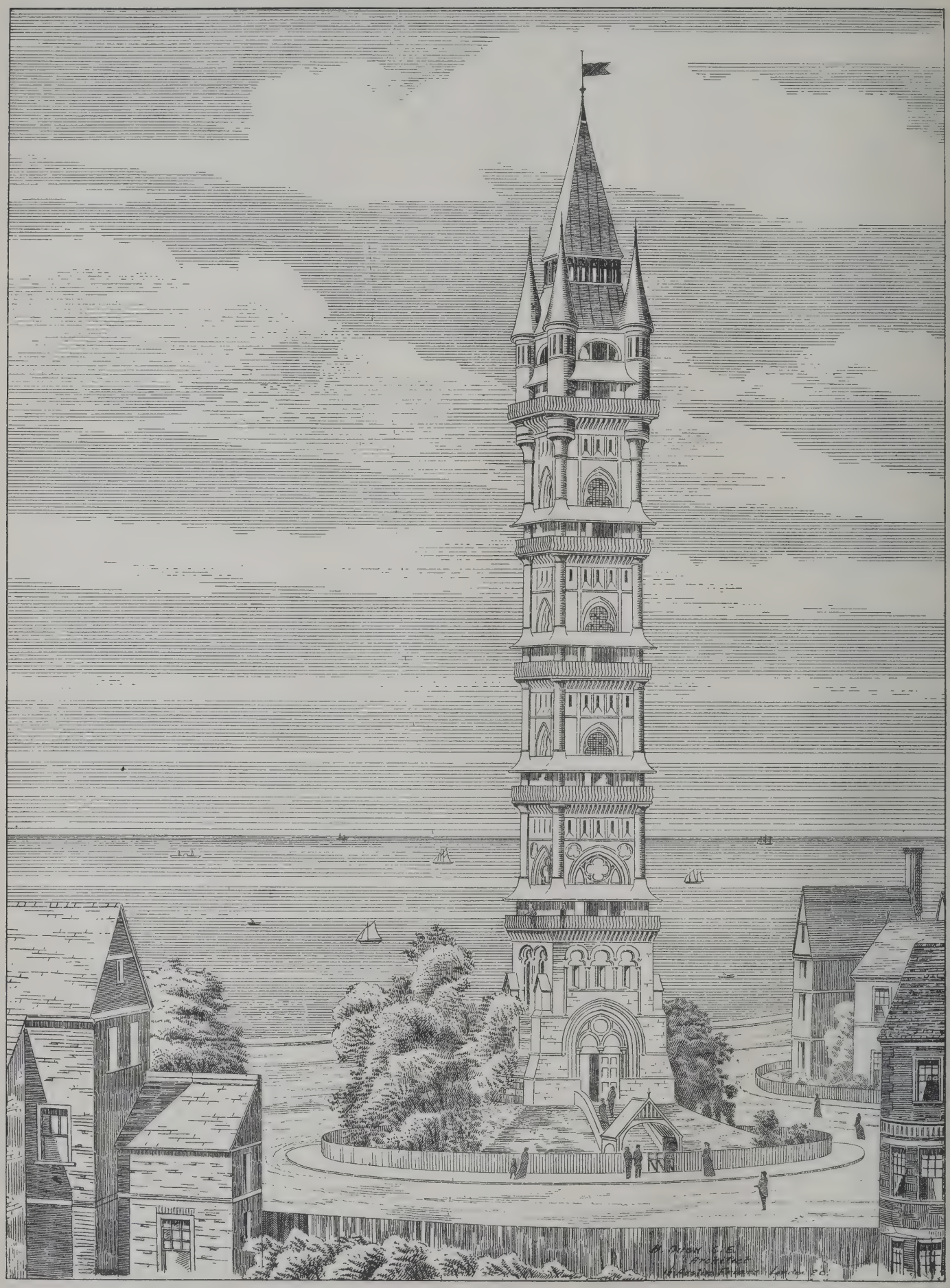
PUBLISHED BY PERMISSION OF MESSRS M KNOEDLER & Co

PART OF A HOUSE AT CROMER NORFOLK

E. J. MAY ARCHITECT.

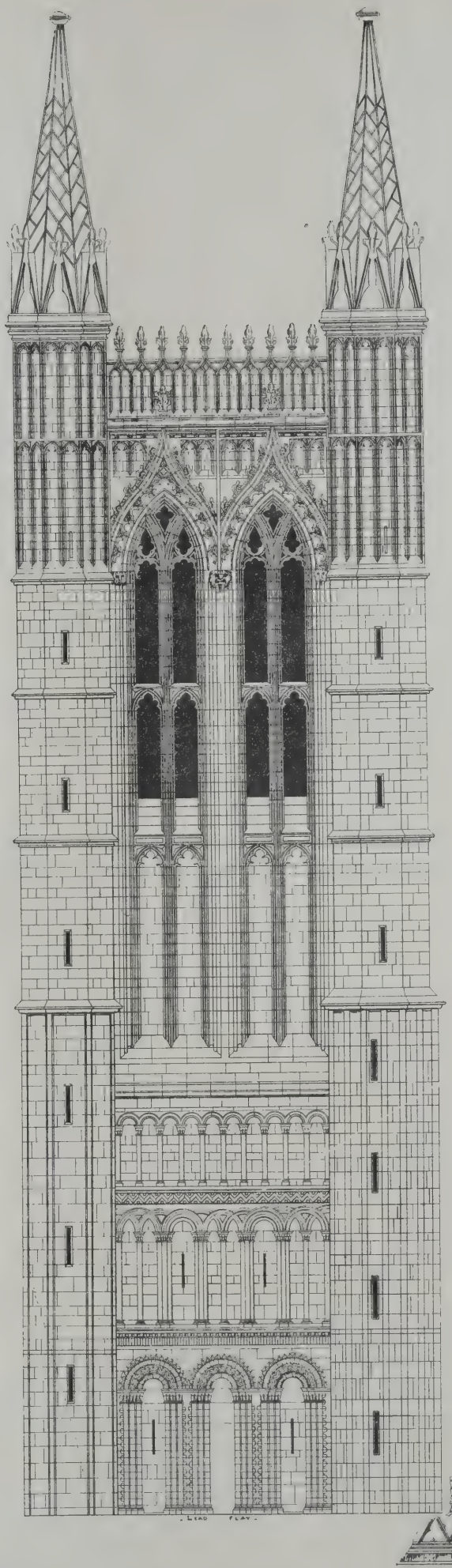






PROSPECT TOWER.

HENRY OUGH, Architect.



LINCOLN CATHEDRAL.

SOUTH WEST TOWER.

MEASURED AND DRAWN BY
E. M. YOUNG.

Printed by Sprague & Co., Martins Lane, Cannon St. E.C.

ILLUSTRATIONS.

TRAVELLERS FROM CASHMERE IN DELHI.

EACH of the American artists who make Paris their home tries to discover a special province for himself. Mr. HEALEY keeps to portraiture, Mr. KNIGHT to French peasants, Mr. BOGGS divides his attention between the sea and buildings in Paris, Mr. BRIDGMAN takes Turkey, and so on. Mr. E. L. WEEKS, as we said some time ago, may claim to have discovered India. An English painter occasionally takes the bold step of a journey to the Eastern empire when he has a commission beforehand, but under such circumstances he cannot have many opportunities to study the country. Hence, from the time of DANIELL, the Indian pictures by English painters are more suggestive of lifelessness than of life. The people represented correspond with the specimens that were lately seen in pens at South Kensington, and who had a good deal of automata about them. Mr. WEEKS's pictures are not in that style. He goes among the people of India in the same way that his brother-artists mix with the peasants of Brittany or Finisterre, and he has consequently found that our fellow-subjects in the East are not always squatting or torpid. Mr. WEEKS's pictures are, in fact, a revelation to many, and it is no wonder they always occupy prominent positions in every Salon exhibition. It is not only the novelty of the scene that attracts, but the splendid colour, which, with all its richness, is so well harmonised that it never appears garish when surrounded by harmonies in grey and yellow. The picture which we illustrate, by the kind permission of Messrs. KNOEDLER & Co., of New York, is a characteristic example. The travellers from Cashmere have much to relate, and feminine curiosity is no more to be restrained in Delhi than in the West. In a little space a vision of life is afforded, and the thoroughness of Mr. WEEKS's work is evident from the care he bestows on the architecture.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 35.—PART OF HOUSE AT CROMER.

PROSPECT TOWER.

THE illustration shows a prospect tower designed to be erected at Clacton-on-Sea, but owing to the depression the company has not yet been formed. The tower will be 180 feet in height, and for the enjoyment of a view of the surrounding country and the sea, which the various galleries and rooms will afford. As the neighbourhood in which it was proposed to erect has not so much natural elevation as some seaside towns, this building will prove a great and novel attraction from which visitors can command the extensive panorama of land and sea on every side. The different levels of the galleries will be reached by a convenient passenger lift and staircase. Each floor will be fitted with accommodation for visitors. There will be refreshment-rooms, lavatories, reading, smoking, conversation, and other rooms. All the apartments will be fitted with large windows, giving access to the balconies, which will be covered in, so that the whole will form a delightful promenade and lounge. If the number of visitors using the pier is a criterion, the project is one likely to prove remunerative. The architect is Mr. HENRY OUGH, of 16 Austinfriars, E.C.

LINCOLN CATHEDRAL: SOUTH-WEST TOWER.

THE present drawing of this tower shows that portion as seen above the screen of the western front, and corresponds with the one on the north side. The lower portion, or Norman tower, erected by Bishop ALEXANDER, had originally highly-enriched projecting gables, of which those on the north and south remain. Those on the west were removed on the completion of the façade in the Early English style in the middle of the thirteenth century; the ridge lines of these gables, however, remaining behind the later screen wall. The lofty belfries which raise the Norman towers to a height of 200 feet may be assigned to the period of 1390. They were originally terminated with tall, slender spires of wood, covered with lead, but in consequence of the expense of keeping them in repair they were taken down in 1807.

The illustration is from a drawing by Mr. EDWARD M. YOUNG, of Lincoln.

THE ARCHITECTURAL ASSOCIATION.

THE second ordinary meeting of the Association was held on Friday evening last, Mr. J. A. Gotch, president, in the chair.

The following gentlemen were elected members:—Messrs. C. S. Haywood, E. H. Dawson, S. C. Baker, H. Sanders, R. Y. Hammond, E. Wyon, J. Andrews, A. H. Noble, A. C. Smart, H. St. John Knight, L. J. Kempster, W. J. Martin, J. H. Jacques, H. J. C. Cordeau, W. F. Marshall, P. Foncard, T. B. Pemberton, A. W. Jarvis, F. L. Sealy, A. Mosley, W. Jane, A. Ford, H. Waterson, T. W. Gray, E. A. Nott, W. A. Lewis, E. R. Barrow, H. A. Woodington, G. F. Terry, S. R. Greenslade, J. Ellwood, A. H. Pearce, H. Berry, L. J. Veit, G. F. Collinson, H. V. Fanchester, R. Hall, V. E. Young, W. C. Howgate, H. Emerick, A. Rollins, J. S. D. Ahmedi, H. H. Fox, P. H. Currey, B. S. Wagstaff, H. J. Leaning, J. W. Drewington, C. A. Garrett, T. H. Hull, J. A. S. Jones, J. A. Verini, F. A. Coles, R. S. Harrison, F. J. Jones, T. Batchelor, A. McGarel Hogg, and P. L. Forbes.

Votes of thanks were unanimously awarded to Mr. J. L. Robinson, A.R.H.A., for his donation of photographs, and to Mr. Wm. White, F.S.A., for a copy of his paper on Restoration.

Mr. H. D. APPLETON, in reference to a notice in the Brown Book in regard of the South Kensington Library, said those who desired to have their tickets renewed should send him their last year's tickets, not their passes.

Mr. ASTON WEBB then read a paper, the main portion of which is reproduced as follows:—

Pupilage.

Mr. WEBB said:—I am afraid I must take it as certain that in many cases the relations of master and pupils are rather strained, owing, perhaps, to a misunderstanding of the relative duties of each, and we should naturally turn in the first place to the form of articles to learn what the respective obligations are. Personally I was never bound by formal indentures, neither have I ever had, up to the present time, a young man formally bound to me. I dislike the idea, and prefer an annual arrangement, which can be terminated without trouble simply by the wish of either party. In such arrangements it is merely an understanding that a young man enters an architect's office with a view of participating in the work, and by the assistance of his master acquiring a knowledge of the practical working of his profession. This puts a master under as strong a moral obligation to do what he can to forward his pupil's interests as the strictest indentures, and is, to my thinking, more consistent with the feeling that should exist between master and pupil. However, we must naturally turn to the stricter indentures to find what is legally understood by a young man being articled to an architect. I have had several copies of these indentures lent to me by friends, and a perusal of them seems at once to carry me back almost to Mediæval times, as much from the quaintness of their requirements as for that of their diction. A good deal is said of what the pupil is to do, but not so much of the master. These seem to be some of the obligations laid on "the said" pupil:—

"That he shall and will during the said term of years faithfully, diligently, and honestly, and to the best of his power, skill, and activity, give him the said architect as a pupil in the said profession, art, or calling of an architect, and that the said pupil shall not at any time during the said term wilfully obliterate, injure, spoil, damage, waste, destroy, misspend, or misappropriate any of the property, money, instruments, utensils, goods, or chattels of him, the said architect, and further, that the said pupil will at all times keep the secrets of the said architect, and will at all times during the term readily and cheerfully obey and execute his lawful and reasonable commands, and shall at all times conduct himself with all due propriety, honesty, and diligence."

"Also, that the pupil will provide himself with all manner of necessaries, with becoming apparel, and also physic and surgery in case of illness," to which curious programme is sometimes added "that he shall not play at cards, dice, tables, or other unlawful games: that he shall not contract matrimony within the said term;" or commit other crimes too serious to mention. After which formidable programme comes a paragraph to say that "the architect, his administrators and assigns [what the latter know of architecture I do not know] will [probably for a certain consideration] at all times during the said term of years teach and instruct the said pupil or cause to be taught and instructed in the said art, profession, or calling [always great difficulty apparently in deciding what it is] of an architect in such sort as the same is or hereafter may be carried on by him, the said architect, to the best of his knowledge, skill, and ability." Well, now, the terms of such an agreement are apparently so strict and impossible to be absolutely kept on either side that probably both break through them in less than a month. I mention them to remind those here who are pupils of the extent of the obligations imposed upon them. But I purposely omitted in this account of indentures the time for which

a pupil was articled. Fifty years ago this was usually seven years; then it was reduced to five years, and since then has been further reduced, in many instances, to three years. This is a detail of importance. Now, putting aside all Mediæval or other verbiage, what is the meaning of these articles? Very roughly put, I believe the understanding is that a young man goes into an architect's office to learn how a practice is carried on, it being an obligation on the architect's part to give all the facilities he can to a pupil to learn it both in the office and out of it. He does not undertake the post of a schoolmaster, as some seem to suppose, and probably most young men at seventeen or eighteen would resent being so treated. He rather assumes that a young man at that age is not too young to understand that he is there to learn, not to play; though I am bound to say some seem to think that if they only attend an Academy or Association class in the evening they can spend their pupilage time much as they please. Possibly in many offices they can do so; but surely they should remember the all-importance of these pupilage years to themselves. You can comprehend that these years of pupilage are fraught with momentous consequences to yourselves. Even three years wasted and dawdled away, as they often are at the commencement of a career, means to many a life wasted and dawdled away. Three years of good work means love of work and business habits acquired. Perhaps you say, "This merely applies to architecture as a business; I follow it as an art." I reply that possibly, if you let your art entirely master the business of your profession, you may find hereafter the business entirely swallow up your art.

Architecture is the one art which combines the necessity for art and business capacity, and the greatest names in the architectural roll of fame are those who have most thoroughly combined them.

Some have made a name for their art capacity only; hundreds have made a practice from their business capacity chiefly; but the greatest have been able to build great buildings by their genius in uniting the two, and architecture is the art of erecting beautiful and useful buildings, not only of designing them.

Well, then, taking it you agree with me that a pupil should not expect to be taught in an architect's office as if he were at school, let us consider what he has a right to expect. It is evident that in a term of three years he cannot expect to acquire a thorough knowledge of his profession, or even as much as he did in a term of seven years; but I think he has a right to expect that he should have free access to all that goes on in the office, and that, further, his master should give him such instruction as he can, and should in all cases advise him in the course he should take in obtaining further knowledge unobtainable in an office from such classes and lectures as are provided at the Royal Academy, Royal Institute of British Architects, King's and University Colleges, and last, but not least, the Architectural Association. That he should be expected to give them one or two hours' personal instruction every day appears to me absolutely impracticable for an architect in active practice, however desirable it might be.

Before going to my second point, let me say a word as to the relation between master and pupil. This should be one of mutual confidence and respect. The latter has the free run of the office of the former, and can, if he pleases, become intimately acquainted with all the details of his master's business. The pupil sees his master at work, and, perhaps, finds he is not infallible; and as it is said no man is a hero to his own valet, perhaps the same may be said of a master and pupil, though the pupil should remember that Carlyle suggested this *might* be the fault of the valet. On the other hand, though the architect must not be considered as a schoolmaster, the pupil has an undoubted right to look to him for advice and help in all matters connected with his architectural education, and to expect that he should put him in the way of acquiring a special technical education, which can be far better learned outside than inside the office. The great advantage of the office training is that a pupil has the opportunity of seeing how work is actually performed, and how an architect, with his clients, builders, and others connected with the building trades, conducts his business in real life, and none of these matters can a young architect afford to neglect. On the other hand, if he is a wise young fellow he will endeavour to gain as much information from the office as he can on his own account, without expecting his master, should he be in full practice, to be constantly especially instructing him.

Mr. Blashill read a paper on this subject before the Association ten years ago, and in that he expressed an opinion that pupils should be allowed to read all the office correspondence. This is a detail that was somewhat contested at the time, though I think there can be no question they should be enabled to do so.

I next come to the disadvantages or grievances which one hears most frequently from articled pupils and the best way out of them. Now, I have talked with a great many pupils, and these are some of the most general complaints I hear.

First and foremost of all, that they have too much tracing to do, or that there are too many pupils in the office and not enough draughtsmen; or that (if they are in a London office) they do too much office work and do not go on buildings enough; or that (if they are in the country) *vice versâ*; or that their master has too much work to do and cannot teach them; or that the work is all of one class; or that it was all surveying and specifications; or that they never see any surveying or specifications; and many more such like.

Well, I agree with you that these are to some extent grievances and should be ventilated, and I should hope in time will be ameliorated, but they will not be in your time; and what I want to do, if I can, is to suggest some ways by which you can help yourselves to get over these difficulties. No sensible man can doubt that there are many cases in which a pupil has every reason to complain, or that others complain without any just reason.

It is difficult, for instance, to sympathise with those who complain that they are in so large an office with a great deal of work and so many to do it that there is no opportunity for them, while it is very easy to sympathise with those who find themselves in an office where their master is much employed out of it, and where the principal work is copying specifications and schedules of dilapidations, and their sole companion an office boy, while the tedium of the long days in the little elevated office is only relieved by the occasional tramp on the creaking stairs of the inevitable cadger.

Now, to take the grievances in detail: the first is tracing, and I say at once I think pupils often have too much of this to do. On the other hand, it is undoubtedly one of the best means by which a pupil can get into the habit of architectural drawing. Some acquire it very quickly, others take years before they can trace properly; some learn while they trace, all could if they would by thinking about it. It also gets a pupil into the way of delineating work and placing it on the paper in an intelligible manner, which he would probably not otherwise learn, and if all these sources of satisfaction should fail him, then is the one left experienced by Carlyle in "honest journey-work well done for want of better." Mr. Christian, I think it was, told a story here once of a pupil who came to him and mentioned, amongst other things, that if he was articled he should like to do nothing derogatory to a gentleman; and being asked to explain, said he should not like to do anything which he could not do with his gloves on, and I believe it was added that this young gentleman came to no good. Of course you cannot trace with gloves on, and you will have to take them off, and your coat, too, if you are going to study architecture thoroughly, and not be too squeamish at the work that is set you either. The next grievance was that there were too many pupils in the office, and there again I agree to some extent. I know some architects who think it would be beneficial to limit the number of pupils to be taken by an architect to two, as is already done in the law, and though this might be well in the majority of cases, we all know some offices where it is eminently to the advantage of architecture that the largest number of pupils should be trained that the master is willing to instruct. It would be invidious to mention them, but you know them without it.

Then, again, those who are in London offices complain that they see little of executed work, and no doubt much of the work designed in many London offices is executed in the country; and where this is so I would say to the pupil, avail yourself to the full of the Architectural Association Saturday afternoon visits, and the numerous opportunities there are always open in London to inspect works in progress. Surely, of all places in the world, London is the place where this complaint should not be made, while the immense advance lately made in the work carried out in the offices out of London shows that here also, if a pupil is so minded, he may see good work and improve himself by it. With respect to the grievance that one master has too much to do and another too little, it should be remembered that in the first case a pupil must have the opportunity of seeing much work go through the office, in the other he will probably have the advantage of more personal attention from his master, and it is practically impossible to have it both ways.

I should now like to show how, in my opinion, a pupil may make the best of his opportunities in whatever office he may happen to be; that is to say, how he can best learn an architect's business, without which he will never be able to develop or exercise whatever power of design he may be possessed of.

The first year of his pupilage he should have some personal instructions from his master, and take part in whatever subordinate work in the office he may be set to do, taking all the time as much interest as he can in the business that is going on. In the second year he should join the Association, and do other work outside, which it is not my province to-night to describe. Then he should start what I would call a commonplace book; in other words, an illustrated note-book, in which he should put down the leading points of drawings passing

through the office, and especially those coming under his immediate notice to ink in, finish off, or trace. All points of construction, scantlings of roofs, and such varied items as dimensions of a stable, details of a church, school seating, sanitary traps, or whatever it may be, should be carefully noted down and arranged for easy reference, and if he steadily did this during his pupilage he would amass an amount of practical information that would prove to be of inestimable advantage to him afterwards; and if this paper of mine to-night is but the cause of a few of you starting such a book it will not have been thrown away; and, while on the subject of this commonplace book, I would suggest to those who complain of the want of variety of work in the office they are in, that they might easily arrange with others to exchange information with those in other offices, and thus add to their own stock of knowledge and that of others at the same time; and though this presupposes a very considerable amount of interest on the part of pupils, it is surely not too much to expect. I do not believe there is a master in London who would grudge his pupil the time to do this if he found he was doing it thoroughly.

Then as to specifications and contracts. Some pupils at the end of their articles are perfectly innocent of these things, but if they have never taken the trouble to copy those that are always in use in the office they must not lay all the blame on their master. They are in the office for the purpose of seeing these instruments in actual use, and I would recommend this as an admirable exercise to any young man who would take the trouble, viz., to take a set of contract drawings in the office and write a specification from them without help, and afterwards compare it with the working office copy.

Again, you should occasionally take your own cube of buildings being erected in the office, and find out their cost and note it in the commonplace book at per foot cube; but I have said enough to show you what I am driving at, viz., that it is to the advantage of every pupil to take an intelligent interest in the work going through the office, and that not merely in the interest of his master, but for his own sake.

Another point, which is somewhat outside, perhaps, the regular office work, but for which, I think, opportunities should be given, is architectural sketching. I am sure it is possible to collect a large number of sketches in so lazy a way that they are practically no good to the student. Water-colour sketching, for instance, is a delightful relaxation, but is of comparatively little value for the purpose of study.

I believe that nothing would help the student more than the habit of sketching from memory, both old examples and new. There is no greater test of how far you have really understood anything you have sketched than by trying when you get home to redraw it without reference to your sketch-book.

You will be surprised at first how little you remember, and afterwards how the practice strengthens your memory. If any of the pupils I am speaking to would try when they get home to sketch a bay of any building they know well, they will be surprised, I fancy, to find how little they really know about it. The same practice is equally useful in respect of modern buildings, and if you select any fairly good building you pass on the way to your office, look at it carefully, and try to draw it from memory, returning time after time until you have it complete, and then another, and so on, you will not find the time spent thrown away.

No pupil should neglect to consult the committee of advice started by this Association if he is in any difficulty and is unable to get help from his master.

One word to those pupils whose articles are just expiring. This is, perhaps, the most difficult time of all to a young man. He has views of taking an office, and perhaps chambers in town, and setting up a door-plate, &c. If he has only served for three years he should do nothing of the kind, but rather remain in the office where he was articled, or enter another as a salaried assistant, and in his spare time read up for the Institute examination, and try for one of the travelling studentships, with a fixed resolve to go abroad for six or twelve months when he has been five or six years in the profession. It is a mistake, in my opinion, to go sooner. If he is not fortunate enough to obtain a travelling studentship, and cannot go without one, he should at least endeavour to live very quietly and save up for the Italian excursion of this Association; not that you should return with the idea of erecting buildings in the Italian or Grecian taste in this country, but that you may have your eyes opened to the marvellous works which men of genius have been able to raise in other countries than your own.

Mr. Webb concluded with some advice to students in regard of reading.

The President, in the course of his remarks, enlarged on the opportunities open to them in pupilage, and said they should make the most of those opportunities. Much depended on the office they got into. In some they were left too entirely to themselves. Architects ought to help their pupils on, but on the other hand, if pupils were indifferent, and did not take the least interest in their work, they could not expect the master would take an interest in them. Mr. Webb's advice to keep a commonplace book was important. Life was so complex that memory unassisted would not carry a man through; he could not recollect everything, but if he knew where to lay his hand on the information as the need for it arose it practically served the same purpose.

Mr. R. Phene Spiers, who proposed a vote of thanks to Mr. Webb for his paper, remarked that he had never gone through the stage of pupilage. He had been sent to the Ecole des Beaux-Arts, Paris, and on his return entered an architect's office as an improver, and had had no cause to regret it. He pointed out the great fault of articling pupils before they could understand the work in an architect's office, and referred to his suggestions at the last conference of architects, that the student on leaving school should attend courses such as those at King's College, and last but not least, he should go through the workshop. A student would learn nothing of architectural work till he learned to think for himself. Those who joined the Association, and attended its classes, necessarily learned to think for themselves, and then they would be able to start a commonplace book with profit. Certainly a pupil when articled should join the Association classes, if only the junior class of design. A pupil had a perfect right to copy anything in the office, make extracts from specifications, &c., in his own time, of course, not in his master's. As a clerk he had no such right.

Mr. John Slater seconded the vote. He expressed the wish that parents could be got to understand that as good an education was required for an architect as for men of any other profession. Business letters of architects not only should be shown to pupils, but pupils should be made to try and answer them. Unfortunately all architects could not express themselves grammatically. He urged them to cultivate more particularly any special bent they had, as a man was more likely to get on, in this age of specialists, in the branch he was most thoroughly well up in.

Mr. Lawrence Harvey said he had been through two Continental schools, and could testify that the system of education in the Association was not a whit inferior to the systems abroad, and with a few improvements it would be far superior. In supplying the supplementary knowledge that could not be got in the architect's office, the Association had done much, and in a year or two the Guilds would afford the same knowledge as was got abroad. Considerable improvement, at little or no expense, would be got if work, such as was done in the ateliers abroad, were done in the architect's office here. The assistance the master gave to his pupils might be recognised by giving the name of architects whose pupils were successful in competition, &c. As to sketching from memory, Mr. Harvey said that abroad they never were set to drawing without also having an exercise in drawing from memory. In two or three months it became easy, though at first it had seemed nearly impossible to do. Mr. Harvey mentioned that in the class of masonry initiated by the Association, the first class for the instruction of the pupil-teachers would begin on Tuesday (the 9th inst.), and the subsidiary class, to be taught by the first mentioned, would begin on December 14. Whatever some might say to the contrary, none could teach so well as those who had just learned.

Mr. Sidney Vacher recommended all as soon as they began their pupilage to join the Association, and take part in the elementary classes. Entrance into the Academy school he advised to be postponed as long as possible.

Mr. Arthur Baker spoke of the great gain got by taking a clerkship of works as soon as a pupil was out of his articles. He agreed with Mr. Slater up to a certain point in regard of specialism, but practically an architect must often consent to share the profits he might get, or else he would come to grief.

Mr. H. O. Cresswell, speaking of the examination, said they would not find it so very dreadful when it came off.

Mr. M. Clarke thought the Association might issue a ticket enabling the holders to see works in progress.

Mr. H. D. Appleton, hon. secretary, said that architects were rather shy in giving them permission, and at present they had permission for no buildings. He did not think the Association would be allowed to issue any general permission.

After remarks from Mr. Brodie, Mr. Leonard Stokes, Mr. F. Miller, Mr. H. Baker, and others, the vote of thanks was carried by acclamation.

Mr. Webb, in the course of his reply, remarked that Mr. Harvey's proposal to couple the architect's and pupil's names would have probably no weight with architects.

Mr. Harvey said that was so, but explained that he meant that the public would be made aware that the pupils of certain architects always gained prizes, and therefore that "their shop" was the right one to go to.

The meeting then terminated.

The Halifax Town Council have decided to purchase the Bankfield Estate, formerly the residence of Mr. Edward Akroyd, the borough member, for a public park.

MANCHESTER ARTISTS AND THE ANNUAL EXHIBITIONS.

A MEETING of the members of the Manchester Arts Club has been held to consider the conduct of the Art Gallery Committee in the management of the City Art Gallery and the permanent collection. Mr. J. H. Nodal presided, and briefly explained the objects of the meeting. He did not want, he said, to utter a single word of reproach against the Art Gallery Committee with regard to the care, time, and attention they had bestowed on their work. At the same time, there was a good deal of dissatisfaction abroad with respect to some points of their management, and an idea prevailed that on these points they had adopted mistaken principles, or had gone on wrong lines. The initial difficulty under which the committee laboured was that of the arrangement they made with the proprietors of the Royal Institution. The conditions with regard to the representation of the proprietors on the committee, and the amount to be spent annually in the purchase of pictures, fettered them in several ways. He therefore moved that a memorial should be presented to the Art Gallery Committee of the City Council, calling their attention to the following recommendations :— 1. The selection of works from London galleries should be brought within narrower limits, and two Manchester painters should be added to the hanging committee. 2. That for the purposes of the annual exhibitions the corridors and lower rooms should not be used. 3. The desirableness of following the example of the Paris Salon, where at the middle of the term the gallery was closed for a time and the whole collection rearranged. 4. A revision of the agreement with the governors of the Royal Institution is desirable; and 5, the committee should cease the practice of placing the pictures forming the permanent collection, and those lent from South Kensington, in a room which was bare, gloomy, and repellent. Mr. H. Magnus seconded the motion. A discussion followed, in which other grounds of complaint were discussed. Mr. T. R. Wilkinson then defended the action of the Art Gallery Committee, and deprecated the presentation of the memorial on the ground that it would do more harm than good. Ultimately the motion was carried almost unanimously.

MESSRS. KNOEDLER'S GALLERY.

THE *Art Amateur* gives the following account of the latest pictures which have been brought from Europe by Messrs. Knoedler & Co., of New York :—

Recently there have been some charming additions at Knoedler's gallery. *The Weeder*, an exquisite little canvas by Jules Breton, shows the stooping figure of a peasant woman illumined by the last rays of the sun, which is just sinking beneath the horizon, the pale crescent of the new moon having already appeared. The picture tells eloquently and most poetically the story of another day's work done. A glowing Henner—the bust in profile of a handsome, pale-faced woman, draped in black, with a wealth of auburn hair descending from her superb, patrician head, relieved against a dark crimson background—is unnamed; but it surely must have been intended for *Romola*. A small Chelminski is a characteristic snow scene, with two military cavaliers. I take one to be Frederick the Great, who seems to be acknowledging, in passing, the salute of a young cavalry officer. Meyer von Bremen is represented by a miniature canvas, showing a smiling young peasant coming from work, with his scythe over his shoulder and a posy in his hand, evidently intended for the comely maiden who, hidden from his view, looks up eagerly from her needlework at the sound of his footstep. *On the Field of Honour*, by François Flameng, tells the story of an improvised duel in the snow. The principals have got out of a coach and are ready for the fray, the witnesses to which are some military looking men in the costume of the Directory, and a knot of peasants who have stopped to see the performance. The combined expression of fright and curiosity on the face of the old woman is particularly well portrayed. There is a strong single figure, by Lerolle, of a French peasant woman in a sheepskin cloak; a Moorish interior by F. A. Bridgman, showing a houri reclining on a divan, chiefly interesting for its colour; and a charming little Israels, a fisherman and a lad returning from work, wading through misty grey water. But Knoedler & Co.'s great prize is *Le Goûter*, by Jules Breton, a group of barefooted peasant women reclining around a wood fire, which is cooking their noonday repast. M. Breton is said to have received a larger price for this picture than for any he had previously painted, showing that the great success of *The Communicants* at the Morgan sale, for which Mr. Donald Smith paid 45,500 dols. (Avery had sold it to Mrs. Mary Morgan for 22,000 dols.), was not without effect on his prices for subsequent commissions. Among other pictures from the Salon bought by Knoedler is Jean Paul Laurens's dramatic painting of the ferocious Torquemada before Ferdinand and Isabella, holding the crucifix before them and insisting on the expulsion of the Jews from Spain.

CLASSICAL ARCHÆOLOGY.

THE Class of Fine Art in Edinburgh University was opened with an address by Professor Baldwin Brown, upon the study of Classical archæology as twofold. In the first place, he said, it brought us into contact with works of genius which have been the models for all the world in some important branches of human activity; and, in the second, it brought clearly before the mind the ideas and outward life of the peoples of antiquity. With these Classical literature has already made us familiar, but the work of art brings before us at a glance the thoughts of men of old time in a more vivid way than when they come wrapped in the garb of language. The hero as he is described in Homer and Sophocles, the athlete glorified in Pindar's song, the trained rational citizen of Plato and Aristotle —in a word, the highest conception of Greek humanity was brought before us as a whole and in a moment in the form of the Theseus of the Elgin Marbles. The study of Classical archæology is no mere antiquarian poring over details or dilettante trifling, but a serious effort to read and master the records entrusted by the greatest nations of antiquity to marble and bronze and clay. Modern experience can give us no idea of the large place occupied by the arts in the life of ancient peoples. The Secretary for Scotland had happily said that music was the democratic art. All arts in old time were democratic. Sculpture and painting are now arts for the few. Architecture—in view of the way in which architects are sometimes treated—seems hardly to be considered an art at all; but in old times the statue and the picture, with the building where they were placed, formed the books of the people—they read there all that was most of interest to their lives. It is an illustration of the importance of artistic monuments in the past to find that the recent "History of the Ancient Peoples of the East," by Professor Justi, of Marburg, might almost be looked upon as a history of art. Turning to the question of the limits of the study of Classical archæology, it is clear (1) that all forms of ancient art, and not the principal ones alone, such as sculpture, must be included in the study, and attention must be paid to various historical phases, and not to the period of perfection alone; while (2) the arts of Greece and Rome cannot be treated satisfactorily without a reference to those of the more ancient peoples of the East. To Winckelmann, who began the study of ancient art in the middle of the last century, only one form of art was of real interest—the perfectly developed statue in which he recognised the embodiment of a certain Hellenic ideal. In the present day we are enabled, and therefore constrained, to take a wider view. Greek sculpture has many phases—it has rude beginnings and tentative efforts. It is a development, not a creation. There are also, beside sculpture, numerous minor forms of art, including painted vases, terra-cotta figures, gold jewellery, &c., not one of which can be neglected. Since Winckelmann's time important original works of the Grecian chisel have been placed in our museums, the principal of which are the sculptures from Ægina, placed at Munich in 1820; the Elgin Marbles, ceded to the British nation shortly before; and the German "finds" at Olympia and at Pergamon in the last ten years. Each has its characteristic importance. The Æginetan sculptures show art at the most critical stage of its progress, about to pass over from the severity of early times to the beauty and freedom of the period of perfection. The Parthenon marbles exhibit the utmost that sculpture could achieve at the point of culmination of art in the Athens of Pericles. The fragments from Olympia, almost contemporary with the Parthenon, show interesting modifications, due, perhaps, to local separation from the great artistic centres; while, finally, the reliefs from Pergamon at Berlin, representing a late period of Greek art hitherto almost unknown, give startling evidence of the extraordinary vitality and many-sidedness of the Greek artistic genius. The question of the connection of Greek art with that of older peoples is quite a modern one. The monuments and inscriptions of Egypt, Assyria, Chaldæa, Phœnicia, Asia Minor, have all been explored and interpreted, since the beginning of this century, and we find evidence that almost all the elements of Greek civilisation existed in their original forms among these Eastern peoples. The laying out of cities in rectangles, according to regular plans, though it may seem so characteristically Hellenic, is yet an ancient Babylonian, perhaps also Egyptian, custom. The elements which made up the Greek temple are found, differently combined, in Phœnicia and Egypt. Many of the details and ornament of Greek architecture are found elsewhere. The statue was not a Greek invention, and even in the specially Greek quality of life and animation Hellenic statue makers had been preceded by the Egyptians of the old empire, some of whose wonderfully lifelike productions were shown in photographs.

The same may be said of almost all the other forms of Greek art down to the engraved gems which are some of the earliest works of art found within Hellenic borders. It is essential fora proper treatment of Greek productions that we should illustrate them by what had been done by older peoples. By tracing out the origin of all these forms of Greek art we arrive at a sort of "natural history" of them. The scientific spirit of the day demands that we study their development from small beginnings. This is, however, only one side of the work of the Classical archæologist. This antiquarian study is valuable and necessary, but it is not all. When we have finished it we find ourselves face to face with the more important question, What was the finished result in itself? what its value to Greece and to the world? Every true work of art is a thing by itself; on its material side it may be only one of many, but, as a finished work of genius, it is individual and distinct. The Athene Parthenos of Pheidias was in its material construction only a development out of very old and rude forms of idol-making and decoration. What Pheidias did was to charm a soul into the wood and gold and ivory, and the old materials became alive; a new personality was born. Mr. Ruskin has taught his countrymen to ask themselves what great works of art can be to them, not how much can be discovered about their origin. So, after all, the best way with a fine work of Grecian genius is not to see how much we can say about it, but rather to let it speak to us with its ever-new message of power and its spell of beauty.

NORTHERN ARCHITECTURAL ASSOCIATION.

THE first meeting of the winter session of the Northern Architectural Association was held on Monday, at the Old Castle, Newcastle-on-Tyne. The president, Mr. G. G. Hoskins, F.R.I.B.A., delivered the following address:—

Gentlemen,—In thanking you for asking me to address you, I think some apology is due from me for my bad attendance—or rather non-attendance—at your meetings for so very many years past, the loss being mine.

Professional Depression.

Now, firstly, as to the condition of our profession generally. I am sorry to say that the last eight or ten years have been, to the majority of its members at least, I was about to say years of rest, but such rest as I fancy many of us would have willingly dispensed with. No doubt plums have fallen to the lot of some, but the state of the profession—taking it throughout for the period I have named—has been, and is, I regret to say, unquestionably bad. But let us hope that this lull or depression—or shall I continue to call it rest?—may not have been entirely without its benefits to some of us. It has given us time for thought, time to digest new subjects—which are always cropping up in our profession—time to realise and review our blunders, and, like Captain Cuttle, "when found, make a note of 'em," for avoidance in the future; time for that thought and study generally which some of us at least could not find during the high-pressure pace which the prosperity of these Northern districts some years ago required of us; for I am very much afraid it was with us as with other classes—and also the masses—there was the same hastening to become rich, the same confidence that "the race would be to the swift and the battle to the strong."

Sanitary Reform.

But if I have not identified myself with this Association to the extent I feel I ought to have done, since my election as a member some twenty years ago, I hope I have not the less continued to take a deep interest in all matters relating to our profession generally, and perhaps if one question more than another has exercised my mind it has been that of sanitary reform. I feel sure that every member of our profession must congratulate himself upon the rapid strides which have—say, during the last ten years—been made in this direction; but, however much has been done, more remains to be executed, and we must not adopt a "rest-and-be-thankful" policy. Engineers, architects, medical practitioners, and enterprising manufacturers of sanitary appliances have done a good share of this good work, and the public is fully alive to the fact that what is now wanted is some energetic and determined action on the part of local authorities—more particularly those of large manufacturing towns—with regard to the consumption or abatement of smoke. For, let the engineer or the architect lay down his miles of well-constructed sewers or perfectly-trapped drains, who shall presume to say a town is in a thoroughly sanitary condition, where thousands of coal-fire chimneys are belching forth their volumes of poisonous black vapour, polluting the atmosphere and destroying almost every breath of fresh air, to say nothing of the injury and disfigurement to our architecture? Surely in this scientific age something could be devised to alter the present state of affairs. Many of us no doubt looked forward with interest some two or three years ago to the results likely to be obtained from the exhibition of smoke-preventing or smoke-abatement appliances at South Kensington, but our hopes have been to a great extent disappointed.

Decline of Stucco.

To turn to another subject, I think it must be a source of much gratification to all of us to see how the long reign of stucco—particularly in London and its suburbs—is fast disappearing before the triumphal advance of terra-cotta. I cannot, however, say that I have very great sympathy with the introduction of terra-cotta in localities like our own, favoured as we are by being surrounded with quarries of some of the best building stones in the kingdom. But in certain districts where stone for dressings is scarcely procurable, or only so at a great cost, terra-cotta is no doubt a great boon, and the more we introduce into our designs good and honest material, such as terra-cotta, instead of the many shams which I regret to say are not yet quite annihilated, the higher will become the standard of our nineteenth-century architecture.

Advance of Terra-cotta.

Now, I think, I may venture to say that no one has done so much for the advancement of terra-cotta in the present day as Mr. Alfred Waterhouse. His Natural History Museum at South Kensington is, I think we must all admit, a most perfect success, and has done more to call forth the potter's art, and the thoughts and abilities of other art workmen, than any other building of the age; and there is every evidence of this material becoming extensively employed, not only in the form of dressings and enrichments, but in ashlar-shaped blocks for walling. The Constitutional Club, Northumberland Avenue, is an instance of this, and I think the result on the whole is satisfactory; and I ascertained when at Birmingham the other day, that in spite of the strong protests made by masons and others against the use of terra-cotta for the new Assize Courts there, that material will nevertheless be used as proposed. Now, what would be the feelings of that master craftsman and great potter, good Master Josiah Wedgwood, could he revisit this earth and see such a building as the Natural History Museum? Would he not think of the time when architects scouted his suggestions for the introduction of raised ornamentation in their façades and other enrichments of their buildings? It is always somewhat surprising to us, when we witness such happy achievements as that at South Kensington, that it has been so long in being brought about, particularly when we remember that all over the Italian Peninsula during the Mediæval period, burnt clay of a decorative character was in free and frequent use in architecture. But we need not go to the Continent for early examples. Burnt clay ornamentation—especially in chimney-stacks—is with much effect employed at Thornbury Castle, Gloucestershire, Eton College, and Hampton Court. I may also mention that the chimney-stacks of many of the old Sussex homesteads are interesting examples. This subject of terra-cotta reminds me of another blow poor old stucco has recently received, I allude to the rage for brick buildings, induced, I conceive, by the introduction of the style generally termed—but I am afraid not always recognised as—"Queen Anne." But I think it is quite a question with us, situated, as I have already said, in the midst of a stone country, how far we are justified in encouraging a taste for brick buildings. I remember some years ago many architects were strong in advocating the use of local materials, viz., bricks in the clay districts, stone in the stone districts, and wood in the woodlands; and I recollect a facetious correspondent in one of the professional journals remarking that "to carry out the extreme principle, it would compel us to build our ships of oyster-shells and fish-bones."

Architectural Federation.

To go to another subject: I presume that on an occasion like the present I shall be expected to allude to the subject of architectural federation. Now I fully approve of the principle of federation, and I believe if some satisfactory scheme can be devised it would prove of immense advantage to our profession and the public; but I do not think some of the chief promoters of the scheme have as yet realised the difficulties which will be found in dealing with its details. Although a member of the Architectural Federation Committee, of which Mr. Edgar Farman is honorary secretary, I have refused to sign the form of declaration which proposes to admit into our ranks as architects local board surveyors and land surveyors. The framers of this document might have gone a little further and included inspectors of nuisances. Unfortunately, our profession is at present one in which any man—no matter how ignorant or how unqualified—can enter, his diploma consisting simply of his door-plate, and his qualification the impudence with which he dubs himself "architect"; and I for one will therefore welcome most cordially any scheme of federation which is likely to bring about a better state of things, and I believe that the true and proper solution of the difficulty—a solution in which the interests of the profession and the status of its members will be best taken care of—will result from the labours of the R.I.B.A.

Federation Committee, upon which I have the honour of representing you.

Advice to Students.

Now, I believe that something like 25 per cent. of the members of this Association consists of students, some of whom no doubt are on the threshold of a noble profession, and to these the remainder of my remarks will be more particularly addressed. I often think of the immense advantages which pupils in London have over their provincial brethren; the facilities for attending the architectural school of the Royal Academy, the British Museum with its wonderful library, courses of lectures at other institutions, and other benefits which, if wisely used, are of the greatest value; but then, on the other hand there are temptations in London to divert the mind from its proper channel, which do not—to the same extent at least—exist in the provinces. Now, what I want the student or the pupil of the present day to do is this. If the fates are against his being made an artistic architect, let him endeavour to help us to make him a practical one. Or, if you take exception to the word "practical"—which I must confess is somewhat hackneyed and frequently misapplied—let us say a scientific architect; and I say "help us" because so much depends upon himself. Let him at once face the truth, and recognise the fact, that unless he takes some special means of study on his own account that he may acquire an amount of knowledge beyond that which he gains in the office, he cannot hope to succeed. If he closes his mind with the office door, he will never attain to proficiency. I will yield to no one in making a liberal allowance for what I may term "unbroken colts." I can feel for the quondam schoolboy who has to put aside, to some extent, his cricket, or his football, and other games so dear to English lads; but he must be reminded that without diligence, or a proper course of professional study—which I am sure, both for our sakes and his own, we are at all times willing and anxious to direct—he will assuredly be worsted in life's battle, and become, not only a reproach to himself, but a disappointment to his friends.

Self-Culture.

Self-culture is always most permanent and the best, and it is particularly so in our profession. It is impossible for the young architect to acquire in an office much more than the requisite technical skill. His own exertions must do the rest, and he should remember that

> He that by the plough must thrive,
> Himself must either hold or drive.

Such associations as ours ought to be most valuable adjuncts to architectural education, and I would urge upon the younger members the importance of their favouring us with papers, and they may depend upon it that the party most benefited by a paper is the individual who writes it, and here let me say that I consider it a mistake to always select a subject you are most familiar with; it would be better sometimes to take a subject you are practically ignorant of, but at the same time desirous of acquiring a thorough acquaintance with. Then set to work systematically about obtaining all the information you can with regard to it, and I can assure you, before your paper is concluded the knowledge you have acquired will be so fixed upon your memory as to be always at your service when called upon.

Talking and Tact.

But these papers should be well discussed as well as written, in which the younger members should take an active part, for I am sure they would afterwards find such discussions to be of the greatest benefit to them, if they tend to do no more than make them "speak out;" because, in the course of business, an architect is frequently called upon to explain some matter or other to a body of men—say a town council, a committee, or even a public meeting, and the young architect would find on such occasions that open discussion had done much to facilitate his expressing himself clearly and to the point at issue. It is, to a great extent, a matter of practice, and ought to be persevered in. I know several men who can talk well, and sometimes eloquently, to a single hearer, but who are perfectly *hors de combat* when they have to address a dozen persons. And here I wish to say a few words about tact. A man may be clever, original, and commence to practice under the most favourable circumstances, and yet utterly fail for simply the want of tact. In my opinion, no two persons—say architect and client—can have much to do with each other without having much to bear with each other. Hence the necessity of tact; but not, mind you, the tact born of the servility and the sycophancies of a Pecksniff, or the surrendering, on the part of the architect, of what, in his opinion and judgment, is due to his profession and his client's real interests, for the purpose of pleasing his client by letting him have his own way, and for which, likely enough, he would ultimately blame you. I have found from experience that to obtain your way in what you believe to be the right course requires delicacy of touch, patience, power of sympathising with the prejudices of others, and, above all, a genial persuasiveness. For, as with a private client, so with a committee or any other body of men, he or they may be guided, or even persuaded, but will not be driven.

The Love of Art.

For some years now the love of art has been spreading, and its advancement would have been greater had not the depression in trade of late years somewhat arrested its progress; but if we are to judge from commercial statistics and other sources, there is already a rift in the cloud displaying a patch of blue sky and sunshine. I believe the tide has turned, or at least the ebb has reached its limit. Now, if this be so, a revival in trade means a revival and progress in art, and the skill of the architect will be more and more in request. It rests with yourselves what use you will make of your opportunities; certain circumstances will no doubt have their influence on certain men, and as "one star differeth from another in glory," one man may have to accept an engagement as draughtsman as soon as articles have expired, another may become a quantity surveyor, a third—seeing the struggle for an art man without a connection—may go in for arbitrations, dilapidations, light and air, and compensation cases. But it is in the power of all—directly or indirectly—to do something for the advancement of our future art and architecture.

Artistic Education.

It is scarcely within the compass of an address like this to deal with a subject of so wide a range as that of the artistic education of an architect. At the same time, I should like to say a few words upon it, and one of my reasons for referring to the subject is that it leads up to the question of what is likely to be the careers of our own sons who are likely to succeed us in our practice, and the sons of others whose professional education has been entrusted to us. I remember, when I was a very much younger man, and without what are generally understood to be encumbrances, reading a paper by Mr. (afterwards Sir) G. G. Scott, in which he said, speaking of the artistic education of an architect:—"I am quite unable to point out to my pupils, or my own sons, any means of obtaining a true artistic training but the most irregular and accidental." Well, I can assure you that I felt very much amazed at this; it seemed to me almost past belief. But experience comes to all of us if we live long enough; and now that I have been in practice for more than twenty years, having had several pupils through my hands, and my own son in my office, I can fully endorse those words, which, coming as they did from such a man, seemed so perfectly incomprehensible to me when I read them. These remarks, however, apply strictly to the artistic education of architects, and it appears to me—alluding very briefly to the subject—that the only way to acquire it is to remember that all fine art in architecture lies in the artistic treatment and perfection of the work when carried into execution, and the only way of attempting to accomplish this is to travel, for the man who is always seeing is always learning. Visit, sketch, and measure the best examples of ancient work, draw from the human figure, study animal life, natural foliage and botanical productions, treating them directly or in conventional forms; then come the true principles of colour, and its application to architectural decoration.

Surveyors and Arbitrators.

But still the world must have its quantity surveyors and experts in arbitration, light and air, and compensation cases. The world could not do without them, and, perhaps, they do the most useful, as well as—I am sure in some instances—the most lucrative part of the profession. And, *apropos* of compensation cases, I would just remark that if a man has not the ability or opportunity of becoming an artist, it is simply an application of the great law of compensation which rules that one man shall not have everything. This being so, we should all mutually assist each other in the great object we all, I trust, have at heart, viz., the advancement of our profession, remembering that in all ages the architecture of a country has testified more than anything else to that country's greatness.

A vote of thanks to the President was proposed by Mr. W. H. Dunn, and unanimously adopted.

ROYAL ARCHÆOLOGICAL INSTITUTE.

THE monthly meeting of the above Society was held on Thursday, in last week, at the rooms in Oxford Mansion, Oxford Street. The chair was taken by Mr. J. T. Micklethwaite, F.S.A., in the absence of Lord Percy, the president of the Institute. An interesting collection of Egyptian antiquities was exhibited and laid on the table by Mr. W. Flinders Petrie, who also read a paper on the city of Daphnæ, in Egypt, where he had made some important excavations during the past twelvemonth, under, at all events, one favourable condition, namely, the fact that the ancient history of that city

extended over only just a century (B.C. 666-566). Most of the treasures which he exhibited were discovered in the palace of King Psammetichus. This was followed by a thoughtful paper by Mr. Arthur Baker on the vexed question of "Architecture *v.* Archæology," and which of the two ought to prevail in the case of the restoration of parish churches; and he suggested, as a solution of it, that a board of examiners should be appointed by the Archæological Institute, jointly with the Institute of British Architects, with power to grant certificates of competency to persons desirous of being employed in church restoration. The reading of this paper was followed by a discussion. Among the other articles exhibited was an object lately dug up at Rotherhithe, supposed to be an ancient Roman amphora; but Mr. Flinders Petrie showed reasons for thinking that it was a piece of Egyptian ware of much more recent date. A letter was read from the Rev. Joseph Hirst, dated from Smyrna, October 25, in which he states that the Turkish Government has withdrawn all permissions given to Englishmen and other foreigners to excavate ancient sites within the Sultan's dominions, and also that large quantities of finely sculptured pillars, walls, and stones are being sold and utilised for modern building purposes; and a motion was carried that the Institute should take action, along with other learned societies, in protesting against this act of vandalism.

THE CAMBRIDGE UNIVERSITY LIBRARY.

THE Library Syndicate of Cambridge University have issued a report on the extension of the library building, a work urgently required. Mr. Pearson, R.A., will be the architect. His plans provide for the completion of the western quadrangle of the library, the western side of which is at present unoccupied, except by the beautiful but incomplete fragment known as the "old gateway." This gateway, which led into the old court of King's College, is a building of Henry VI.'s reign, and one of the most beautiful pieces of architecture in Cambridge. It is proposed to preserve and complete the gateway tower, and to fill the spaces on either side of it, between Cockerell's building to the north and Scott's building to the south, with erections three storeys high. On the south side of the gateway will be a safe-room, provided with fireproof walls and doors, for the manuscripts and most valuable books. The attention of the architect has been specially directed to safety from fire, economy of space, and the avoiding of dark corners. It is believed that while attending to these points Mr. Pearson has produced a convenient plan, and an elevation the architectural features of which are interesting and in harmony with those of the old gateway. It is estimated that the building will cost about 13,500*l.*, and the Syndicate recommend that the work shall all be carried out at once. Another proposal of the Syndicate is to accept the valuable collection of Chinese books offered by Sir Thomas Wade, and to confer upon the donor the honorary office of keeper of these books, with certain privileges. They also announced another important gift in the shape of a large collection of Sanscrit manuscript from Nepaul, made by Mr. Bendall, of Caius.

THE SURVEYORS' INSTITUTION.

ON Monday Mr. W. J. Beadel, M.P., the president of the Surveyors' Institution, delivered the opening address of the session. Mr. Beadel dealt mainly with the past and proposed legislation with regard to land. At the present moment there was a wide-spread indisposition to invest money in land. To show the altered state of things, it appeared that in 1875, 95,894 acres of agricultural land were disposed of, the purchase money being 4,969,783*l.*, or at the rate of 52*l.* an acre, while in 1885, 31,070 acres only were disposed of for 986,253*l.*, or an average of 32*l.* an acre—in round figures less than one-third of the quantity, one-fifth of the total amount in money, and a reduction in the acreage price of 40 per cent. In City properties values (warehouses somewhat overbuilt excluded) had been fairly maintained. In the suburbs houses and land had been depreciated partly by overbuilding and partly by reduced spending power. The quinquennial valuation of the metropolis under the Act of 1869 having been completed, the result was a rateable value of about 30½ millions, showing an increase of about one million and a half during the last as against an increase of nearly three millions in the previous five years, while the present small increase appeared to have been chiefly made up by an extra charge upon railways and other public undertakings. The suggested increase in land-tax and other charges upon land, instead of proving a national advantage, would further paralyse the agricultural interest of the country. It might fairly be urged that some of the existing charges should be transferred to personal property. With regard to the allotment system, if sufficient land were given to occupy a working man's whole time his labour would probably prove unremunerative, but allotments near towns would be of immense benefit to the artisan class in affording recreation to them. As to the remedy for agricultural depression, Mr. Beadel said that wheat-growing was the backbone of English farming, and, as foreign competition had led to the present state of things, he advocated legislation which would allow them to grow the largest quantity of wheat in this country, and so become dependent upon extraneous sources for a minimum rather than for all we require.

Correspondence

The New Charter of the Institute.

SIR,—As the Society of Architects has published a protest against the principle of the new Charter which the Institute has petitioned the Queen to grant, perhaps it has not yet been sanctioned. If so, it is not too late for a word or two on behalf of a body almost as much interested in its terms as architects themselves, namely, the public.

Is it, then, really necessary that all architects (whether members of the Institute or not) should be bound by regulations in the framing of which they have had no voice? Is it in the interest of the general public that a man shall be prevented from practising as an architect, however competent he may be, because he prefers freedom to the checks of a society whose rules he may not in all respects approve? It is certain that the Institute and its Charter are unnecessary to the attainment of the highest rank in the practice of architecture, as there are men equally distinguished who are and who are not members.

The Charter of "the Institute" and the proposed Registration Act of "the Society" are framed in the interest of the profession, which it can scarcely be maintained is invariably that of the general public. We know that disputes between architects and their clients do occasionally arise, and that when the former propose to refer the matter to the Council of the Institute, the latter often object on the ground of its being a one-sided tribunal. This is obviously natural enough, because laymen—as representing the public—have had nothing to do with framing the Charter or its by-laws. And in the present proceedings, the lawyers constituting the Judicial Committee can scarcely be accepted as representing the general public, unless they are in some way requested to do so.

This, I am inclined to think, ought to be done before the new Charter is granted. It is in every way desirable that the public should—if possible—have full confidence in the regulations by which architects who are members of the Institute are governed, but it can only possess this confidence by knowing that it has been represented when those regulations were framed.

Would it not, then, be well for the Judicial Committee to examine a few laymen as to the merits of the new Charter from the point of view of the public—laymen who have been connected with more or less important building projects, and know something of the duties, the responsibilities, and the remuneration of architects? If this could be done, I think there can be no doubt that the position of the profession would be improved, and that the public hereafter would probably be quite satisfied to be governed in matters of dispute by the Charter of the Institute.

At the same time, I think the right of men to practice with perfect honour independently of the Institute should be acknowledged in the Charter. Experience has proved that success is quite independent of any advantages the Institute can confer. It should, therefore, be no dishonour not to be a member. I am inclined to think that if the suggestion I have ventured to make were adopted, membership would soon be felt to be so honourable as to be a necessary distinction to every practising architect, and be secured as a matter of course.—Your obedient servant,

DEMOS.

Registration.

SIR,—Allow me to endeavour to show why the proposed scheme of compulsory registration is undesirable and impracticable. If the proposed Bill be brought before Parliament, the promoters will have to answer the following questions:—

"Do all the gentlemen who have signed your petition consider themselves competent to act as architects?"

"Have they all passed through the usual apprenticeship or shown their capacity by passing an examination?"

"If they have not entered the profession in either of these ways, why do they attempt to impose on others that which in their own case they admit to have been unnecessary?"

The application of these questions would certainly put out of court a large proportion of those members who have signed the petition, and convert them, though against their will, into

hostile witnesses. A large number of those practising in the country as architects have raised themselves from much humbler positions. In the future it will be far easier for others to do so. Is it pretended that these gentlemen are not as qualified to deal with the multifarious and puzzling duties of country building as the young architect green from an office, even though he may have successfully passed an examination in the science and art of his profession?

The public will continue to prefer the humbler practitioner for a large department of work, and, with the present facilities for education, he can easily make himself thoroughly competent for such work as should fall to him. It would be an ungenerous action, opposed to all modern ideas, to close to the man of talent the means of raising himself above the station of life in which he is first cast. In these days, any one with practical knowledge of building may readily qualify himself both artistically and scientifically to exercise the humbler branches of architecture, and it is quite certain that the public would not for a moment tolerate any restrictive action.

What does seem to be needed is that the public should have some means of knowing the relative status of architects; that it should be able to tell at a glance that the man who is well qualified to superintend repairs, or to erect farm-buildings, shops, cottages, mills, and villas of the humbler sort, has not had the education likely to qualify him for the design of more important dwelling-houses, churches, or buildings requiring scientific knowledge. He may possibly be well qualified for all these, and there can never be anything to prevent the public from employing him if they choose, but we have to see that they do so with their eyes open.

The name of architect has been used freely for centuries, and it is quite useless to expect that Parliament will sanction its restriction. It remains, therefore, for those who wish for registration to adopt a new name that they can keep to themselves. That is a very unpromising idea, and the result can, I think, be attained another way.

The Institute, by requiring a certain course of professional action, and insisting on a competent education, offers the public a guarantee that all members of its body are fit and proper persons to practice as architects. It is open to the Society of Architects, whose conditions of membership are apparently less strict, to offer a similar guarantee, and it is open for any number of similar societies to do the same. The point is then to get the public to recognise the value of these guarantees.

Putting occasional exceptions out of view, there is only one safe way of getting anything from anybody, and that is to offer them a fair exchange for it. If these societies wish to obtain any substantial recognition from the public they must be prepared not only to look after their own interests but after those of the public, and they must act and not be content with talking. Whatever society does most for the public will get most respect paid to it, and will swallow up the others. I venture to say it lies in our own hands, without the intervention of Parliament, to create a position for ourselves quite equal to any to be created by an artificial system of registration.—I am, Sir, faithfully yours,

RALPH NEVILL.

November 10.

CHURCH BUILDING AND RESTORATION.

Bongate, Appleby.—St. Michael's Church, Bongate, which has just been restored, has been reopened. Mr. C. J. Ferguson, Carlisle, was the architect, and the following were the contractors:—Stonework, Mr. George Robinson, Appleby; woodwork, Messrs. Slinger & Gowling, Appleby; plumbers, Messrs. Thomson, Carlisle; painter and glazier, Mr. Palmer, Carlisle; slater and plasterer, Mr. G. Potts, Appleby; clerk of works, Mr. William Harrison, Bongate.

Winthorpe.—The foundation-stone of a new church has been laid at Winthorpe, near Newark. The architect is Mr. S. Gambier Parry, of London, and the builders are Messrs. Mackenzie & Son, Newark, Mr. J. Handley being clerk of works.

Eppleton, Hetton Downs.—The foundation-stone of the new church of All Saints has been laid. Mr. R. J. Johnson, of Newcastle, is the architect; Mr. Robert Boyd, of Gleasby, Darlington, the contractor; and Mr. T. Adamson, of Sunderland, clerk of works.

Penarth.—The memorial-stones of a Presbyterian chapel, which is now being rebuilt, were laid on the 1st inst. The building is in a free treatment of Romanesque, and is being carried out from the designs and under the supervision of Mr. J. H. Phillips, architect, Duke Street, Cardiff. Accommodation is provided for about 380, and the cost will be about 800*l.*

Bo'ness.—The memorial-stone of a new parish church has been laid. The architects are Messrs. Thorton & Shiells, of Edinburgh. The contracts are being carried out by the following tradesmen, viz.:—Mason work, Mr. Russell, Bo'ness; joiner work, Mr. Smith, Stirling; pulpit and chancel, Mr. Smith, Stirling; plaster work, Mr. Ferguson, Bo'ness; slater work, Mr. Kilpatrick, Bo'ness; plumber work, Mr. Hodge, Bo'ness; glazier work, Mr. O'May, Falkirk; heating, Messrs. Robinson & Son, Edinburgh; painter work, Mr. Craig, Bo'ness; gas and fittings, Messrs. Laidlaw & Sons, Edinburgh; ironwork, Messrs. Morrison & Co., Bo'ness.

GENERAL.

A Picture, *The Pass of Leny*, by Mr. John Smart, R.S.A., in Dundee Fine Art Exhibition, has been purchased by Mr. J. G. Orchar, and presented to the permanent collection. This is the seventh picture Mr. Orchar has presented to the Dundee Picture Gallery.

Mr. Phipps, F.S.A., and Mr. Hollingshead have been making an inspection of theatres in Germany, with a view, it is said, of erecting two new buildings in London.

Mr. W. Agnew, chairman of the Fine Arts Section of the Manchester Jubilee Exhibition, has intimated that the members of the Manchester Academy will be requested individually to send a representative work to the forthcoming exhibition at Old Trafford.

The Exhibition of the Aberdeen Artists' Society closes to-morrow (Saturday). Little public interest has comparatively been taken in it except by the working-classes.

A Portrait of Mr. Philip Horsman is proposed to be placed in the Wolverhampton Art Gallery as a memorial of his gift of that institution to the town.

The Liverpool Exhibition, which has just closed, has been visited by 2,682,516 persons since the opening on May 11.

The Birmingham Art Gallery Committee report that 178,282 persons, a daily average of 696, have visited the gallery during the past twelve months, that no fewer than twenty-six pictures have been presented during that time, and that no damage has been done to any of the works of art.

Mr. Fowler, the architect, has been elected Mayor of Louth for the year of office just beginning.

Mr. R. Horsfall, architect, has been re-elected Mayor of Halifax.

Mr. R. W. Moore, at the meeting of the Leeds Architectural Society on Monday, read a paper on "Reminiscences of Old Edinburgh."

A Paper on "Towers and Spires" was read by Mr. M'Nab, the president, at the meeting of the Glasgow Architectural Association last week.

The Jubilee Year is proposed to be marked in Denbighshire by rebuilding on Moel Fammau, one of the highest mountains in the Vale of Clwyd, the tower which was erected in commemoration of the Jubilee Year of George III., and which collapsed in 1862.

Mr. J. F. Kempson, architect, of Hereford, has been elected Surveyor of Ecclesiastical Dilapidations for the Diocese of Llandaff, in succession to the late Mr. Prichard.

Mr. T. Lewis, the Mayor of Bangor, intends to present a tower and clock to the city of Bangor during this his second year of office.

The Public Baths at Richmond, Surrey, have been nearly destroyed by fire, the large swimming baths fortunately escaping injury.

Messrs. Blaikie Bros., engineers and ironfounders, Footdee, Aberdeen, have just entered into a contract with the Great North of Scotland and Highland Railway Companies to erect a steel over-bridge across the railway in the vicinity of Elgin stations.

Mr. E. J. Osborn, Upper Holloway, London, was on Wednesday appointed clerk of works to the new infirmary which is in course of erection at Birmingham. The salary is 6*l.* per week, and there were 141 applicants.

Mr. D. Wood, manufacturer of Glossop, has offered to build and endow a hospital for the town at a cost of 25,000*l.*; Mr. S. Wood to construct and endow public baths; and Mr. Partington has added 2,000*l.* to a like sum given by Mr. Rhodes towards a free library and town-hall.

Mr. John Sleddall is about to build and endow twelve almshouses for decayed tradesmen at Kendal. The houses will be erected from the designs of Mr. Eli Cox.

Miss Eason, of Gurdon, has given 1,000*l.* and a site for a new church in Parkgate, Darlington.

The Aston Board of Guardians have selected plans for the erection of a new block of imbecile wards, and other works. Several Birmingham architects were invited to submit plans in competition for the work. The Guardians, in consultation with Messrs. Henley and Jenner Fust, Local Government Board inspectors, have adjudicated upon the plans submitted, and selected those of Messrs. John G. Dunn & F. W. Hipkiss, of Waterloo Street, who have been appointed architects.

The Architect.

THE WEEK.

When writing, on October 8, about the election of a supervising architect, we remarked from what we saw of Mr. Vulliamy that he was running a risk to himself in agreeing to hold office. It must have been evident to any careful observer that Mr. Vulliamy could not undergo the fatigue of his post during many months. We regret to find that our prognostics were verified. At the meeting of the Metropolitan Board on Friday last the announcement was made that Mr. Vulliamy was no more. One member said that it was evident a few days before that Mr. Vulliamy's constitution was giving way; but so much might be observed a month earlier. During the twenty-six years which Mr. Vulliamy held his most difficult office he discharged the duties in an honourable and equitable way. His decisions might not always give equal satisfaction to all parties, for that would be an impossibility; but we never heard of a case in which anyone impugned his honesty. He often sided with architects against district surveyors, and it is rather surprising that at the meeting on Monday testimony to Mr. Vulliamy's good qualities was not borne by some member of the Institute who was not an official under the Building Act. To most architects he was known simply as supervising architect or surveyor, but he was so able a designer and draughtsman as to merit recognition among the artists of the profession. The proposition of Mr. Smith that an exhibition of Mr. Vulliamy's works should be held in Conduit Street did not appear to be accepted by the authorities of the Institute, but it is to be hoped that no obstacle will be raised to such an exhibition. It is not much of a tribute to offer to the memory of a man who was so closely connected with the architects and architecture of London. Mr. Vulliamy was buried in the churchyard of Stone, near Greenhithe, on Wednesday.

Mr. George T. Doo, who died at Sutton, on Saturday, was, we believe, the last of the old line engravers. He was born in January 1800. He was first brought into notice by his engraving after Lawrence's *Duke of York*, in 1824. Afterwards he studied abroad, and on his return set up an antique and life academy in the Savoy. Mr. Doo was one of the nine engravers who, in 1826, presented a petition to the House of Commons praying that an investigation might be made into the state of engraving in England, as neither the art itself nor its professors derived adequate consideration, encouragement and respect from the institutions of the country. In 1836 he was appointed engraver to William IV., and in the following year he was the representative of the historical and landscape engravers who presented a petition to the King on the position of engravers in the Royal Academy, which was said to be humiliating. What was sought was the assigning to the most skilful engravers "the same honourable rank that is bestowed on those of every other branch of fine art." Lord John Russell, who was Secretary of State, in reply, wrote to Mr. Doo saying he must decline recommending His Majesty to accede to the petition. A similar petition was presented in 1812 with the same result. Although Mr. Doo was appointed engraver to His Majesty in 1842, he was not elected an Associate until 1855. Among the best known of his engravings are those after Wilkie's *Knox Preaching before Mary Queen of Scots*, Eastlake's *Pilgrims in Sight of Rome*, Correggio's *Ecce Homo*, Etty's *Woman interceding for the Vanquished*, Reynolds's *Exiled Noblemen*, Vandyke's *Gervatius*, and several portraits after Lawrence. He joined the Artists' Annuity Fund in 1825, and was elected President in 1825. Mr. Doo was elected an Academician in 1856, and for a long time has been on the retired list.

It is wonderful how interesting and important a building is discovered to be when it is on the eve of destruction. There is no great love for old buildings in England, for many of the best have been allowed to fall into a decay that is dangerous to their existence. But as soon as there is a project to utilise one of the sites for another purpose, behold a sudden uprising of an army of enthusiasts for the preservation of the building. As a rule, the defenders of antiquity will only talk; they leave the privilege of paying to others. Hitherto Staples Inn, in Holborn, was neglected. The governing body, therefore, thought they were safe in selling their property, and, according to rumour, they received 80,000*l.* from Messrs. Trollope for it. Now, Staples Inn would seem to have been the idol of London. Of course, the Royal Institute of British Architects must make a show of taking an interest in the place. The President is, however, a man of business, and does not commit himself to anything definite either for or against the transaction. "We feel it incumbent on us," he says, "to call public attention to the contemplated removal of any interesting record of the past, so that those who have the power or the means may, at least, be made aware of their value, and may thereby be induced to appreciate the desirability of maintaining those works of artistic historic value, the preservation of which adds so largely to the interest of our great city." It is evident from the cautious letter that the President feels that nobody cares about the valuation of the Institute, and indeed if the interest of a work is not self-evident, there is little chance of its preservation. The Commons Preservation Society approach the City Council, which is supposed to have an exchequer that is unlimited, and suggest that it is "peculiarly the function of the Corporation to preserve all that is ancient and venerable within the City." If that were correct, then many recent buildings are illegal. Knowing the alleged propensities of citizens to indulge in the pleasures of the table, it is said that the "hall of the Inn is excellently adapted for banqueting purposes." The Corporation are not to be caught by blandishments under that form. The existing Staples Inn is not of great age, and has no historic importance. The hall is the most interesting part of the property, but it is hardly worth preserving at the price of 80,000*l.*, for unless the whole site is turned to account, a profitable arrangement of the property is impossible.

Among the statuary in this year's Salon was a great figure of Vercingétorix, representing the young warrior at the time when the Gauls had made him their chief. It was the work of M. J. J. François Mouly. He had already received an honourable mention for one of his statues, and he anticipated this year that one of the medals must be awarded to him. Like so many sculptors, M. Mouly was a poor man, and it was with the greatest difficulty he raised money to pay for the models and the plaster for his figure. But his hope was in the Salon. If the figure brought him a medal he was sure to receive a commission, and all would then go well. He was married, and had five children, for whom bread had to be found. His figure was not thought worthy of more than a mention, and there was no order given for its execution. Indeed, there is, of late, a superabundance of figures of Vercingétorix, and the public authorities may be excused for passing over another. His *département*, also, was not tempted. The disappointment brought the unhappy artist to a state of insanity. His wife carried him away to some relatives near Bordeaux, in the hope that a change might be curative. First, he tried to kill his wife, and then he attempted to throw himself under a locomotive. It was decided to place M. Mouly in an asylum, but he contrived to escape from his keepers, and killed himself at the roadside. He had not reached his fortieth year.

The interim reports on the South Kensington Exhibition will disappoint people who anticipated a surplus which could be applied to some useful purpose. It is not yet certain whether the guarantors may not have to make up for a deficit. The Committee say they are confident that no claim will be made on the guarantors, but there is something ominous to them in the statement that "many of the objects purchased by the Royal Commission in India have yet to be disposed of." Suppose purchasers are not forthcoming, what is to be done? The Inventions produced a loss of 5,437*l.*, and all that remains of the surplus of the Health Exhibition is about 3,000*l.* What seems most amazing is the item for buildings. Under that head we find 44,238*l.* for the Fisheries, and 47,045*l.* for the Health Exhibition. The cost for the succeeding Exhibitions is not given. It is evident that flimsy sheds are an expensive form of structure.

RICHARD WAGNER.*—II.

IT will be asked, What brought WAGNER to Paris when he first went there in 1839? He was a German of an almost ideal type, and, as he was twenty-six, he was old enough to know that he must be out of place in the French capital. But he was one of those men over whom Paris exerts fascination. Whenever he went there he was rejected, and suffered keenly, yet he was always ready to repeat his visits. For him the city was the *belle dame sans merci*, and he continued to be as much in thrall as any Mediæval knight to the enchantress. He made a roundabout journey to Paris by way of London, and we cannot understand why he did not remain with us if he wished to have an exile's experience. Opera flourished in London in 1839. A band of speculators who took Her Majesty's Theatre cleared 10,000*l.* in that season, which was memorable by the first appearance of MARIO here. RUBINI, GRISI, LABLACHE, DORUS-GRAS, TAGLIONI, and other opera stars were then shining, and, as regards concerts of an expensive class, London was said to be "concert mad." If WAGNER stayed among us it would have been better for himself and for his art too; but probably he resembled M. GARNIER, the gold medallist, and considered that London was *la ville anti-artistique*.

At Boulogne WAGNER met MEYERBEER, who gave him letters of introduction to a manager and a firm of publishers in Paris. HENRI HEINE, when he heard of the auspices under which the composer landed, said he was distrustful of WAGNER because of the man who had recommended him. Afterwards the poet was a little more sympathetic. WAGNER was throughout his life regardless of economy, and it was probably at his wife's suggestion when he engaged lodgings in one of the back streets of Paris near the Halles. At first everything seemed propitious. His "Novice of Palermo" was accepted at the Renaissance, and an overture for the Conservatoire. It was found, however, that the executants could not make head or tail of the overture and declined to play it, and, as ill-luck rarely comes alone, the lessee of the Renaissance became a bankrupt. Fortunately for WAGNER he was able to write articles in the *Gazette Musicale*, and for a time contrived to keep himself alive. He also transposed one of DONIZETTA's operas for the piano; he composed airs for French songs at prices varying from 12 frs. to 22 frs., and was willing to do any journeyman's work of a musical kind. He was invited to supply the music for a vaudeville, but actors and actresses rebelled when they heard what they were expected to sing. He tried to get humble employment as a chorus singer, but was found incompetent. His "Columbus" overture was sent over to London to M. JULLIEN, but the ringletted conductor did not consider it to be suitable for his promenade concerts. He returned the manuscript, but did not pay carriage. WAGNER was not possessed of the small sum that was due, and in consequence the overture was taken back by the carriers and was henceforth as much lost to the world as the comedies of MENANDER. People often say that Paris is a kindlier place than London for a man of genius when he is needy, but in spite of his industry WAGNER must have starved if a few of his humble countrymen, who resided in the city, had not come to his rescue. It is not surprising that he wrote and said harsh things of contemporary musicians who were successful, or that he considered LISZT, who was to be his doughtiest champion, as a charlatan. He made an exception in favour of BERLIOZ, who also was disregarded as a composer by the public. In spite of his misery, WAGNER could become enraptured in those days when he was permitted to hear a symphony by BEETHOVEN or WEBER's "Freischütz." We have an anticipation of his revival of so many of the oldest legends when we find him saying, after hearing that opera, "How I must love the Germans who still believe in legendary marvels, and who, as men, continue to be agitated by the terrors of childhood." He took heart, for the success of WEBER appeared to be the triumph of Germanism.

WAGNER's "Rienzi," which he brought with him incomplete, may be said to have resembled the ordinary Italian grand opera. In his misery in Paris and enforced idleness, he could hardly fail to reflect often on problems of music and of life, and in what he wrote at the time one can discern that a change was being wrought within him. He imagines BEETHOVEN as saying that the sounds of instruments pre-existed in the primitive world as the organs of nature, while the human voice is a direct interpreter of the human heart and of our abstract and individual sensations. The words give us a clue to much that is to be found in the later operas. When the singers' voices are overwhelmed by the force of the instrumentation, we have the struggle of Man with Nature, of Man with Fate. Instrumentation is no longer a subservient accompaniment to support the singer, but a rival force, and which often seems to be the conqueror.

MEYERBEER appears to have been absent during the time when WAGNER was suffering. When he returned to Paris he introduced him to the director of the opera. Whether WAGNER proposed the unfinished "Rienzi" we cannot tell. All we know is that he offered to submit the sketch of a new opera. What he had in his mind was the story of the "Flying Dutchman." Some of our readers who are no longer young, and who were playgoers in their youth, may be able to recall FITZBALL's "Vanderdecken," if they have seen the incomparable T. P. COOKE or one of his imitators in the principal character. The weird drama impressed HEINE, and he retold the story in his most charming style. On application he gave permission to WAGNER to dramatise his version. WAGNER was an able playwright, and his libretto was so captivating that the director offered to purchase it in order to get somebody else to write music for it. WAGNER was overwhelmed by the disappointment, but his needs were so pressing that he was compelled to accept the offer. He received 500 frs.

After this he abandoned the hope of finding any success in Paris, and turned his thoughts homewards to Germany. "Rienzi" was completed with a view to its performance in Dresden, and through MEYERBEER's interest it was accepted for that theatre. But in order to visit Dresden it was necessary to pay for conveyance, and WAGNER was compelled to produce several transcriptions for the piano of other men's works in order to gain a few pounds for travelling expenses. At last he was enabled to fly from Paris. All he had gained by his three years' sojourn there was the discipline which sorrow gives.

In Dresden he found a capacious opera house which SEMPER had completed not long before. "Rienzi" was produced under WAGNER's direction, and was an unqualified success. But he was not satisfied, since neither story nor music could be called German. He persuaded the management to mount the "Flying Dutchman"—that is his own opera—for the Frenchman's (with WAGNER's libretto) was a signal failure. But the legitimate version at Dresden was not more successful. The opera-goers cared only for something that was pleasing to the eye and ear. Henceforth the composer resolved to satisfy an audience that was fit, if few.

The "Flying Dutchman" was the beginning of the Wagnerian era—although enthusiasts may say it was rather an antecedent of the beginning. It seems to us to show signs of a new influence in the mythic character by which it is so widely separated from old FITZBALL's drama or HEINE's story. To WAGNER the Dutch sailor was only a later type of ULYSSES, the Wandering Jew, and other victims of Destiny; and all were expressions of physical phenomena. What was the influence which gave so unoperatic a spirit to WAGNER's *dramatis personæ*? We imagine that it was to be found in the teaching of SEMPER, who was then in Dresden, and with whom WAGNER could not fail to be associated. SEMPER's theories were exactly of the kind that would impress such a man as WAGNER; they afforded him a ready-made solution to the mysteries of life, and helped him to interpret old legends in a way that was satisfactory to himself. WAGNER was a nineteenth-century representative, from his belief in the omnipotence of scientific laws and the unimportance of the individual (himself, of course, excepted); and in his dramas we see the power of an

* *Richard Wagner: Sa Vie et ses Œuvres.* Par Adolphe Jullien. Ouvrage orné de Quatorze Lithographies originales, par M. Fantin-Latour; de Quinze Portraits de Richard Wagner; de Quatre Eaux-Fortes, et de 120 gravures; Scènes d'Opéras, Caricatures, Scènes d'intérieur, Vues de Théâtres, Pièces autographes, Costumes d'acteurs, &c., &c. Paris: J. Rouam. London: Gilbert Wood & Co.

external force, destiny, or nature that is more inevitable in its effects than the fate which presides over the Greek tragedies. All this has a close resemblance to what Semper maintained. Afterwards Wagner came under another influence not far removed from the first, namely, Schopenhauer's, from whom he acquired the faith that life was only a delusion, separating nothingness from nothingness. Latterly, and it may have been through the influence of Liszt or one of his friends, Wagner recognised that in the legends belonging to Christianity there was something which was neither mythic nor Buddhic, and if years had been granted to him, who knows but the "Parsifal" might have become the forerunner of operas which would be essentially human?

Wagner must be comprehended before he is appreciated, and that is impossible if the ordinary rules of drama and opera are applied to him. We need not discuss whether so much mental exertion is compatible with pleasure. The majority of men and women can find more enjoyment in the woes of Amina and Elvino, considered simply as mortals in the dress of stage peasants, than in the harmonious philosophy of Tristran and Iseult as they take an everlasting farewell before they are absorbed into chaos. Whether at a future time, when Schopenhauer prevails, there will be a different mode of thought we dare not say; but, on the eve of the universal suicide which according to some folks is to be the climax of a cultivated humanity, it will be difficult to find a worthier entertainment than Wagner's opera, in which pessimism is expressed through the medium of flats and sharps and with trombones and kettledrums.

During his residence in Dresden Wagner was productive, and he was able to have new operas produced, although they invariably caused much loss to the treasury. It was said that every new opera sent the publisher to a higher floor in the building which he occupied, and if the composer remained in Dresden the publishing office must have been above the roof. Wagner did not confine his attention to his own operas. He produced Mozart's "Don Juan," reading the score in a manner which gave great dissatisfaction to amateurs. He had a sort of triumphal performance of the "Vestal" to give honour to Spontini, but the old maestro did not recognise Wagner as a successor. Weber was another of his heroes; and when the author of the "Freischütz" died in London, Wagner became the leading spirit among those who sought to bring back his body to Germany. There seemed to be no limit to the energy of Wagner while he was director in Dresden.

Wagner could hardly dwell in Dresden for six years without having his head filled with novel notions about other things as well as operas. When the revolutionary year 1848 dawned upon Europe, he was ready to help in creating a new world. Having found that he could do as he liked in Dresden, owing to royal protection, he may have thought that politics were as easy to control as the theatre. "You are a man of genius," said a prima-donna to Wagner, "but you write things so eccentric that they cannot be sung." Somehow they were sung, and as a legislator he might be no less effectual. However, he wished to give a harmonious character to the revolution. He began, therefore, by writing to the King, his patron, advising His Majesty to resign and become first citizen of the republic. His next step was to take a position on the barricades, for which, we believe, Semper was the director-general. The King ran away, and for a time Wagner must have felt that he had discovered a new way to pay old debts; but the Prussians quickly came to the rescue of royalty, and Wagner and Semper forthwith fled from Dresden. Semper found his way to London, while Wagner secured a refuge with Liszt at Weimar. It was soon discovered that he could not be secure there, and Wagner once more took the road to Paris. The Parisians had already more than enough of revolutionists, and Wagner again saw that he was not destined to conquer the city. Like many other representatives of a lost cause, he sought an asylum in Zurich.

In Zurich he found himself among theorists of many kinds, and it was not surprising that Wagner should also lend a hand in explaining how a world that was out of joint was to be set right. He was heavily in debt when he left Dresden, and, as is usual in such cases, we may suppose that some of his creditors were Jews. At Zurich Wagner lost no time in showing that he also had something to say about Jewish influence. His argument was that no Jew could be a musician. He cited Meyerbeer and Mendelssohn as proofs. According to Wagner, they were no more able than others of their race to get beyond the outside of things. A Jew might have senses, affections, passions, and a hooked nose like Wagner; he might have a history of which the facts were more inspiring than the legends of the bards, but on account of his race he could not compose a song. Henri Heine might express the tragedy of the "Flying Dutchman" in words, he might write the most exquisite of lyrics, but beyond that he dare not go; moreover, an adamantine law prohibited any of his race from sounds that corresponded with the words. The Wagnerites and a chosen few who lived a few years earlier were ordained to be the monopolists of the music of the spheres, or the boundless vacuity in which everything is supposed to be annihilated. The sweet singers of Israel were unworthy and incompetent to shout in Wagnerian choruses.

While Wagner was strong in his wrath against Judaism he was invited to conduct the Philharmonic Concerts in London. A notability was indispensable, for the rival society had got hold of Berlioz. He condescended to come, but took care to make everybody feel that he was sacrificing himself. There were traditions of Mendelssohn in the society, and the performers and committee were proud to adhere to them. But then Mendelssohn was a Jew, and Wagner soon made it plain that the quantities in the score were valueless if music was desired. The pieces were not to be taken as written, but as the conductor willed. Whatever may be the faults of Englishmen, they are not ungrateful, and as Mendelssohn showed himself to be friendly towards the Philharmonic Society, it was only right that the committee should adhere to the composer's own interpretation. There was consequently much dissatisfaction with Wagner, but as he possessed the support of the Prince Consort it could not be as freely expressed as it was felt. His plan of conducting the elaborate pieces of Beethoven without a book was also considered to be running risk in order to display the strength of his memory.

At Zurich Wagner was amidst men of genius, but they are not always the best supporters of operas and concerts. Wagner was impelled to make another trial in Paris. He resolved at first to confine himself to concerts. There was, however, much difficulty before he was able to secure a hall. It could not be denied that Wagner had gained a reputation, since his music was the subject of debate throughout a great part of Europe. What decision was to be given by the Parisians who arrogated to themselves the office of arbiters in such matters? At that time everybody took the cue from Berlioz, some directly, the remainder at second-hand. Heretofore he had been rather friendly towards Wagner, but on this occasion he decided against his works, and all Paris echoed his judgment. The concerts were therefore not successful if tested by the receipts.

There was another chance left to Wagner. Through the influence of Madame Metternich, the director of the opera house received a command to mount "Tannhäuser," and under Wagner's superintendence. The composer wished to have Faure for the principal *rôle*, but as he wanted 8,000 francs a month, another performer at 3,000 francs was substituted. A work of the class was novel to singers who were accustomed to the grand operas of France and Italy, and many stormy scenes took place at the rehearsals. But at last the work was ready, and the accessories were in the sumptuous style that was characteristic of the French opera house. To the discredit of Paris, "Tannhäuser" was not allowed a fair trial. The members of the Jockey Club were supposed to have betted against it, and attended in full force, armed with whistles and cat-calls. A scene followed that could only be compared with one of the O.P. riots in London. There was not enough public opinion among opera-goers to insist on justice against a band of pseudo-aristocrats; a few people attended out of curiosity, but from the first the opera was doomed. All Wagner received out of the three performances was 30*l*. It must be recorded with sadness that the downfall of Wagner did not excite any

compassion in the mind of BERLIOZ; he was jubilant at the result.

On the occasion of his first failure in Paris WAGNER found a consolation in returning to Germany. Happily he was able to again take the same route. By the intercession of the Grand Duke of BADEN he was granted freedom from arrest in all parts of Germany, with the exception of the kingdom of Saxony. He returned as poor as when he left, but the hisses of the Parisians had elevated him to the rank of a martyr among his countrymen.

(*To be continued.*)

M. PAUL BERT ON COLOUR.

THE late M. Paul Bert, who died in Hanoi on Thursday in last week, was no less distinguished in science than in politics. Originally he intended to become a civil or military engineer, and he entered the Ecole Polytechnique; but he suddenly changed his mind, studied law, and gained a diploma. However, as he said himself, he criticised laws instead of learning them, and was interested only in Roman and comparative law. Afterwards he was induced to take up physiology, and for five or six years he served M. Claude Bernard as assistant, and afterwards as a deputy at the Sorbonne. In January 1878 M. Bert informed the Académie des Sciences of various experiments he had made in respect to the observation of complementary colours by painters. The following abstract of the paper is found in M. Veron's book on Æsthetics, and will be read with interest, for the death of the Resident-General in Annam is a great loss to France:—

If we observe, from some little distance, the green light resulting from the intermixture of blue and yellow rays—such, for example, as that given by the lamps of a Paris omnibus—we perceive that its colour increases in blueness as its distance becomes greater, and *vice versâ*. If the omnibus be approaching the observer, a moment will arrive when, with a sort of wrench, the real colour becomes suddenly apparent. This result is not, however, absolutely constant; certain conditions seem to be necessary, of which the most important is the presence of a given amount of watery vapour in the air. It will then be readily perceived that of the two colours which compose the green light, blue is the more persistent.

M. Bert seems to have ascertained from other and less careful observations that, in the case of the colour violet, when seen from a distance, the red dominates the blue; again, orange gradually sinks into red. From all this it would seem that the most persistent of colours is red, after which comes blue, and, last of the three, yellow.

We know that there are some painters, and by no means mediocre ones, who make some favourite colour predominate in their works even to exaggeration—with one, it is yellow; with another, violet, &c. It is commonly said of them that they only see yellow or violet. This favourite colour sometimes varies with the succeeding epochs in the life of one and the same painter; so Décamps painted everything lilac in the later years of his life, until people were driven to look on it as the consequence of some physical modification in the sensory apparatus of his eyes.

In order to investigate the bearings of this interesting fact upon physiology, and upon the history of art, M. Paul Bert painted a number of coloured spots, in plain tints, upon a blank canvas. He then got one of his friends, a painter by profession, to copy these spots. But first it was arranged, not only that he should use spectacles of various colours, but, as an additional precaution, the colours were arranged upon the palette by a strange hand, so that the painter, not having his usual arrangement before him, was obliged to examine carefully the composition of the tints which he had to use for his copy.

This experiment confirmed the *à priori* conclusions. The painter seeing through the same glasses both the spots to be copied and the colours upon his palette, committed the same error in his appreciation of the former and his mixture of the latter. Consequently, he was not satisfied with his work until it seemed to be really similar to his model. Looking through the coloured glasses had no other effect than to increase the difficulty of the imitation.

Two exceptions, however, must be made to the latter statements. Suppose the colour of the glasses to be green. If with them the painter examine the various shades of green, he will not appreciate them with his habitual justice; and this is easily to be understood, for they all seem to be more or less bathed in that colour, so that the green tones in the copy suffer. The error, however, becomes still more marked in the case of red. The various shades of this colour, which is the complementary of green, have a tendency to black when looked at through a green light; as a consequence, the compound tints, in which red predominates, become embrowned, lowered in tone, whilst their delicate gradations escape comprehension.

In the case of blue spectacles, it is the shades of blue, and still more of orange, which suffer. To speak generally, the mistakes in the copy mostly arise when the various shades of the same colour as the spectacles, and, in a still greater degree, of its complementary, are in question.

If, then, we suppose the case of a painter, who really sees things with a violet tint, either by his natural disposition or by some alteration in his visual organs, it is not, as is generally believed, by a predominance of violet that his infirmity is recognised, but by insufficient variety and delicacy in the shades of violet and of yellow. If he saw a predominance of red and had to represent a nude figure in a landscape, there would be a disagreeable monotony in his flesh tints, in the gradations of red, which the painter would be unable to distinguish exactly, and above all, in the various shades of green in the landscape.

We may remark in passing, that there is much interest in watching a painter who is copying either nature or a picture after he has made use of a quantity of santonine, a substance which makes everything put on a violet tinge. It is certain, however, that the exaggerated employment of favourite colours by particular painters is caused, not so much by any change in the organs of sight, as by reason of an intellectual kind. The experiments which we have just described show, moreover, how interesting an examination of pictures from this new point of view would be. If there be some who err in their representations of the two classes of tints derived from the complementary colours, we can only attribute such errors in execution to some modification of the organ of sight.

THE EDINBURGH NEW MUNICIPAL BUILDINGS.

IN accordance with a resolution come to a few days ago in the Lord Provost's Committee of the Edinburgh Town Council, the minutes of the sub-committee on the New Municipal Buildings have been published and circulated among the members of the Corporation, with a view to being considered at the meeting on Tuesday. These minutes, which take the form of an interim report by the Lord Provost's Committee, are as follows:—

At Edinburgh, November 12, 1886.—At a meeting of the sub-committee of the Lord Provost's Committee on New Municipal Buildings Bill:—

Present—The Lord Provost, Bailies Anderson, Roberts, Turnbull, Walcot, Treasurer Boyd, Dean of Guild Sir James Gowans:—

With the object of making an interim report to the Lord Provost's Committee, the sub-committee are of opinion that an abstract of the proceedings which have already taken place should be made, in order to gather up the stages through which the proceedings have passed.

On December 15, 1885, the magistrates and Council remitted the following motion by the Lord Provost to the Lord Provost's Committee:—"That the present municipal buildings being inadequate for the proper conduct of the public business of the city, it be remitted to the Lord Provost's Committee to investigate and report on the whole subject; and, to enable them to do so, to take such professional or other advice and assistance as may be deemed necessary."

The following motion by Councillor Cox was adopted by the Town Council, and Councillor Cox was added to the committee for the purpose of the remit. The motion is of the following tenor:—"That it be remitted to the Lord Provost's Committee to consider whether the time has not now come when efforts should be made to procure for the use of the public a hall in a central position, which shall hold more people (with greater comfort to audience and performers), which shall have better acoustic properties, and which, in the matters of ventilation, entrances, and exits, shall be more worthy of the metropolis of Scotland than any hall in Edinburgh which is at present used for concerts and public meetings."

January 6, 1886.—The Lord Provost's Committee, at their meeting to-day, submitted these motions to the Lord Provost, Bailies Cranston, Anderson, Roberts, and Russell, Dean of Guild Gowans, Treasurer Boyd, Convener White, Councillors Clapperton and Cox.

January 29.—The sub-committee met of this date. The minute of meeting is of the following tenor:—"January 29, 1886. Sub-committee on Municipal Buildings. Present—The Lord Provost, Bailies Cranston, Roberts, and Russell, and Councillor Cox. Without committing themselves or the Town Council to any resolution on the subject, but with the view of obtaining the means of forming an opinion and making a report, the sub-committee assumed that if the present site of the City Chambers was to be included in the proposed new structure, the area to be occupied would extend from Warriston

Close on the west to Craig's Close on the east, and from Cockburn Street on the north to High Street on the south. It was further tentatively assumed that provision would require to be made in the new buildings for the assessors of lands and heritages, the registrars of births, deaths, &c., the Water Trust, Heriot Trust, the inspector of weights and measures, the burgh engineer's department, the medical officer of health, and the collector of police. It was also thought that space might be available for the branch of the Clydesdale Bank now established in the south-east corner of the Exchange Square. It will be seen from this that it is proposed to leave the Police Office for the exclusive use of the Watching, Cleaning, and Fire Departments. With regard to the appropriation of space, the sub-committee were of opinion that there should be provided, in addition to sufficient Council room, two Court-rooms, one for the Justice of Peace and Dean of Guild Courts, and one for the Burgh Court, besides three committee-rooms in addition to the room of the Lord Provost. They were further of opinion that the principal rooms, including the rooms of the principal city officials, should be situated on the ground floor. With these general indications of opinion, and before making an interim report to the Town Council on the subject, the sub-committee desired Mr. Morham to submit a block plan of the ground suggested to be occupied, with any suggestions which might occur to him as to the beneficial occupations of the space."

March 17, 1886.—Meeting of sub-committee of this date, at which Mr. Morham submitted his plan and report.

March 30.—Meeting of sub-committee of this date. Mr. Morham submitted an estimate for new buildings, amounting approximately to 80,000*l.* The sub-committee resolved to recommend that new buildings should be erected on the site of the present buildings and adjoining property, and that a remit should be made, with powers to obtain competitive plans and offer prizes for the first and second designs.

March 31.—The Lord Provost's Committee, at their meeting to-day, approved of their sub-committee's report.

April 12.—The magistrates and Council at their meeting to-day approved, on a division, of the committee's report, and remitted, with powers, as craved in the report.

April 28.—The Lord Provost's Committee remitted to the Lord Provost, magistrates, Dean of Guild, treasurer, Councillors Steel and Colston.

June 2.—Meeting of sub-committee. Present—Lord Provost, Bailies Roberts, Anderson, Walcot, and Turnbull, Dean of Guild, Treasurer Boyd, and Councillor Colston, when there was read a letter from the secretary, Architectural Association, and relative printed rules of the Society of Architects; and the sub-committee sub-remitted to the Lord Provost, Bailies Roberts and Anderson, Dean of Guild, and Treasurer Boyd, to report.

June 18.—Meeting of sub-sub-committee. Present—Lord Provost, Bailie Roberts, Bailie Anderson, Dean of Guild, and Treasurer Boyd. The sub-sub-committee authorised Mr. Morham to have lithographed block plan, showing present building and sections of adjoining closes made, as well as a drawing and photographs of the front and back walls of the present building, and they sub-remitted to Bailie Roberts and the Dean of Guild, to consult with the town clerk and Mr. Morham, and report on the conditions of the competition and form of advertisement.

July 14.—Meeting with Bailie Roberts and Dean of Guild (also Bailie Cranston), who instructed the notice to architects, which they went over, to be put in print.

July 23.—At a meeting of the sub-committee. Present—Lord Provost, Bailies Cranston, Roberts, and Anderson, and Dean of Guild. Proof of conditions of competition by sub-sub-committee submitted. The paragraph on page 4, rubric of which was "style," was deleted, otherwise the proof was approved. A print marked "Proof, Private," being schedule of floor space, was also submitted and approved. Instruct Mr. Morham to show on the block plan the whole property occupied by M'Laren, Son & Co, and authorise him to accept W. & A. K. Johnston's estimate for lithographing, 16*l.* 10*s.* 6*d.*, and Annan's for photographing, and authorise the town clerk to advertise for plans.

August 21.—Meeting of sub-committee. Present—Lord Provost, Bailies Cranston, Anderson, Turnbull, Walcot, and Russell, and Dean of Guild Gowans. Letters from Mr. Adams, secretary to the Royal Institute of British Architects, and from Messrs. Chorley & Connon, architects, Leeds, produced and read. Remit to Dean of Guild Sir James Gowans and Mr. Morham to adjust a reply.

August 30.—Meeting of sub-committee. Present—Bailies Cranston, Roberts, Anderson, and Russell, Dean of Guild Sir James Gowans, and Councillor Steel. Letter from the Royal Institute of British Architects, dated August 25, read. The sub-committee resolved that no modification of the schedule of conditions can take place. Remit to Mr. Morham to frame replies to the other questions submitted by architects, subject to the approval of the Dean of Guild.

September 7.—Motion by the Lord Provost as to the promotion of Bill in ensuing session of Parliament, adopted by the Town Council, and remitted to the Lord Provost's Committee.

September 14.—The Lord Provost's Committee remitted the motion to the sub-committee.

October 15.—Meeting of sub-committee. Present—Lord Provost, Bailies Cranston, Anderson, Roberts, and Russell, Convener White, Mr. Beveridge, Parliamentary Solicitor; and Mr. Paterson, Burgh Assessor. *West Boundary*, M'Laren & Son. Letter from them dated October read. After explanation by Mr. Paterson, who is preparing the Book of Reference, the sub-committee resolved that no portion of Messrs. M'Laren's property should be included in the site of the new buildings, except that strip or small portion on the east side of their present front shop, drawn in a direct line through the shop in a line with the west boundary of Warriston Close, although it may be necessary to include compulsorily the whole area; and the Town Clerk was authorised to enter into negotiations with Messrs. M'Laren & Son to have all this brought about by agreement before the Bill is lodged in Parliament, as also with the firm of Messrs. W. & R. Chambers, that their respective entrances from Warriston Close shall not be interfered with, or will be reinstated if altered. Mr. Paterson reported that the Book of Reference was nearly completed. The committee instructed Mr. Morham to prepare the Parliamentary plans.

October 25.—Meeting of sub-committee. Present—The Lord Provost and Bailie Anderson. On consideration of various letters from competitors, the sub-committee resolved to give effect to the suggestion made by several of the competitors that the time be extended for lodging plans to January 31, 1887, instead of December 31, 1886, intimation of which to be sent to each competitor.

November 12.—The Clerk submitted letters from some of the competitors, asking, since the restriction of the site had been made, if they should proceed to complete their designs with reference to the original site on the first block plan, with a view to their adaptation by the committee to the restricted site, and he was instructed to refer the writers to his circulars of October 18 and 26, sending the supplementary plan, and postponing the time for lodging designs to January 31, 1887, and to return the deposit to those asking it. Further, the committee authorised the projecting stair at 251 High Street to be included within the scheduled area, and the employment of Messrs. W. & A. K. Johnston to lithograph the Parliamentary plan. They directed the Parliamentary notice to be inserted three times in each of the *Scotsman* and *Evening News*.

(Signed) THOMAS CLARK, Lord Provost.

Edinburgh, November 12, 1886.

The Lord Provost's Committee directed their sub-committee's interim report to be submitted to the magistrates and Council at their first meeting, and in the meantime instructed the Town Clerk to have the same printed and circulated among the members of Council.

(Signed) THOMAS CLARK, Lord Provost.

AN IDEAL CITY.

ON Saturday, Mr. F. Harrison lectured on "The City in Ancient, Mediæval, and Modern Times," at Toynbee Hall, Whitechapel. In the course of it he said the first great fact that struck one was that the modern city was in a far lower state of organic life than either the ancient or the Mediæval town. The modern city was intensely changeable. It was an amorphous mass of buildings, grimy, noisy, and bewildering. It was the embodiment of indefinite change. In Edinburgh the sense of civic patriotism was still found, and York, Nottingham, Leicester, and a few other towns possessed the sacred fire. Abroad this quality was shared by Paris, Vienna, Rome, and Naples. The monstrous, oppressive, dismal bulk of modern city life was becoming one of the great evils of civilisation. It was a calamity that such a considerable fraction of the entire population of England should, as Londoners, be cut off from country life and city life also, as those were who dwelt in the suburbs. It must be admitted that in some respects many modern cities compared favourably with their predecessors. In spite of smoke and steam and factories the death-rate in many places was below that of ancient and much below that of Mediæval cities. London, for example, was the city least noxious to life of all the great cities in the world. Its death-rate was 25 per cent. below that of Paris, 50 per cent. below that of Berlin, and 200 per cent. below that of St. Petersburg or Calcutta. After referring in commendatory terms to the pure water supply of towns like Birmingham, Glasgow, and Nottingham, and to the spontaneity and excellence of the countless independent charitable, educational, and social institutions which existed in the towns of England, the lecturer drew a picture of the city as it could be imagined. Such a city, even if a capital, ought not to contain

a population of over a million. One-fourth or one-fifth of that figure would be preferable. London should divide itself into eight or ten cities, a change for which its subdivision under the new electoral system might be considered to have prepared it. The inhabitants of the ideal city ought to enjoy air, light, and water unlimited in quantity and free of cost. Every chimney must consume its own smoke. The city would have its squares, parks, playgrounds, and gymnasia within the reach of all, and would contain many noble public buildings and monuments. Museums, art galleries, libraries, lecture halls would be free and within a mile of every man's home. Means would thus be given to every one to cultivate body and mind. For the realisation of his idea he did not rely on Acts of Parliament. Such ideals were to be realised solely by long efforts and after many mistakes and failures. To reach them we needed the vivifying force of a higher social morality, a loftier standard of life, and a deeper social religion.

TESSERÆ.

Academies of Art.

GUSTAF WAAGEN.

IT must not mislead us in favour of academies that in our times a great many of the most celebrated artists have been members of academies; from the beginning it must have been the interest of these academies, by the reception of persons who enjoy a great reputation, to procure to the academies splendour and distinction which otherwise would have been wanting. With this another injurious effect of the academies has been connected, by means of the official distinctions which they enjoy through the influence of the State. They have attained a preference over all the artists that do not belong to the academies, which the academies watch over very jealously, and have thus introduced into the freedom of art an unsalutary degree of authority and interference. It occurs often that a very mediocre artist, of which every academy counts some few amongst its many members, stands much higher in the State as an academician than the most talented artist who does not belong to an academy. As the majority of mankind look more on authority than on genuine merit, it has occurred often that a moderate artist, being an academician, has found plenty of employment, while artists of considerable talent who do not belong to such an institution remain unemployed and unnoticed. If it is asked how the artists in modern times can be taught in a better manner, we may lay down the following remarks. The favourable relation in which the pupil stood to the master in the ancient times might be restored to a certain degree by these means—that artists of distinguished reputation should be induced to open studios. Most artists would be induced to open studios if the Government provided them with the locality and a moderate remuneration; besides this, every pupil would have to pay a moderate sum for the use of living models. How important such a system is for the formation of artists may be seen in the example of Prussia: for sculpture, the studio of Professor Rauch, in which many distinguished artists have formed themselves in a good manner; and the most remarkable instance in painting is the school of Dusseldorf, which the Government founded under the direction of William Schadow. Within eight years several artists distinguished themselves, who in originality and ability have surpassed all who for a long time have been formed in the academy at Berlin.

Greek Cistæ.

C. T. NEWTON.

This name is usually given to boxes or caskets, generally of a circular, but occasionally of an oval form, and usually made of bronze alone, though *cistæ* have been found of which the body has an inner lining of wood or leather. These caskets sometimes contain strigils and other objects used by athletes in the bath, and sometimes a variety of articles for the female toilet, such as the Romans called *mundus muliebris*. Round the body of the *cista* usually runs a frieze, representing some mythical subject incised in outline, and similar subjects often decorate the cover. The *cista* was carried in the hands by chains attached to the body, and the cover was usually surmounted by a group of two or more figures in the round (*epithema*) which formed the handle. The bottom of the *cista* usually rests on the three animals' feet, above which is frequently a group in relief. The incised figures are for the most part not more carefully drawn than the designs on Etruscan mirrors, which are very analogous in style. In some few examples, as, for instance, in the Ficoroni *cista*, the drawing is most refined and masterly, and, though the *cista* is apparently of Roman origin, it must be attributed to an artist trained in the Greek school. The groups which form the handles of these vessels, and the reliefs above the feet, are executed in the mechanical manner which characterises much of the Etruscan art in bronze, and it is probable that these decorations were not wrought by the artists by whom the friezes were incised, but that they were supplied as a manufactured article in great numbers, while more skilled hands were employed on the friezes. The date of these *cistæ* is probably about the year 300 B.C. These vases were formerly called *cistæ mysticæ*, and were thought to have been employed in the Dionysiac mysteries. This theory, however, finds few supporters at present. Upwards of seventy *cistæ* are extant, the greater part of which were found at Palestrina (Præneste). It is, however, probable that they were not exclusively manufactured there, as the feet and handles, which, from their solidity, are little subject to decay, have often been found in Etruria. The extreme thinness of the incised metal of the body would cause it to decay except where some special quality of the soil or other circumstance favoured its preservation.

Chimneys.

E. M. SHAW.

For those parts of a chimney which are supported throughout, stone may under some circumstances be admissible, but brick is always preferable for the purpose. The abutments of a chimney should be tied into the walls by wrought-iron bars of sufficient number and strength, turned up and down at the ends, and built into the jambs for several inches on each side. No part of a flue should be of less thickness than half a brick or 4½ inches. Where slabs of stone or slate are placed level with a floor before the opening of a chimney, they should invariably be laid in sound mortar, cement, or other incombustible and non-conducting substance, and it should be at a distance of not less than 4½ inches from the joists, flooring, or any other woodwork. A chimney built only up to the roof and stopping at that point is always dangerous. Every chimney in a house should be perfectly distinct and separate from every other chimney from the hearth to the external opening. Chimneys may safely be built in stacks, but they should on no account have any connection within the stacks. Brickwork around flues should not be less than 4½ inches thick in any part. By the Code Napoléon it was not permitted to build a chimney against the wall of an adjoining house without isolating it by an intermediate wall, of sufficient thickness to prevent heat passing to the neighbouring premises.

Hindoo Temples.

SIR G. C. M. BIRDWOOD.

The Hindoos themselves classify their temples according to the idols worshipped in them. The *mandira* is dedicated to the *lingam*, and is double-roofed. The *deula* is sacred to Jagannatha, and has an iron image of *Garuda* on the pinnacle. The *trisula* in the pinnacle distinguishes the temple of Siva, and a wheel one of Vishnu. The *pancha-ratna* ("five gems") temple has four smaller turrets at the corners of the square cell from which the central tower springs, and is dedicated to Vishnu in his various form of Krishna. The *nava-ratna* ("nine gems"), also a Vrishnata temple, has a double roof like the *mandira*, with four turrets on one roof and four at the corners of the central tower which forms the other. The *Vishnu-mandira* and the *Chandi-mandira* are small, flat-roofed temples or cells sacred to Vishnu and Durga or Kali respectively. The *yora-bangala* is made like two thatched houses placed side by side, and is used for different gods. The *rasa-mancha* is an octagonal temple with eight turrets, sacred to Krishna. The *dola-mancha* is a smaller building. The *deva-laya* consists of a number of temples built in a square.

Greek Thomson.

D. THOMSON.

In the works of the late Mr. Alexander Thomson we have a fine series of designs of a character so unique and excellent as to excite our wonder at the fertility of his inventive faculties and our admiration at the beauty, richness, and vigour of his handling. In all of them he set himself to adapt the principles of Greek art to modern requirements, without any pedantic borrowing of their features. Indeed, it is quite surprising how seldom we find in his works the orders reproduced, with their details strictly conforming to the ancient remains. He more frequently originates some form of column and capital designed to meet the special requirements he had to deal with, or to conform to the character of the impression he wished the building to convey; but where he has used the orders they are appropriately placed, finely proportioned and detailed, with carefully-adjusted relief, the wall-space behind being kept subdued in tone, with no disturbing objects in it to mar the repose and quiet dignity of the design. The multiplicity and variety of the details and forms he introduced into his works, and the singular grace and unity of effect he maintained throughout, are deserving of our most careful consideration, showing as they do that to adopt a style does not necessarily imply that only those marked features and peculiarities of detail and com-

binations which are found in the original works are to be reproduced, but that new forms and details may freely be employed, provided we have skill enough to maintain the spirit and essential qualities of the style. Of none of his designs can it be said that they are very like the old work, a term of praise we often hear applied to the works of our best men of Mediæval proclivities; but, whilst they differ from the works of the Greeks as distinctly as the nature of our requirements do from theirs, they agree with them in the adaptation of forms to the purposes they subserve—the grouping of the parts into forms in which the horizontal lines predominate, the clear marking of the voids, the precision of the distribution, and the graceful adjustment of light and shade, with strength and placidity as a general expression. Only by the adoption of such principles as these can building be raised into a fine art. His churches in St. Vincent Street and Caledonia Road, Glasgow, are in his best manner, while the various warehouses and other street buildings by his hand are all marked by the same elegance and refinement of detail, and display the abundance of his resources in design, and his power of impressing on them his own ideal perception of art.

Egyptian Bricks.

S. Birch.

Bricks—*tebi* made in a mould, or sun-dried clay mixed with straw, pounded pottery, and other materials—were extensively used for construction in ancient Egypt. At the earliest period the use of baked bricks was unknown, but some objects of this class occur at the time of the twelfth and following dynasties of baked red terra-cotta of conical or square shape, the use of which is not decidedly known. The bricks of unbaked clay vary in dimensions from 1 feet 8 inches to 1 feet 3 inches long, and are in thickness from 8½ to 4½ inches, and weigh about 16 lbs. The largest are those of the earliest dynasties before the sixth, and they become of smaller dimensions under the eighteenth and following dynasties. At the earlier period rude marks, spirals, curves, or devices, made by pressing the finger or fingers of the hand into the moist clay, were impressed on the bricks; but at the time of the eighteenth dynasty stamps were introduced of an oval or square shape, having in relief the prænomen or name of the monarch, or the name or titles of the persons for whose buildings or constructions they were made. The stamps on the bricks commence under the eighteenth and continue to the twenty-second dynasty. These bricks were extensively used in the construction of pyramids, palaces, walls, private houses, fortresses, and other constructions, the absence of rain making them sufficient to withstand the climate. Representations of the making of them by foreign captives or prisoners of war corresponding with the account of the bondage of the Israelites, and the labours imposed upon them, are seen in the tombs of the eighteenth dynasty.

Telford and MacAdam as Roadmakers.

Sir J. Rennie.

Telford, previous to his being employed to construct the Caledonian Canal, had turned his attention to road-making, and was appointed by the Government to lay out new lines of road, both for the purpose of employing the then poor and thinly scattered population of the Highlands, as well as to improve the districts by more general intercourse with the rest of the kingdom. He evinced a skill and knowledge which had not hitherto been bestowed on this important subject, but which was afterwards developed upon a greater scale in Ireland, and, lastly, in England, in his great works, the Holyhead, Liverpool, and Great North Roads, formed in consequence of the increased communication with Ireland after the Union, and which were excellent models for roads throughout the kingdom. Telford set out the roads according to the wants of the district through which they were made, as well as with a view to more distant communication; and the acclivities were so laid out that horses could work with the greatest effect for drawing carriages at rapid rates. The road was formed by a substratum of large stones, with sufficient interstices between them for drainage; the materials laid on this foundation were hard and angular, broken into small pieces, decreasing in size towards the top, until they formed a fine hard surface, whereon the carriage-wheels could run with as little resistance as possible. The transverse section of the road had no greater convexity or rise than was sufficient to cause the water to run steadily into the side-drainage channels; by this means, the carriages not being inclined laterally, the weight was more equally divided on the wheels, whereby they moved more easily and with the least wear and tear of the roads. The surface of the road was always kept even and clean, by the addition of proper fresh materials where necessary, and distributed equally in thin layers immediately after rain, in order that the new materials might bind and incorporate properly with the old. Telford's system was afterwards extended by his assistant, Macneill, and is fully described by Sir Henry Parnell, afterwards Lord Congleton, who, by his perseverance and support of Telford, mainly contributed to its extension and success. About the year 1816 MacAdam introduced his system, and brought it into general use in the vicinity of Bristol. It resembled in some respects that of Telford, but differing from it by making no foundation in the first instance; it consisted in simply laying a stratum of flints, or other hard materials, 10 or 11 inches thick, broken equally into small pieces about 2 inches diameter, and spread equally over the intended road; this soon became so consolidated together by carriages passing over it, that they could travel with great facility and expedition. The section and the mode of applying fresh materials and keeping it clean resembled that of Telford. MacAdam, professing to be a road-maker only, devoted his whole time and attention to the propagation of his system, which was greatly superior to the old, and became very generally adopted. Its introduction and extension was in a great degree due to the Earl of Lonsdale, and to his lordship's exertions we are indebted for the present system of metropolitan roads, which has proved of great advantage to the public.

Simplicity of Italian Gothic.

W. S. Okely.

In Italian architecture generally the simplicity of the various members is a marked characteristic, the beauty of effect being left to colour and harmonious proportion, where in churches north of the Alps it would have been obtained by the strong lines of shadow formed by the deep-cut members and by ornamentations in different planes. We frequently find in Italy, it is true, ornament produced by incisions, as well as mere surface decorations, such as colouring and mosaics; but it may be said in such cases that the stones used in the building are ornamental, rather than the ornament forms a part of the main design. This is literally true of some of the older churches, where stones belonging to the different members of Classical buildings were used with their ornamented faces placed in view, and arranged in as symmetrical a manner as could be improvised at the time; and it may account for the character of the ornamentation which, when Classical fragments were no longer to be obtained, were adopted in the later Italian façades.

The Development of the Doric Order.

T. L. Donaldson.

It seems to be certain from the evidence brought forward by Canina that the Ionic as well as the Doric was invented before the Persian invasion of Greece by Xerxes; and in fact the example at Samos, given in the works of the Dilettanti Society, so peculiar in its design, proves a very remote epoch, not a decline of a previously well-conceived and highly-finished example, but the first rude attempt at somewhat not yet matured and perfect in its conception. We may hence conclude that in the period between the Trojan war and the Persian invasion the Greeks, although distracted by internal wars, still pursued the art with perseverance, and following the right traces. They seem to have made a point of studying nature as the source to direct them in the principles of art; and as in those of painting and sculpture they sought in the finest forms of the Grecian youth and in the exquisite figures of the athletes and runners in the sacred games, the proportions of their heroes and their gods, so they recurred to the productions of the vegetable world and the parts of the log hut or wooden temple for the principal features of the orders and graceful details of the mouldings which gave a charm to, and relieved the heaviness of, their substantial constructions. We may assume as certain that the Corinthian order had not yet been discovered; for otherwise we should find it doubtless employed in those edifices, at least in some parts, erected immediately after the Persian invasion. Nor probably had the Ionic yet established its claims, as I said before, to be considered a perfect conception, for unless restrained by a superstitious veneration for antiquity, or an attachment to established forms, we might suppose that the Theseum and Parthenon would have been raised in all the sumptuousness of the more enriched parts of the Ionic. That the Doric was perfect in all its parts at the Persian invasion we may infer from the fragments of the large Doric order, whose blocks form part of the citadel walls of the Acropolis of Athens, and which seem with all reason to be the ruins of the original Parthenon destroyed by the Persians and worked up when the citadel was rebuilt. We may judge also from the fact that the temples of Sicily and Magna Grecia, which appear probably to have been erected soon after the settlement of those colonies, contain all the parts of the more refined productions of Ictinus, although of more massive proportions, of ruder workmanship, and with some greater crudity of detail. The Doric example at Corinth, apparently the prototype of the Sicilian and Magna Grecian temples, is the expression of a masculine and fierce sentiment; the Athenian models the emanation of a gentler and more refined feeling. This pervaded the entire of Attica, at Eleusis, Rhamnus, and the Promontory of Sunium, as the other did Syracuse, Girgenti, Selinus, Pæstum, Metapontum.

NOTES AND COMMENTS.

THE Spalding Club, which was founded in 1839, rendered invaluable service to Scottish history and archæology by the publication of ancient documents and memoirs. After thirty years it was decided to suspend the operations, and a set of the volumes is a treasure which is eagerly sought by collectors. Since that time many sources of imformation have come to light, and it is thought advisable to create a new Spalding Club, which is to deal mainly with the archæology of the counties of Moray, Banff, Aberdeenshire, Kincardineshire, and Forfarshire, but if materials are forthcoming, Inverness, Sutherland, Caithness, and Orkney would be included. The district is rich enough in old houses, which should supply an abundance of traditions. The club is to consist of four hundred members, and the annual subscription is to be a guinea. Aberdeen is to be the headquarters of the club. Up to the present there are 375 applications for membership. The Earl of ABERDEEN will be first president. Although we cannot discover the name of an architect in the long list of the council, we hope that the new Spalding Club may rival its famous predecessor in utility and success.

THE Slade Professor at Cambridge, Mr. JOHN HENRY MIDDLETON, was on Thursday in last week presented to the congregation of the University for the degree of M.A. *honoris causa*. He was introduced by the Public Orator, Dr. SANDYS, as one who, in his wide attainments and varied learning, was a brilliant instance of the truth of the observation of VITRUVIUS: "Architecti scientia pluribus disciplinis et variis eruditionibus ornata est." The Orator also referred to Professor MIDDLETON'S travels, as an investigator and critic of architecture and other arts in many parts of the world, including Greece and Italy, and alluded in particular to his residence in Rome, and to his excellent work on that city, "Ubi urbis æternæ inter monumenta vitæ suæ tabernaculum tam diu collocavit." He observed, in conclusion, that no one could be surprised that an authority of such taste in the province of art should have taken up his abode in Cambridge under the shadow of so fair a fabric of architecture as King's College Chapel.

IN the exhibition of French pictures which was held a few years ago in the Dudley Gallery, there was a marvellous sketch of a long low gallery in the Hôtel Dieu, with the light falling on a corpse that was near the white wall. It was one of the works by M. GERVEX, who has so often shown himself to be a master of realism. In the next Salon M. GERVEX will break a lance with REMBRANDT, for he has a picture in hand which represents M. PÉAN, the surgeon, giving a demonstration to his pupils. In the Dutch picture the subject of the operation is a man; in the French picture it is the body of a woman. M. GERVEX is a master of the figure, and the portrait in this year's Salon shows what he can do in portraiture. His picture will be sure to be among the earliest sought in the exhibition. Like so many artists, M. GERVEX is to have an atelier, but ladies alone will be eligible to be students, and especially those who will paint as amateurs.

SOME months ago we related a strange story about a table, which gave rise to a good deal of amusement among the amateurs of Paris, for it shows their fallibility. At the time the first steps of a law suit were about to be taken; now the case is ended. As our readers may have forgotten the circumstances, we now repeat them. An amateur, M. VEIL-PICARD, invited M. BOISLÈVE, an expert, to look at a table of the purest LOUIS XV. style. On his arrival he was told that the table was worth 60,000 francs at least. M. BOISLÈVE inquired if it were to be sold, and was informed in reply that for it no smaller sum than 30,000 francs would be taken. As the table appeared to be a splendid example of the period, M. BOISLÈVE and his partner called on a M. PERDREAU, who, on their advice, gave the required sum. The partners reserved 5,000 francs for their commission, and handed over the remainder to M. VEIL-PICARD. M. PERDREAU lost no time in displaying his treasure to a friend, who informed him that the table was well known, and was not what it was represented to be. An action was accordingly brought before the Tribunal of Commerce, and the case was referred to M. BAUER, an authority in such cases. He said that the connoisseurs, however keen, might be deceived with the table. Among the sculpture were charming details, the wood appeared old, and the gilding had the *patina* that is supposed to be a sure sign of age. M. BAUER, however, said he was not to be taken in, as the restoration was evident to him at the first glance. The table was reconstructed under the direction of M. ANDRÉ, an antiquary, and for the gilding and *patina* a sum of 3,000 francs was paid to a M. FOURNIER. The decision of the Tribunal, therefore, was that the sale should be annulled, that the table should be taken back by MM. BOISLÈVE and FRANCK, who were to repay the 30,000 francs. As to the amateur, who received double the sum that he paid for the table, the Tribunal decided that he was beyond their jurisdiction, since he was not engaged in commerce. Amateurs should be happy in Paris under such laws.

MR. BASSETT KEELING, who died a few days since, was an architect whose name was well known in the City. In 1853 he entered the office of a Leeds architect, and subsequently he acted as head-master of a local school of art. In 1860 he came to London, and was soon fortunate in securing a large share of practice. Among the churches entrusted to him were All Saints', Camberwell; St. George, Campden Hill; St. Paul, Norwood; Christ Church, Old Kent Road, and St. Saviour, Kensal New Town. He was, however, mainly known by his large buildings in the City. He designed the Tokenhouse Buildings, the White House, the Jerusalem Coffee House, and the Auction Mart Restaurant. Mr. KEELING was also the designer of Princes Mansions, Westminster, which occupy 51,580 square feet, and have a frontage of 393 feet. Although he had acquired so many commissions, he was only in his fiftieth year at the time of his death. Mr. KEELING'S business has been taken up by his second son, Mr. GILBERT KEELING, who was for some time associated with his father, the eldest son being head of the firm of KEELING, TEALE & CO.

WHEN the late JOHN WEALE started his most useful Rudimentary Series of cheap books on architecture and engineering, he received a good deal of support from military engineers and army men. Among the authors who helped him was Mr. J. F. HEATHER, M.A., one of the mathematical masters in the Royal Military Academy at Woolwich, who wrote the treatises on mathematical instruments, and compiled those on descriptive geometry and plane geometry. He was also the author of other works which are adopted as class books in military schools. On Saturday last Mr. HEATHER died in London, where he lived after he retired from the public service. As a contributor to WEALE'S Series he rendered a service to technical education.

IN front of Notre Dame, Paris, there is a fine equestrian figure of CHARLEMAGNE. It is generally supposed that this work belongs to the city of Paris; it is, however, only a speculative production. The owners are MM. THIEBAUT, the founders, whose names are associated with so many examples of bronze statuary. The question of its purchase is at present before the Municipal Council.

THE power which individuals can have in parish churches is curiously illustrated by a case which is now before the Commissary-General of Canterbury. A faculty was applied for to enable alterations to be carried out in Bearstead parish church at a cost of 138*l.* 17*s.* 6*d.*, and according to plans prepared by Mr. CHRISTIAN. Although the amount to be expended is small, the parish is in arms over the subject. It is proposed to construct an organ chamber on the south side of the chancel, and to remove there the organ, which is now at the north-west corner of the church; to remove with the donor's consent a memorial window on the south side of the chancel to the next window on the same side in the nave; to remove the piscina and sedilia, which occupied part of the space where it was proposed to put the organ; and to set back the front pews in the chancel, on the north side, a few inches, so that an open seat might be erected in front for the boys in the choir, while the adult choristers would occupy the pews at the back. The two front pews are claimed by a lady as freehold property, as they form part of the Milgate chantry, and the claim is supported by several inhabitants. The case is not concluded.



THE

CHAS FORSTER H

n.s 19th 1886.



"INK PHOTO" SPRAGUE & Co. 22, MARTINS LANE, CANNON ST, LONDON, E.C.

RS.

RD F.S.A. Architect.



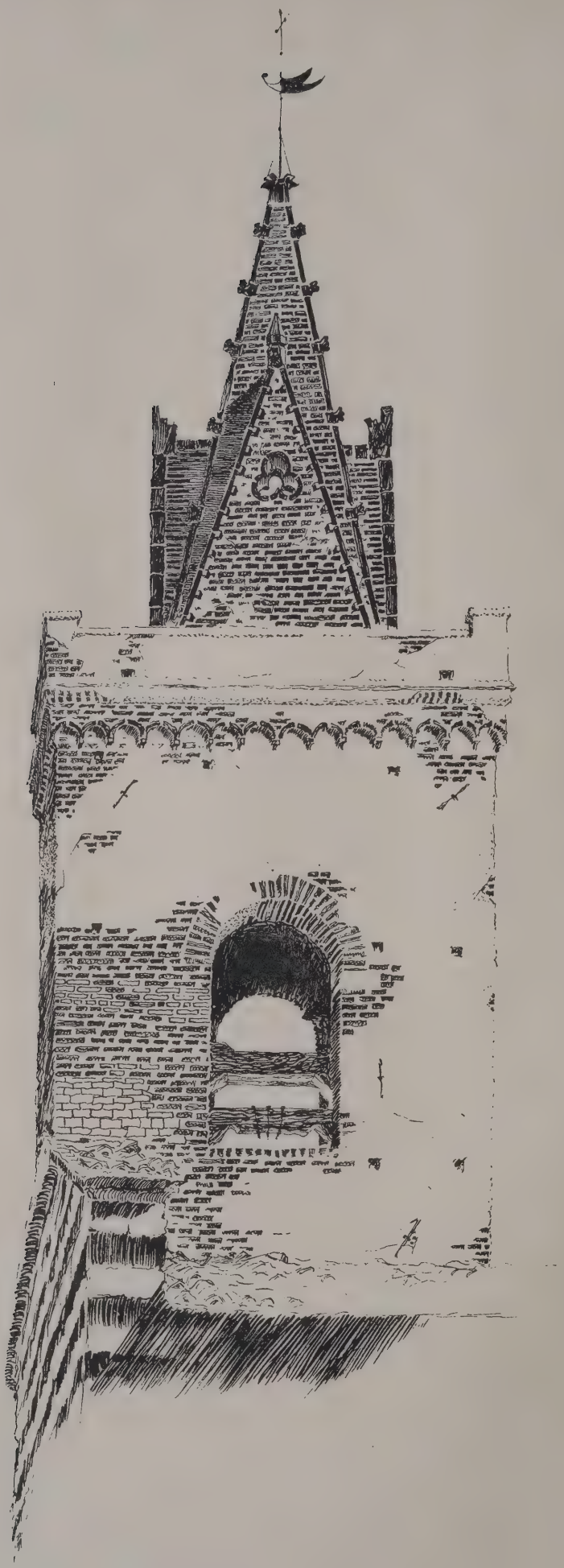
FRESCO IN CHURCH

By SIGNO



ST SPIRIDION. TRIESTE

ZAGHI-CATTANEO



A CAMPANILE AT PISTOJA.

from a drawing by EDWIN GEO. HARDY.

Printed by Sprague & Co. 22, Martins Lane, Cannon St. EC.



A Bell Turret at Asciano.

from a drawing by EDWIN GEO. HARDY.

ILLUSTRATIONS.

THE FIRS.

THE Firs, at Worplesdon, Surrey, is a picturesque alteration, or rather rebuilding without entirely pulling down, of a house that is situated in a most delightful position, looking over the Merrow Downs, above Guildford, and the Valley of the Wey. It is of rich-coloured red brick, cut and carved, and generally, with the white frames, &c., produces a fine mass of colour in the midst of deep fir foliage, the effect of which is necessarily lost in the reproduction in black and white of the Academy picture, which fairly represents this contrast. The original drawing was in highly-wrought water-colour by Mr. NATTRASS. Mr. C. J. HAYWARD, F.S.A., 47 Museum Street, W.C., is the architect.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 36.—CAMPANILE, PISTOJA.
NO. 37.—BELL TURRET, ASCIANO.

FRIEZE FROM ST. SPIRIDION, TRIESTE.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE second ordinary meeting of the Institute of Architects was held on Monday evening, Mr. E. l'Anson, president, in the chair.

The decease was announced of Mr. George Devey, Fellow, of Mr. A. R. Fraser, Associate, and Mr. George Vulliamy, past vice-president.

The Late George Vulliamy and George Devey.

The PRESIDENT said these announcements came on them with painful interest. No doubt many present would wish to speak to their memory. As became him in his position of President, it would be his duty to convey their condolences to the widow and family of the late Mr. Vulliamy.

Mr. CHARLES FOWLER rose and expressed his earnest sympathy with the President's proposal.

Mr. WOODTHORPE, senior member of the body of district surveyors, said he rose with difficulty, feeling as he did the loss of so valued and dear a friend as the late Mr. Vulliamy, and he felt he spoke the sentiments of the profession when he said it would be difficult to find his counterpart. He had known Mr. Vulliamy from an early period, many had known him as a personal friend, and knew him as a man of intelligence and high attainments, one who would have shone in a leading position at the head of the profession. It was not Mr. Vulliamy's fault that he did not occupy that position, but for want of opportunities to display his talents. He was possessed of clear judgment, sound common sense, a most gentlemanly demeanour, and the manner he conducted himself towards the Board of Works and towards those who came before the Board was particularly welcome to the profession. Loss of friends was one of the sad trials that beset men as they advanced in life, and they had to submit to it.

Professor KERR said the loss of Mr. Devey, an architect distinguished by his work and a credit to his profession, must not be passed by without a word.

Mr. G. AITCHISON, A.R.A., said he had enjoyed more than thirty years' acquaintance with Mr. Devey, and could endorse what Professor Kerr said of the extreme delicacy of design and great competency of their late brother. At their first interview Mr. Devey had shown the sketches of all the lamps made by him on the Continent, and later he had seen works executed by him. He was an artist of great talent, elegance and refinement, and of extreme taste. His disposition and his general manner were of the most kindly description.

Mr. R. PHENÉ SPIERS said Mr. Devey's works were little known, as he always made models for his work. He suggested that when the record of his life should be written for the Institute it should be accompanied by some illustrations from his models, to show the fertility of design which characterised all he did. He also had had photographs taken of his works by Messrs. Bedford & Lemere, and it would be most desirable if they could show a series of these.

Professor T. ROGER SMITH said that if Mr. Vulliamy's life was written for them, his drawings should also be illustrated. Among other parts he had travelled in Egypt, and made very beautiful sketches there.

Mr. JOHN HEBB said he desired to say a few words in memory of his late chief, Mr. Vulliamy, with whom he had passed the last ten years as assistant. It would be difficult, he said, to find a man more kind, considerate, more appreciative, and more gentlemanly in every sphere of life. Mr. Vulliamy began life many years ago, and many of the present generation thought of him only as the architect to the Metropolitan Board of Works, and did not remember that he commenced life as an architect and artist of great ability. He was originally intended for an engineer, but not satisfied with the progress he made, he was articled to Sir Charles Barry, and afterwards travelled over Greece, France, Italy, and Egypt, making sketches and measuring a great number of monuments, including Karnac and the larger temples in Egypt. On returning he commenced business as an architect, and achieved a good position, but, dissatisfied with his slow progress, he joined Lewis Vulliamy, his uncle. Most of the drawings for the works there were made by his own hand, including all the drawings for Dorchester House. But his uncle was not a man of particularly adaptable nature, his temper not being of the sweetest kind, and his nephew's patience being exhausted, when the office of architect to the Board of Works became vacant, he put up as a candidate and was elected. As an independent architect, he built the church in Ennismore Square, a pure Italian work of considerable refinement. Other works of his were a Gothic building, the French Protestant church in Bloomsbury Street, and a house in Merionethshire for Powell ap Griffiths. When he joined the Board of Works his artistic work might be said to have closed. The work of the Board did not require any great artistic power, the buildings of the Board being of a utilitarian character. But remarkable traces of artistic genius were to be seen in his little group of buildings in Queen Victoria Street and Bucklersbury, and which were distinctly different from the architecture met with in the City. He also designed the lamp standards for the Thames Embankment, simple and appropriate in design, and fortunately selected instead of a design originally intended, of standards with cupids holding torches. The public had great confidence in Mr. Vulliamy, and most of the profession must have been struck with his constant courtesy and refinement of manner, and that distinction which is only associated with refinement and knowledge of the world.

Mr. PERCY STONE said he was the only pupil taken by the late Mr. Devey, and having referred to Mr. Devey as a disciple of Mr. C. A. Voysey, paid a tribute to his memory. Some of the marvellous lamp sketches of Mr. Devey were being mounted, and he hoped would soon be seen on the walls of the Institute rooms.

Mr. Philip Herapath, lately elected Fellow, of Auckland, New Zealand, and others, were formally presented to the President.

At the late examination under the Metropolitan Building Act, Messrs. F. R. Farrow, H. Blackburn, W. C. Evans, Brooker, Swatman, jun., and E. W. Mountford had obtained certificates of competency; also Mr. J. C. L. Bettridge, of Birmingham, had obtained a certificate as building surveyor, being the first candidate who had passed under the new examination of the Institute last year.

The PRESIDENT announced that under by-law 44 the following had ceased to be members of the Institute :—Messrs. T. Mitchell, C. M. W. Davies, E. E. Deane, Boston, U S.; F. W. Hyde, Brighton; E. Jenkins Jones, R. J. Cresswell Jones, Ryde; W. E. Macarthy, F. H. Mullins, J. F. Shenton, E. Webb, Exeter; and Richard Wood, of Chicago.

Mr. WHITE, secretary, then read a paper by M. Paul Sédille, in the absence of that gentleman, under the title of "Etude sur la Renaissance de la Polychromie Monumentale en France," of which the following is an abstract :—

Polychromy.

The author showed at the outset that the ancient and traditional custom of colouring exteriors in France had declined by the reign of Louis XIV. The eleventh-century paintings on the Church of St. Savin, near Poitiers, were the oldest extant in France. Polychromy had been employed very largely in later centuries, and the façade of Notre Dame de Paris still bore traces of paintings, as did also the greater portion of the ecclesiastical edifices of the thirteenth, fourteenth, and fifteenth centuries. The wooden frontages of residences were also painted, while pottery and glazed tiles were encased between the beams. During the Renaissance, the influence of Italian taste transformed external polychromy; colouring was subdivided and localised, the paintings being often enriched with gilding, marble, and enamels. Terra-cotta and glazed materials were much used. The monuments of those cities famous for the works of Luca della Robbia and his school were the sources of inspiration. Moulded to its own taste by the French Renaissance, coloured architecture appeared less marked at the end of the sixteenth century, and diminished during the seventeenth, although found under new aspects in the half-tile, half-stone façades of the Louis Treize period. From this epoch it disappeared almost entirely. With the era of the "Grand Roi" was inaugurated the solemn architecture imported by the Jesuits and Bernini. French artists, while imitating Italian buildings of the end of the sixteenth century, thought they followed the spirit of ancient Roman art. They restored antique edifices by robbing them of the splendours of their

colouring, and reducing them to the bare beauty of form and proportion. This dealt a fatal blow at coloured architecture, not only in France but in all those parts of Europe which had any architectural pretensions. During the eighteenth century colour was absent from every architectural conception, the total eclipse of this radiance was a veritable singularity in the historical records of architecture. All ages and peoples had given polychromy a prominent place in architecture. Architecture was the outcome of the great laws and aspects of nature, and was not colour the manifestation of nature? Could one imagine an object without its appropriate colouring? White and black were but light and shade intensified, and used as a setting to convey the full effect of the infinite varieties of colour. It might logically be hoped that colour would reassume over architecture those rights which belonged to it from time immemorial. In the style called "Louis Seize" a few light ornamental paintings vainly attempted to restore colour to the panels of doors and wainscoting. The Revolution, the Directorate, and the Empire for a long time overcame these fancies for colour. The *style Impérial*, in spite of its pompous stiffness, was, however, not wanting in brilliancy and masterly qualities of composition. Moreover, the art of the First Empire was represented by two talented men, Percier and Fontaine, and it might be assumed that had Percier been less influenced by the taste of the age, he would not have been unmoved by the charms of colour. His design for the interior of a Salle-de-Musée, decorated with ornamental paintings of delicacy and harmony, is a proof of this. During the Bourbon Restoration architecture remained stationary, but the Revolution of 1830 signalised the advent of a new era. With the restoration of the souvenirs and monuments of France of the olden time, attention had been called to the arts of the Middle Ages and the Renaissance. The works of Vitet, of Prosper Mérimée, of De Caumont, of Didron, and later on of Viollet-le-Duc, familiarised the public with Mediæval art. Wall paintings reappeared in old buildings, freed from the whitewash of previous centuries, and colours, used in interiors, were soon to be produced on exteriors. A succession of important works on ancient art contributed to this return of polychromy. Hittorff was one of the first to search for colour on the monuments of antiquity. Segesta, Selinus, and the temples of its Acropolis were objects of his studies when in 1823 he visited Sicily. The results of his observations he had communicated to the Académie des Beaux-Arts, in several papers which created a great sensation. Encouraged by some, violently opposed by others, Hittorff saw his opinions passionately rejected or accepted, but the subsequent labours of the students at the Ecole de Rome proved the accuracy of his theories. In 1851 he published "L'Architecture Polychrome chez les Grecs," containing a restoration of the temple of Empedocles at Selinus. Hittorff had restored in like manner the three temples which stood close to the acropolis of Selinus. Théodore Ballu and Paccard were the first who left the Villa Medicis to study the ruins at Athens, and in 1845 and 1847 respectively restored the temple of Minerva Polias, and the Parthenon, but the colouring was not represented in the bright colours of a newly-finished work. In 1848, Tetaz resumed the studies carried on by Th. Ballu at the Erechtheum, but M. Charles Garnier was the first who displayed, in his restoration of the temple of Jupiter Panhellenius in Ægina, Grecian polychromy in all its pristine brilliancy of tone. As a reminder, M. Sédille mentioned the works of several other French architects, and among them the restoration of Pæstum by Henri Labrouste. The excavations at Pompeii had periodically brought to light painted apartments. Constant-Dufeux had stated his belief that the Trajan column had at one time been entirely painted. Hittorff set the example of using colour in important works. His Cirque in the Champs-Elysées was a valuable testimony to the effects that polychromy could produce. Duban was one of the first to manipulate colour with an exquisite sense of harmony. At the Ecole des Beaux-Arts he reproduced the *Loggi di Rafaele* in the *galeries*, and decorated the porticos in the Cour-du-Murier with paintings in a Pompeian style. Variegated marbles, glazed tiles, terra-cotta, and naked iron had been used by him with truth and logic. Constant-Dufeux also produced colour decorations refined, harmonious, and effective. The diocesan architects sought to restore to the great religious edifices their ancient colouring, and in some cases with success. In the villa Louis Duc had built for himself at Croissy, on a bank of the Seine, the colouring was a distant repletion of Oriental art, and there, both internally and externally, paintings and glazed tiles combined to produce a decorative effect as cultured as it was refined. After Italy, Greece, and the monuments of the Middle Ages, and the Renaissance, the East had supplied a conclusive argument in favour of coloured architecture, and for some time the East had been invading the West. Colour had extended itself within to without, no longer by superficial coats which would rapidly fade in damp climates, but under the form of coloured materials. The development of ceramics placed at the disposal of the architect a varied supply of solid materials. The Exposition-Universelle of 1867 gave prominence to the efforts of English aud French potters, while the *Azulejos* of the old Spanish monuments, the faïence coatings of the mosques at Cairo and Persia, and the decorations of the Indian palaces had exercised a sort of fascination easily accounted for. It was necessary to take these circumstances into consideration, in order to understand the marked reaction which then became manifest in favour of bright colouring obtained by the use of natural materials. M. Charles Garnier had introduced mosaics on a large scale in the Nouvel-Opéra, which had been a kind of revelation, and had borne abundant fruit. About 1872, after returning from Spain, M. Sédille himself largely employed terra-cotta and glazed tiles in combination with highly-coloured woods. From that time the use of terra-cotta and glazed tiles had become general both in France and England; indeed, in the latter country the efforts made to utilise the resources of the potter's art dated back to an earlier period. The Exposition-Universelle of 1878 gave a great impetus to the manufacture of ceramics; the façade of the Exposition, and the special pavilion of the Ville de Paris, equally attracted attention. As a proof of the renaissance of polychromy, M. Sédille mentioned many works executed in Paris, by Davioud, Ballu, and MM. Garnier, Vaudremer, and others. He, however, urged that it was no longer paintings which, as in the olden time, must constitute modern polychromy, but rather the coloured materials themselves which formed a part of the structure. This art had not, so far, been received with unanimous approval, and all the attempts hitherto made had not been equally satisfactory. But a misconception of colour ought no more to discourage one from polychromy than bad architecture ought to set one against good. Architects should serve a special apprenticeship to colour, study the laws of harmony, fathom its resources, and thoroughly understand the part it played, so as to avoid its abuse. Coloured materials, such as granite, marble, stone, metal, and wood, allied with terra-cotta, enamels, and all the fire-tested products, would render modern polychromy as lasting as the edifices of which it would be one day the inseparable adornment.

Mr. G. AITCHISON, A.R.A., referred to M. Paul Sédille as a personal friend, and said he was altogether an extraordinary man, not only an apostle of colour but an excellent landscape-painter and writer. He was a sort of apostle of a new architecture which was to come, not only in France but in this country and the whole of Europe. Mr. Aitchison then spoke of the Magasin du Printemps, and said that M. Sédille in construction brought his effects to the outside of the building and showed how iron, bronze, and metal work could be made harmonious with each other and in colour. It was most interesting, Mr. Aitchison said, to hear that the whiteness which once overspread everything in the land had disappeared. M. Sédille, when here, was delighted to see how far advanced we were over French architects in the use of gold mosaic—mosaic on gold ground—and in enamelled pottery, and M. Sédille had been one who had strove to cultivate and foster the love of pottery. Mr. Aitchison accounted for the adoption of white by saying that the Roman buildings had been bleached by time, their gorgeous colour had disappeared, and the beautiful marbles, such as adorned the Temple of Faustina, seldom showed a trace of their grandeur except under the heaviest rain. A sight of the beautiful tombs and temples at Ravenna showed that the Romans were not wonderful admirers of white, and men who only delighted in proportions shown in white. The highly-coloured interiors, bright with bronze and gold, were still an evidence to the contrary. Mr. Aitchison made an allusion to the detailed drawings sent by M. Sédille and M. Garnier. The drawings might have been prepared for exhibition, but they were merely working drawings for their own and the contractor's use. M. Sédille had built several country houses in which he had introduced coloured, or, as the French called it, enamelled pottery. It seemed strange that we here, in the land of potters—in the land of Minton and Doulton—used so little pottery in the walls of our buildings. Few architects, even in country places of little importance, but had an opportunity of thus introducing a little colour at a trifling expense. Nature accentuated the complimentary colours in the pistils and stamens of her flowers. Nothing in nature was all white; nature used it slenderly and as a precious thing.

Mr. H. H. STATHAM proposed a vote of thanks to M. Sédille for his paper, who, he said, spoke in favour of constructive ornament. The climate here was against the use of pigments for exterior ornament, a mode of decoration that would also interfere with the monumental appearance sought to be impressed on our buildings. Restorations made of Greek buildings had not impressed him with the architectural judgment of the Greeks, if the suggested painting were correct. Speaking of blue metopes and red triglyphs, he said colouring of that nature would hardly add dignity to the Parthenon. It would show that the Greeks were not without shortcomings. An idea of a German writer was that the frieze was not covered

with crude colours, but was gilded first and painted afterwards, a theory which the writer said was borne out by traces found all over the building. Greek statues were idealisations, and not strict imitations of nature. The nearer nature was approached the more was the statue removed from the realm of idealisation, and therefore he could not see the objection to statues in white.

Mr. W. Dawson seconded the vote of thanks. He suggested the desirability of using more largely the various coloured stones which exist in our own country, which were possessed of most beautiful colours, and which hitherto had been too much neglected. He had lately seen the stations of the North-Eastern Railway Company constructed of stones of most lovely colour from quarries newly opened in Northumberland. The workmanship was admirable and the beauty of building in coloured stone was clearly illustrated. Cost of freight was comparatively cheap now, and it would be a great boon if architects would use such stone in the dreadful London climate. It would be carrying out M. Sédille's idea of introducing colour in the exterior of our buildings.

Mr. Hansard said he would warn anyone against using stone for colour before it had been tried in London. He had lately read a letter from Mr. T. N. Deane, of Dublin, who spoke of a stone he had found and had been using in Dublin, and which he believed, from that gentleman's knowledge, would equal the use of Portland stone in London. If this were true, they would greet their sister island's stone and use it.

Mr. John Hebb said he thought M. Sédille unduly blamed the polychromy of the churches in Paris, some of which he characterised as conspicuous failures. Mr. Hebb said failure was not the result of the imperfect application of a good principle, but was due to the attempt to carry out an impossibility.

Professor Kerr said a specimen of glazed stone produced by Mr. Cliff, of Leeds, had been lately sent him. The question of glazing, as a means of keeping a building clean by rain, was no new one. The merit of the contrivance was that the glaze was produced at so low a temperature that the stone was not injured. If he was right, it was done by a portable oven set up at the building in course of erection. It might be worth considering what the contrivance was worth, and if the glaze could be modified so as not to be too glaring. If it were found satisfactory, what Mr. Hansard was afraid of would not happen, as the surface of the stone would be protected and the colour brought out, and, by judicious design, a good effect would be produced.

Mr. J. D. Crace praised the great thought and delicacy of the external mosaics of the Trocadéro Palace at the exhibition of 1878. The interior work was not striking.

Mr. R. Phené Spiers said the subject divided itself broadly into two points: colour on ancient buildings, and what chance there was of adapting it to our own country. It was not exactly fair to judge by the drawings made and published in various works. These drawings had a partial glaze. Bright blue metopes and red triglyphs were not agreeable. This country was dull. In the East the brightest primitive colours, lit up by the bright eastern sun, showed none of the crudeness apparent in the drawings here. The Walhallah in the Black Forest district, erected in imitation of the Parthenon, of white marble uncoloured, it was impossible to look at at all under the sun; all proportions were destroyed. The sunlight, no doubt, required colour, and perhaps very powerful colour. The effect was not so gaudy as might be imagined in that dry and sunlit atmosphere. Under London skies a gay and bright surface was out of keeping, and nature very soon toned down anything of that sort here.

Mr. S. Vacher made some remarks on students and their opportunities.

A vote of thanks was then unanimously passed to M. Sédille and M. Garnier, and the meeting ended.

YORK ARCHITECTURAL ASSOCIATION.

THE opening meeting of the fifth session of the York Association was held on the 10th inst. at the Church Institute, under the chairmanship of the president, Mr. W. Hepper.

The annual report was as follows:—The Committee, in presenting their report of the work done during the fourth session, congratulate the members on the continued prosperity of the society. It now numbers fifty members, and the attendance at the lectures and excursions has been very satisfactory. During the past session the papers read have been interesting and useful. During the summer excursions have been made to many places of interest. The prizes offered by and through the Association, with the exception of one class, have not been competed for. The prize for the best design for a fireplace, with mantel and over-mantel, has been awarded to Mr. J. England Jefferson. The Committee whilst regretting the absence of competitors for the other prizes, testify to the general excellence of the design to which they have awarded the prize. The treasurer's report is satisfactory, showing that after all expenses have been paid, including a donation of 5*l.* 5*s.* to the local fund in connection with the visit of the Sanitary Congress to York, there remains a balance of 5*l.* 17*s.* 4*d.* in favour of the Association. It is a matter of great satisfaction to the Committee that Sir William Tite's prize of 30*l.* and certificate, in connection with the Royal Institute of British Architects, was won in competition by your secretary, Mr. B. Priestley Shires, for his design for a school of medicine and surgery. It is pleasing to the York Architectural students that one of their number has taken the National Gold Medal at South Kensington. It was won by Frederick R. Whitwell, for a design for a cathedral, and is the highest award taken by a member of the York School of Art; last year the silver medal was awarded to Edwin R. Tate, a member of our society, for drawings of a tomb in St. Crux's Church. Mr. E. Felgate, another member of the society, has taken the second prize in open competition for a design for "An Advertising Lamp." These successes, it is hoped, will stimulate our members to achieve similar results.

Mr. Wm. Hepper, the president, in the course of his address, contrasted the very much stronger position of architects in York since the society was established. There were now about fifty members, with every prospect of an increase, with a balance in the treasurer's hands, and it was acknowledged by the Institute of Architects. The main object which they had in view was to elevate the tone and character of the profession generally by combinations of members and associations, and thus effect an exchange of ideas on the subjects which were most interesting to them. The speaker strongly complained that there was no standard college for the training of architectural students, or any examination which was recognised by the professional bodies. If institutions were organised with that object it would greatly benefit the profession, as a considerable number of those who entered their ranks had obtained nothing like a sufficiently good education. He advocated students visiting and examining ancient churches, which would fully repay them. Warming and ventilation were questions which called for a great amount of study. They had hitherto been much neglected, which was partly owing to many of the inventions yet brought out being a failure. The matter would thoroughly repay a careful study. Though he spoke strongly of the preservation of our ancient buildings, any structure which interfered with the progress of the times he thought ought to give place to the new.

At the close a vote of thanks was passed to the President.

THE ROYAL SCOTTISH ACADEMY.

A MEETING of the Scottish Academicians was held on the 10th inst., Sir William Fettes Douglas, the president, in the chair. The following Council was elected for the ensuing year, as follows:—*Council*—Sir Wm. Fettes Douglas, president and trustee; Clark Stanton, J. M. Barclay, Gourlay Steell, D. W. Stevenson, Waller H. Paton, John Hutchison; George Hay, secretary and trustee; J. M. Barclay, treasurer and trustee; Wm. M'Taggart, trustee; John Hutchison and W. E. Lockhart, auditors; John Hutchison, librarian; Clark Stanton and J. M. Barclay, curators of library; J. M. Barclay, W. E. Lockhart, Otto T. Leyde, and W. D. M'Kay, visitors of the Life Academy.

At the statutory meeting of the Academicians held on February 10 last, J. L. Wingate and D. W. Stevenson were elected to the rank of Academician, to fill the vacancies caused by the death of J. A. Houston and E. T. Crawford. These elections and the death of John Glass have caused three vacancies in the rank of Associate. These vacancies were filled up by the election of the following artists:—Charles Martin Hardie, Arthur Melville, and James Hamilton.

The report submitted gave a *résumé* of the year's proceedings, which included a reference to the exhibition and its arrangement. The librarian and curators reported the addition of a number of art books and prints, &c., to the library.

The visitors to the Life School reported as follows:—"The session of 1885–86 commenced on November 2, 1885, and ended on June 25, 1886, having 120 morning and 121 evening meetings. The aggregate morning attendance was 2,355, or an average of 19 per morning; and 2,374 was the aggregate evening attendance, being an average of 19 per evening. The visitors have much pleasure in bearing testimony to the industry and good conduct of the students."

The Council are sorry to report that the students' work in colour does not maintain the high standard reached in recent years. While they cannot but express their regret that the paintings are not so satisfactory as they could wish, they are glad to be able to speak in terms of approbation of several of the drawings—those more especially to which the prizes

have been awarded, as in them is given evidence of more than ordinary artistic ability. It is gratifying to find that the Stuart prize has called forth a greater number of competitive works than last year, all of which, with marked individuality, indicate earnest effort after the qualities for which the prize was instituted. The Council, after careful examination of the studies, &c., awarded the other prizes as follows:—The Chalmers bursary, G. Denholm Armour; for the best drawing from the life, the late J. W. Lee;* for the second best, William Milne; extra prize for modelling, John S. Rhind; Keith prize, for the best work of a student in this year's exhibition, G. Denholm Armour and Duddingston Herdman—equal; Maclaine Watters medal, R. Haswell Donaldson; Stuart prize, P. A. Hay. The studies in water-colour from the life by John Briggs were considered worthy of honourable mention, and the competition design by D. B. Waters for the Stuart prize was highly commended. The following additions have been made to the Academy's collection of works of art, &c., during the past year:—(1) Bust of Thomas Duncan, R.S.A. (the original model), by Patrick Park, R.S.A. (presented by his widow, Mrs. T. Duncan); (2) *St. Bernard's Well*; (3) *Dunkeld*; and (4) *Hawthornden*, by Mrs. Cumming (the above three works bequeathed by the late Miss Mary Ann Cumming of Tullses, Forfar, and Tullses Lodge, Cheltenham, daughter of the artist); (5) *Wreck of the Wood*, diploma work of J. L. Wingate, R.S.A.; (6) *Bust in Marble of a Scotch Peasant Girl*, diploma work of D. W. Stevenson, R.S.A.; (7) *Portrait of William Brodie, R.S.A.*, by John Phillip, R.A., bequeathed by the late William Brodie, R.S.A. (this portrait has been placed for the term of three years in the National Gallery, in compliance with the desire of his representatives); (8) water-colour drawing of Roslin Chapel, by G. W. Kemp, architect (presented by W. Beattie Brown, R.S.A.); (9) "The Douglas Book," 4 vols., privately printed (presented by the Earl of Home, per William Fraser, C.B., LL.D.); (10) Catalogue Raisonné of William Miller's Engravings (presented by W. F. Miller, son of the engraver); (11) two photogravure artists' proofs of *The Queen's Favourite Dogs*, from pictures by Gourlay Steell, R.S.A., executed by Her Majesty's desire (presented by Gourlay Steell, R.S.A.). The thanks of the Council were duly transmitted to the respective donors. In accordance with the resolution of the Academy of May 31, the Water-Colour Exhibition intimated to be held during the summer and autumn months was postponed.

The Council regret exceedingly having to report that the proposal of the Academy to have a refreshment-room and a retiring-room in the Academy building, in connection with the annual exhibition, cannot be carried out at present. It is hoped, however, that apartments for these purposes may soon be obtained. For many years consecutively it has been the painful duty of the Council to record the death of one or more members of the Academy. They are glad, however, to be able to report that during the past year no losses have been sustained.

RESTORATION IN FLORENCE.

THERE has been in a quiet way a great deal of complaint, writes a correspondent of the *Times*, about the demolitions and plans for demolitions of the old parts of Florence, mainly coming from the lovers of the picturesque—*i.e.*, the shabby and dilapidated, the fungoid developments on the old architecture. Most of this is senseless—so much of it, indeed, that none of it receives any attention from the authorities concerned. The taste which confounds the old with the beautiful, and the charm of accidental overgrowth or aggregation with that of pure architectural effect, cannot be depended on to advise what shall be done in the way of restoration. The best view of any noble building, from the purely artistic side, is unquestionably that which the builders conceived, and that is, of course, the condition in which it was seen when finished; and the marks of age and decay, the dilapidation and crumbling line which the modern school of landscape painters delight in, have no place in pure architecture. The dilapidated sheds of the old market in Florence, the rows of shops on the Ponte Vecchio, and the aggregations of vegetable growth and lichenous stains on the old buildings awaken no kind of tender regard in the commissions for the restoration of the old monuments. The old market, with the picturesque effects of light and shade, is swept away, with its garbage and stench, and for the bettering of public health. The ambitions of the reformers go further, and aim at the entire demolition of the buildings which skirted the old market-place towards the Duomo, and the opening the Piazza out on that side so as to give a better distant view of the baptistery and Duomo from the west, and of course showing the new façade to better advantage. The Bigallo on this side has been restored now for some time, and, in spite of all that has been said against it, I must say that it is an excellent piece of work, restoring the building as nearly to its original condition as our present information will permit. It has not been renovated in any sense of being made to look new, but the old windows have been opened again, and the marble work of the front restored where damaged. It keeps its age perfectly.

The further demolitions in the old market quarter are regarded by the architect in charge, Signor Del Moro, with a good deal of diffidence. Here are, he says, some of the oldest and most interesting houses in Florence from the historical point of view, and we must proceed with the utmost caution, and with no preconceptions, to their treatment. "We must," he says, "consider all the conditions under which the great works of the old architects were constructed, and that, in all probability, the very restrained space in which they were built was planned for in their design, and by increasing the space around them we may seriously belittle them. In all these alterations we must move very cautiously." Nothing then can be off-hand determined concerning the enlargement of the Piazza in front of the Duomo, much less of the demolition of the Ghetto, which, as Signor Del Moro says, contains some of the oldest specimens of domestic architecture in Florence. The tasteless and unnecessary restoration of the house of Dante, which is made a new house from foundations up (so that, as the proprietor says, "We see it now as Dante saw it," supposing always that it was new when Dante lived in it, which is not at all likely), is an example of what to avoid in restoration. It is idiotic.

The Italian architects in charge of these works have converted me from an indiscriminate admirer of the old and an enemy of renovation to a view which foreigners must perforce accept, and which I hope the Italians will not exceed—the architects, so far as I know them, are not likely to—viz., that where there is a personal or autographic element in work it is not to be interfered with except where solidity demands it, but where the original intention of the architects is concealed by aggregation of materials foreign to its purpose or by decay of the material, it should be restored as exactly as possible to what it was originally. The house of Dante had no architectural value whatever, and the only thing the owner could have done for us was to prevent its falling down and give us the chance of seeing something which Dante's eyes had looked on, now impossible, for the house might as well have been built from the foundations in the nineteenth century. The Duomo, on the contrary, will be cleaned throughout as thoroughly as possible without going to the raw surface of the stone; and the campanile will follow suit, all the dirt being thoroughly removed and the architectural effect due to the intarsiata restored. It must be remembered that constant decay of the marble slabs has for a long time necessitated the renewal here and there of slabs of the intarsiata, and these are, therefore, in all stages of toning; but in these old restorations, it has often happened that samples of marble which do not well resist the influence of the weather have been introduced, and by their more rapid change, especially those of red marble, which are important in the design, have become an ashen grey. This can be seen in the campanile, and, wherever such pieces occur they will be removed, and more carefully selected pieces will be substituted. The reliefs, the carvings of the portals, windows, &c., whatever, in short, has any autographic value will be cleaned as thoroughly as brushes and water will wash, but in no case will the surface of the stone be interfered with. If any admirers of the effect of time are discontented with this they are likely to remain so, because the programme of restorations has been carefully considered, and will in all probability be adhered to, with such modifications as the change of *personnel* in the Opera may give rise to, immaterial in any case.

The Ponte Vecchio is one of the features of Florence which attracts most attention, and which has been most warmly contested against the restorer. There is no present intention of interfering with it in any way, but the gallery which connects it with the Uffizi, and which, like the Ponte Vecchio, was once filled with shops, wedged between its piers and hiding its arches, is restored to its original condition of an open arcade along the river, with most admirable architectural effect; and this work will one day be continued along the bridge, to the demolition of the jewellers' and bric-à-brac shops which are now so picturesque a feature, but which destroy absolutely the original character of the bridge, and interfere with its legitimate purposes. The gallery connecting the Uffizi and Pitti palaces is an historical feature, and is besides a distinct architectural element, though not of the original design, of the bridge, and as such will be preserved; but the shops, which are excrescences, however picturesque, and utterly alien to the

* The Council cannot refrain from expressing regret at the death of this student, which took place accidentally by drowning at his native town, Aberdeen, on August 29. Mr. Lee went through the course of tuition in the School of Art there, and gained admission to the Academy's Life School only two years ago, in which he worked with great industry, making rapid and decided progress, and giving excellent promise of attaining proficiency and distinction in the future. His untimely loss is regretted by all who knew him.

uses of the structure, will be weeded out, and I believe that the architectural effect of the view on the river will be more noble when the arcade is disengaged from this filling in, just as it is improved by the arcade on the Lung' Arno. Present visitors who hold to the shops, however, will not be annoyed by their removal, which will be at some undetermined future, unless the pressure of traffic demands an early clearing of the bridge, which now is crowded at times, and gives no place for pedestrians, the footwalk being occupied by the shops.

The next work to be undertaken when the Duomo is out of hand will be the Baptistery, the ceiling of which will be restored, the mosaics being in a most dilapidated condition, repaired by painting on bits of wood, canvas, &c., the Church having had little respect for the monuments in its charge, probably esteeming the money better spent in masses. Wherever one goes in Italy, the indifference of the ecclesiastical authorities to the condition or preservation of the works of art entrusted to them is most striking, and the Baptistery is one of the worst cases. With this the Or San Michele will be taken in hand, and, it is to be hoped, with restoration of the windows. The church of San Filippo in the Piazza Sta. Trinità is also at present being repaired, and some interesting old paintings have been recovered in a badly defaced condition from the whitewashing, which was the usual ecclesiastical method of restoration for the frescoes.

EDINBURGH ARCHITECTURAL ASSOCIATION.

THE opening meeting of the session was held on the 11th inst., when an address was delivered by the president, Mr. Blanc. In the course of it he remarked that twenty-eight sessions had passed since the Association was instituted, and that it could now lay claim to be the most prosperous of all the like institutions out of London. It was one of the three oldest in the country, and had a membership nearly double that of any other of those associations. Through varying conditions, with a fluctuating exchequer, many means had been tried to consolidate the Society by securing a permanent abode. That object, however, at no time interfered with the Society's main work, for he found a further advance by the inauguration of a sketch-book, fixing in representation the fast-mouldering remains of Scottish architecture; next, the systematic visitations to places of architectural interest in their neighbourhood; and later, they found themselves abreast of the times by the establishment of classes for the consideration of design and construction. The President afterwards spoke on "Scottish Ecclesiastical Architecture." He said that in Scotland, as elsewhere, wood and wattles might have in early times supplied the necessities of certain colonies and cell-builders, until in the sixth century the Roman fashion of building in stone was adopted. The early churches in Scotland bore strong marks of Irish influence, and the Scandinavian examples also seem later to have been followed. With the Norman conquest a train of good for arts and learning advanced northwards. Large tracts of land in the Lothians ceded to Scotland were colonised by new lords and their followers, and quickly a new and more fervent expression of religious feeling spread over Scotland, as in England. Religious communities from France were not slow to journey with the tide, and they found a great church-building period begun. Its period of activity lasted upwards of two hundred years, during which time architecture in Scotland followed closely the lines of the sister kingdom of England. Lands, under new partitions, were freely given over to the clergy, who were thus enabled to devote themselves to the erection of edifices which, if not so liberal in scale of magnificence, were at least in equal proportion to the more favoured conditions in England. When Margaret became the wife of Scotland's king she set herself to stir new enthusiasm in the clergy. Her influence was powerful and effective. Still leaning to English forms, she sought to assimilate to them the Scottish Church. Scotland doubtless received direct influence from France during this period of church building. Her chief associate and tutor, however, was England. Scotland's works of the twelfth and thirteenth centuries were unquestionably her best efforts. In them they found exhibited an equal knowledge of the prevailing style, and power in treating it, that was shown in England. A peculiarity distinguishing the Scottish churches was their extreme narrowness compared with their length; St. Magnus Cathedral, Dunblane, Dundrennan, Glasgow, and Arbroath were all very long, and in this they more nearly resembled the proportions of French than English examples. As an example of purity of style, graceful proportion, and scholarly simplicity, they had Glasgow Cathedral, sometimes called the "Scottish Salisbury." In treatment, however, it was markedly different from its assumed prototype. No transepts, no flying buttresses, finials, or other excrescences so prominent at Salisbury were seen in Glasgow Cathedral. There all was simplicity, the interior effect, of solid and simple design, being more emphatic in this respect than the exterior. For some years longer Scotland was enabled, under peaceful influences and royal encouragement, to pursue the development of her civilisation and arts. The death of Alexander III. in 1286 brought these restful and peaceful times to a sudden check. For upwards of a hundred years Scotland suffered under the fierce contentions of a disputed succession. There was no advancement in art, and the hitherto quiet march of learning and social refinement was obstructed. With quieter times art blossomed forth anew. Scotland then, in a state of uneducated manhood, was left to begin upon her own art traditions. This her works show she did, and in doing so she began her new art industry from the period of its cessation, and may have incorporated here and there some of the minor features concurrently expressed in England or France, and with which renewed intercourse may have made her artists acquainted. But wholesale imitation of the forms of plan or detail of any of these countries was not found in Scottish work. Her art had become as decidedly her own as her independence; and, true to the national characteristics, the strength and vigour exhibited in all the examples was particularly noticeable. They miss the delicacy of refinement and purity of the thirteenth-century efforts, but the new forms had the merit of originality, which longer study would trim to more pleasing expression.

At the close a vote of thanks was awarded to the President for his address.

THE CHURCH HOUSE.

THE executive committee appointed by the general committee for the erection of a Church House as the Church of England memorial of the Queen's Jubilee, at the meeting in Lambeth Palace library on October 18, held its first meeting on Friday last, the 12th inst., in the Jerusalem Chamber, Westminster Abbey, by permission of the Dean of Westminster.

The meeting was attended by the Archbishop of Canterbury (in the chair), the Duke of Westminster, Earl Stanhope, the Bishops of London and Carlisle, the Right Hon. the Lord Mayor, and twenty-six other members of the executive committee, a full list of which is given below.

The Archbishop of Canterbury was elected chairman, and the Duke of Westminster and the Bishop of London vice-chairmen of the executive committee.

The question of recommending to the general committee a modification of the scheme by the inclusion of other objects than that of erecting a Church House was very carefully considered at great length, and in all its bearings; but while the warmest sympathy was expressed with some of these proposals, it was decided by a large majority that it would be undesirable to depart from the plan already agreed on for the Church's commemoration of Her Majesty's Jubilee. After a prolonged and careful discussion the following points were unanimously decided upon:—

1. That it is desirable to secure a site in a good and accessible position sufficiently large to allow for the erection of a building which shall ultimately be adequate to all the purposes which a Church House is intended to fulfil as a centre of Church life and activity. It was, moreover, considered desirable that the scheme should include a chapel.

2. That the aim should be to collect funds for the erection of rooms sufficiently large for the meetings of the Upper and Lower Houses of the Convocation of Canterbury, and the House of Laymen, regard being also had to the possibility of a joint session of the Convocations of the two provinces and of the Houses of Laymen when duly constituted, a chapel, several committee-rooms, and the necessary rooms for a secretary and clerks. The immediate or more remote erection of a large hall and any further additions that may be required to depend upon the funds that are raised. That provision must also be made for the sustentation of the fabric by the investment of an adequate sum to yield an income for the purpose.

3. Sub-committees of site and works, with the Duke of Westminster as chairman, and of finance, with the Bishop of London as chairman, were appointed, which will respectively meet forthwith to examine and report upon suitable sites, and to proceed with the collection of funds. This report will be presented to the general committee for confirmation at its next meeting.

Executive Committee.—The Archbishop of Canterbury, the Archbishop of York, Bishop of London, Bishop of Carlisle, Dean of Westminster, Dean of Windsor, Dean of York, Archdeacon Farrar, Archdeacon Sumner, Archdeacon Watkins, Canon Cadman, Canon J. Erskine Clarke, Canon Gregory, Canon G. Venables, Prebendary Billing, Prebendary Ingram, Rev. J. T. Brown, Rev. J. Troutbeck, D.D., Rev. R. T. West, D.D., Duke of Westminster, K.G., Earl Stanhope, Lord Brassey, Right Hon. W. H. Smith, M.P., Right Hon. Sir J. R. Mowbray, M.P., Right Hon. Lord Justice Cotton, Right Hon. J. G. Hubbard, M.P., Right Hon. G. Cubitt, M.P., Right Hon. A. J. B. Beresford-Hope, M.P., Right Hon. Sir H. Selwin-Ibbetson,

M.P., Right Hon. the Lord Mayor, Sir James M'Garel-Hogg, M.P., K.C.B., Sir Walter G. F. Phillimore, D.C.L., Mr. G. Baden-Powell, M.P., Mr. H. Hucks Gibbs, Mr. Mark Knowles, Mr. P. Vernon Smith, Mr. R. Bosworth Smith, and Mr. G. A. Spottiswoode.

Hon. Treasurers.—Mr. George T. Biddulph, the Hon. H. D. Ryder, and the Hon. Edward Thesiger, C.B.

Hon. Secretaries.—The Rev. R. Milburn Blakiston, the Rev. William Sinclair, and Mr. Fred. A. White.

Bygones.

"*Antiquity after a time has the grace of novelty.*"—Hazlitt.

THE ACT FOR THE REBUILDING OF LONDON AFTER THE GREAT FIRE.

When a fire broke out about ten o'clock on a Sunday night, September 2, A.D. 1666, in a bakehouse in Pudding Lane, it could not have been anticipated that it was to cause the destruction of London. On the next day John Evelyn took his wife and son to Bankside, and by that time "all the houses from the bridge, all Thames Street, and upwards towards Cheapside down to the Three Cranes were consumed." This will give a notion of the ease with which the buildings caught fire. The season had been dry and there was a fierce eastern wind: the power of the fire was therefore increased. Moreover, the people appeared to be panic stricken. "The conflagration was so universal and the people so astonished," says Evelyn, "that from the beginning, I know not by what despondency or Fate, they hardly stirred to quench it, so that there was nothing heard or seen but crying out and lamentation, running about like distracted creatures without at all attempting to save even their goods, such a strange consternation there was upon them."

By the 4th the fire had extended as far as the Inner Temple. Fleet Street, the Old Bailey, Ludgate Hill, Warwick Lane, Newgate, Paul's Chain, Watling Street were reduced to ashes, the lead from St. Paul's Cathedral was flowing in molten torrents, and the stones were flying "like granados."

For two days the fire was a novel spectacle to the fine ladies and gallants of the Court, but on the 5th there were signs that the flames cared little for the divinity that hedged a king, as they were making their way towards Whitehall, whereupon there was a confusion that the loyal Evelyn dared not reveal. He was asked, with others, by Charles II. to do something towards quenching the fire, and Fetter Lane was assigned to him for operations. But the only men who seemed of use at the time were some sailors. They could have saved a great part of the City if they were allowed to pull down or blow up a few houses here and there, but the worthy aldermen and City fathers would not allow their property to be sacrificed.*

Fortunately the wind abated. As it was, over thirteen thousand houses were destroyed, with eighty-six parish churches, and fifty-two halls of companies, besides other buildings. The loss was estimated at about eleven millions sterling. On the 7th Evelyn was unable to see, during a walk of five or six miles, "one load of timber unconsumed nor many stones but what were calcined white as snow." The few people met were "like men in a dismal desert," for it was impossible to make one's way unless by such landmarks as a ruined tower or pinnacle. That was Evelyn's way of representing the catastrophe. The Dean of Rochester on the following Sunday expressed it in a pedantic way by telling his congregation that "the City was reduced from a large folio to a decimo-tertio"!

Forty years afterwards Woodward, the Professor of Physic, gave it as his opinion that the fire was a beneficial if a terrible remedy. In consequence of it, he said, provision was made for sweetness, cleanness, and salubrity, and London became the healthiest of cities. Hume, who is almost the only historian who condescends to notice the rebuilding of the City, is of the same opinion. "A discretionary power," he says, "was assumed by the king to regulate the distribution of the buildings, and to forbid the use of lath and timber, the materials of which the houses were formerly composed. The necessity was so urgent, and the occasion so extraordinary, that no exceptions were made to an exercise of authority which otherwise might have been esteemed illegal."

There were regulations for building in force within the City walls, but the Great Fire was made the occasion for drawing up a Building Act (19 Car. II., cap. 3) with some claim to comprehensiveness. The provisions of this document are not generally known, and the following abstract of them may be worth a place among "Bygones":—

No house for habitation shall be hereafter erected within the limits of the City of London but such as shall be pursuant to such rules and orders of building, and with such materials, as are herein mentioned: and if any presume to build contrary thereunto, the house so irregularly built shall be deemed as a common nuisance, and the builder to enter into a recognisance to demolish the same in convenient time, or otherwise amend the same according to the said rules; and for default of entering into such recognisance to be committed to the gaol without bail or mainprize till he demolish or amend the same, or else the Court of Aldermen may demolish the same.

* * *

The Lord Mayor, Aldermen, and Common Council of the said City shall and may nominate and appoint one or more discreet persons, intelligent in the art of building, to be surveyors to see the said scantlings well observed, and give them an oath for the true execution of their office in that behalf.

* * *

There shall be only four sorts of buildings, and no more. The first and least sort, fronting by-lanes: the second, streets and lanes of note: the third, high and principal streets: the fourth and largest, mansion-houses for citizens or persons of quality.

* * *

The Lord Mayor and Aldermen and Common Council shall resolve before the 1st of April next which shall be accounted by-lanes, which streets or lanes of note, and which high and principal streets, and the same to be marked or staked out, that the extent may be known. And if any person pluck up or remove the same without lawful authority, and be thereof convicted, he shall be sent to the common gaol for three months without bail, unless he pay ten pounds: but if the offender be unable to pay the ten pounds, then the said offender shall be whipped near the place where the offence was committed, and the justices of peace out of the pecuniary mulcts may reward the informer.

* * *

All outsides of buildings shall be made of brick or stone, or brick and stone together, except for door-cases and window-frames, the breast-summers, and other parts of the first storey to the front between the piers, which at the discretion of the builder may be built of oak for conveniency of shops.

* * *

The surveyors shall take care party-walls and party-piers set out equally on each builder's ground to be built up by the first beginning of the building, and toothing left in the front wall, and that no man be permitted to build on the said party-wall until he hath reimbursed the first builder the full moiety of the charges of the said party-wall and piers, with interest at six per cent. for forbearance; and in case of difference the Alderman of the next Ward to mediate an agreement, and where he cannot do it to appeal to the Lord Mayor and Court of Aldermen to hear and determine the same.

* * *

Houses in by-streets or lanes shall be two storeys high, besides cellars and garrets; the cellars to be six foot and a half, if the springs of water hinder not; the first storey nine foot high from the floor to the ceiling, and the second the like: that all walls in front and rear be two bricks in length thick, and thence upward one brick and a half. The thickness of party-walls between houses of the first and lesser buildings be one and a half as high as the garrets, and in the garrets one brick in length at least.

* * *

The second sort of building fronting high streets and lanes of note, and the river of Thames, shall have three storeys besides cellars, which are to be six foot and a half high; the first storey ten foot from the floor to the ceiling, the second the like, the third nine foot: the walls in front and rear to the first storey to be two bricks and a half, thence upwards one and a half. Party-walls two bricks lengths as high as the first storey, and then upwards one brick and a half.

* * *

Buildings fronting high and principal streets shall consist of four storeys, besides cellars and garrets as aforesaid; the first storey from the floor to the ceiling ten foot, the second ten foot and a half, the third nine foot, the fourth eight and a half: the front and rear walls to the first storey the thickness of two bricks in length; and thence upwards one brick and a half. The party-walls to the first storey two bricks in length, and thence upwards one brick and a half.

* * *

The fronts of houses in high streets shall be balconies four foot broad, with rails and bars of iron, to contain in length two

* According to what was said by the Duke of York (afterwards James II.), it was an old woman who suggested the plan of blowing up houses by gunpowder in order to form gaps.

parts of the front, and the remaining vacancy to be supplied with a penthouse, to be covered with lead, tile, or slate, and sealed underneath; and the water falling from the tops of the houses, balconies, and penthouses be conveyed in party-pipes to the channel; and under the balconies and penthouses pavements to be made of broad flat stone.

* * *

No builder of houses fronting high streets shall lay his first floor over the cellar more than eighteen inches above the streets, or less than six, with a circular step to lead thereto; and no trap-doors to be suffered, nor any open grates or lights but upright; and that no bulks, jetties, windows, posts, or seats shall be made in any streets, only in high streets stallboards may turn over eleven inches and no more, when shop-windows are open.

* * *

And if any persons, bodies politic or corporate, seized or possessed of any ground built upon, and the houses now burnt in the late fire, shall not within three years next build up the same, that then the Mayor, Aldermen, and Common Council of London may make public proclamation between twelve and two in the afternoon, as well upon the ground as the Exchange, to give notice to all persons to rebuild within nine months then next following: and in case of neglect or refusal, the said Mayor and Aldermen may cause a jury to be empannelled to inquire and assess the true value of such void ground, and after such inquiry and valuation to sell the fee or inheritance thereof by conveyance under their common seal to any that will purchase the same at the price so valued, and the money thereupon due to be paid to the Chamber of London, and thence to be paid by the Chamberlain to such persons who have any estate in the same: which sale so made and enrolled, according to the custom of the City, shall be final to all others, and bar them, their heirs, &c.

* * *

That in case of combination, &c., or exaction by brick-makers, tile-makers, and lime-burners, the justices of the King's Bench, or any two of them, upon complaint of the said Mayor and Aldermen, may call before them such number of brick-makers and lime-burners as burn or make bricks, tiles, or lime within five miles of the Thames, and, upon conference with them had, assess such reasonable prices of the several kilns, and also of all carriages by land or water, as may respect the honest profit of the said brick-makers and the necessity of the builder.

* * *

That the justices of the Court of King's Bench, or any two of them, upon the like complaint of the Lord Mayor and Aldermen, may limit, rate, and appoint the wages of brick-makers, tile-makers, lime-burners, carpenters, bricklayers, masons, plasterers, plumbers, or other artificers, workmen, or labourers by the day, week, or otherwise, and what wages they shall have by the great, by the foot, yard, rod, or perch; which rates, set in a table, and proclaimed, shall bind all persons therein concerned. And if any refuse to set to work for the wages so assessed, or depart from his work without license of such as employed him, unless for non-payment, or if any underhand agree to give greater wages, the said offenders, legally thereof convicted, shall by the justice be committed to the common gaol for a month, unless he pay such fine as the justice shall impose, not exceeding ten pounds, out of which the injured party to be satisfied, and the rest to be employed towards the public buildings of the City.

* * *

Carpenters, bricklayers, masons, plasterers, joiners, and other artificers, workmen, and labourers to be employed in the said buildings who are not freemen of the said City shall for seven years next ensuing, and till the said buildings shall be finished, have the same liberty of working as the freemen of the City of the same trades; and after the said seven years, shall have the same liberty to work as freemen during their lives, paying and performing all such duties as freemen are liable to.

* * *

All differences about stopping of lights, windows, or water-courses may be determined by the Alderman of the Ward; and if he cannot determine the same, then the Lord Mayor and Aldermen to determine the same without appeal.

* * *

The numbers and places for all common sewers, drainers, and vaults, and the manner of paving and pitching the streets, shall be designed by such persons as the Lord Mayor, &c., shall appoint, who together with the surveyors have power and authority to direct the making of any new vaults, sinks, or common sewers, and to impose any reasonable tax upon houses, according to the benefit they shall receive, towards the same. And in default of payment of the same charged, the said persons so authorised, or any seven of them, by warrant under their hands and seals, may levy the said sum by distress, &c. And all other commissioners are suspended within the said City and liberties thereof for seven years, and till the buildings are finished.

* * *

All corner-piers of stone or brick to be erected shall be of the dimensions mentioned in the former Act. But builders may use, instead of brick or stone, a substantial post of oak timber of such dimensions as the City surveyors shall appoint.

* * *

No builders shall be permitted to lay their foundations till the surveyors have viewed the same and seen the party-walls equally set out; and then the builder shall repair to the Chamberlain of London, and there enter his name, with the place where his building is to be, and pay down to the said Chamberlain six shillings and eightpence for every foundation, after which, in three days the surveyors shall set out the foundations accordingly: and all builders who have already laid any foundations shall pay to the Chamberlain aforesaid six shillings and eightpence; and in default thereof, the Chamberlain may sue for the same.

* * *

No houses built upon the site of the houses burnt by the fire shall, after the rebuilding, be liable to any encumbrances whereto the same might be liable by any matter or thing before the said late fire.

Who was the author of the Building Act of Charles II.? Tradition has assigned the office to Sir Christopher Wren, but the evidence is only of a circumstantial kind. The practical knowledge and good sense seen in the clauses are the grounds on which the claim is based.

It will be seen that an effort was made to prescribe buildings of a more substantial mode of construction than hitherto prevailed. More would have been done if there was less limit to the King's power in Parliament.

One advantage arose from the new Building Act. London used to suffer periodically from plague, and the year before the Great Fire over 100,000 of the inhabitants perished from that disease. But London, since its rebuilding, has been free from that calamity. Sanitarians have, therefore, some reason to be grateful to the "Merry Monarch."

Correspondence

Architectural Restorations and Modern Practice.

Sir,—One of your daily contemporaries has published some letters from Florence describing the restoration of the Duomo, and referring to the storm of censure that assailed those engaged in similar work at Venice a year or two ago. It is a trite saying that we should learn wisdom from the past, and it appears to me that these letters invite us of this northern clime to take its lessons to heart.

Does it not seem as lamentable as it is extraordinary that in this country—the inhabitants of which are always credited with a just appreciation of the practical—we should persist, without the slightest necessity or excuse, in the use of materials for our façades so utterly unsuited to our climate that, instead of centuries, as in Italy, only months are required for their destruction? If from some lamentable cause we feel compelled to give constant employment to our masons, we could not do better than build as we do. Public structures have to be restored twice in a lifetime at a cost of many thousand pounds, and in our case a little fortune has to be spent annually on repairs.

The only excuse for continuing the absurd practice of building in London with perishable stone is that it is so soft that it admits, at small cost, of abundant ornamental carving, and that if this soon decays it can easily be repaired. That is the case of the architects and builders. But the question remains—What would the British taxpayer say if the case were properly presented to him? Would he prefer to have ornamental buildings, always in a state of costly restoration, to simpler edifices of equal, though different, architectural beauty never requiring repair? The answer, I venture to think, is as obvious as certain. It is to be hoped, then, that with the building of the new War Office an end will be put to the necessity for the restoration of public buildings in English cities by the use of a material suited to their abnormal atmosphere of destructive gases.

The proofs of the possibility of this are numerous. But to take one only. Within bowshot of Westminster Abbey are two structures. On the one hand you have the Houses of Par-

liament; on the other the Crimean monument. The first is of limestone, which is constantly under restoration, at a cost of 2,500*l.* annually; the last is partly constructed of an igneous rock of great beauty, which has suffered no change whatever from twenty years of exposure. In the use of the durable material there is no question of extra cost. An appropriate granitic treatment of architectural style would not be more expensive than the customary elaborate carving and moulding of soft freestone, including the outlay on its periodic restoration.

It is scarcely necessary in your pages to urge that the splendours of ancient architecture were intimately connected with the use of materials remarkable alike for their durability and beauty, but it scarcely seems to be realised, as yet, that within the limits of the United Kingdom nature has been almost as bountiful in this respect as in Egypt, or Greece, or Italy. The only misfortune is that at present their use is limited to a portal or a column here, to a pilaster or a panel there. It is extending, however, and my conviction is that the architect will make his mark, so to speak, who shall erect the first complete city edifice in which perishable and fuliginous freestone shall be conspicuous by its absence, but instead thereof burnished walls of white Cornish elvan, with details of pink and gray granite and green porphyry.—Your obedient servant, AN OLD ARCHITECT.

CHURCH BUILDING AND RESTORATION.

London.—St. Stephen's Church, Battersea, is the ninth of the churches to be erected under the Bishop of Rochester's Ten Churches' Fund, and is situated at the corner of Bridge Road and Kersley Street. The building, which may be termed a brick church, is designed in the Decorated style, with simple telling details, advantage being taken of different colours of materials for effect. The internal walls are finished throughout with picked stock-brick facings of a good deep colour, with moulded red-brick arches, strings, labels, jambs, &c., most of these moulded bricks being specially made to the architect's details by Messrs. Lawrence & Son, of Bracknell. The tracery of windows, caps, bases, and other stonework are in Monk's Park stone, with red Ancaster stone shafts to nave arcade. The roofs throughout are close-boarded, stained, and varnished. The floors are of wood-block paving; seating in nave and aisles in pitch pine; choir stalls, pulpit, screens, and sanctuary fittings in English oak. The exterior of the building is finished in picked stock facings, relieved with red-brick dressings. The roofs and spire are covered with Broseley tiles, specially-designed tiles being used for ridges, &c. The church is built to accommodate about 700 people, with a large parish-room, offices, and vestry beneath. The cost has been about 4,600*l.*, including tower and spire, narthex, boundary walls, fittings, &c., complete—a comparatively small sum. The work has been carried out from the designs and under the superintendence of Mr. Wm. White, F.S.A., by Messrs. Holloway Bros., of Queen's Road, Battersea, S.W., Mr. T. W. Barry acting as clerk of works.

GENERAL.

The Aberdeen Artists' Society's Exhibition in the Schoolhill Galleries, which was opened on Monday, August 2, was closed on Saturday evening. Pictures were sold to the value of about 1,000*l.*

The Collection of Works of Art bequeathed by the late Mr. Joshua Dixon, of Winslade Park, may now be seen at the Bethnal Green Museum. It comprises many valuable water-colour drawings, besides oil-paintings, and sculpture in marble and bronze.

Mr. James Sellars, I.A., of Glasgow, read a paper on "Every-day Architecture" at the last meeting of the Dundee Institute of Architecture. In the course of the paper he said that more than one-half of the plans which went before the Glasgow Dean of Guild Court were signed by persons who had no claim to be called architects, and who did not so designate themselves in the City Directory.

Mr. W. Leiper, F.R.I.B.A., delivered a lecture on architectural study at last week's meeting of the Glasgow Architectural Association, in which he advised students to draw often and draw well, as the disadvantage Scotch architects labour under in the lack of all academic instruction in architecture, either practical or as a fine art, could be best minimised by the careful study of the works of the past with the aid of pencil and measuring rule.

The Roman Catholic Cathedral at Pittsburgh, Pennsylvania, U.S., was burnt down on last Saturday morning. It was one of the finest churches in the country. The fire is reported to have originated from an explosion of natural gas which supplied a stove.

Lord Aberdeen (the late Lord-Lieutenant of Ireland), while regretting that the pressure of many direct claims hinders him from sending a more substantial amount, has forwarded a cheque for three guineas in aid of the Science and Art Classes of the Dublin Mechanics' Institute.

The Plans of Messrs. Darbyshire & Smith, of Manchester, have been approved for "Old Manchester and Salford" at the forthcoming exhibition. Messrs. Maxwell & Tuke report marked progress in the ironwork of the buildings in general.

Mr. C. F. L. Horsfall, of Halifax, has been awarded the first premium in the competition for the Elland Town Hall.

Mr. F. J. Clarke having determined to discontinue his prize of a gold medal to the Lincoln School of Art, Mr. Sharpley Bainbridge has offered to continue the gift.

Mr. G. F. Watts, R.A., intends leaving for Egypt at the end of next week, to pass the winter.

Plans to the number of seventy have been sent in, in competition for the proposed hospital for West Renfrewshire. Six sets have been selected for further consideration.

Mr. S. Denman, of Brighton, has obtained first premium in the competition for the Town Hall and offices at Lewes. The second premium goes to Mr. Mark J. Lansdell, of London and Hastings.

Mr. R. S. Marsh, of Cockermouth, has prepared plans for a Liberal club, to be erected in Station Street, Cockermouth.

M. Munkacsy, the painter, arrived in New York at the beginning of this week.

A Town Hall is proposed to be erected at Bromsgrove. Mr. John Cotton, of Birmingham, is the architect.

The Lighting of Ingestre Church by electricity has been just carried out.

The Birmingham Architectural Association held the first ordinary meeting, Mr. John Cotton, president, in the chair, on Tuesday evening, when a paper was read by Mr. Victor Scruton, hon. secretary, on "Poetry and Price Lists."

The Architectural Section of the Glasgow Philosophical Society held its opening meeting on Monday evening, when Mr. James Thomson, architect, delivered the presidential address.

The Kingstown Commissioners have resolved to erect artisans' dwellings in the township, according to plans prepared by Mr. Thomas Drew, R.H.A. The cost will be about 21,000*l.*

An Exhibition of Irish Industries will be held in an annexe of the Manchester Jubilee Exhibition next year, provided a sum of 3,000*l.* for the building is guaranteed by the Dublin Society.

Professor Sullivan will deliver the inaugural lecture at the Dublin Technical Schools upon an early date in January next.

Joseph Messner, the sculptor, has died of consumption at Oberndorf, in his forty-sixth year. He was brought up as a watchmaker, but having a talent for sculpture he was received as a pupil in the Munich Academy. In 1871 he was sent to Rome, where he remained for nine years, when he removed to Vienna.

The Metropolitan Board of Works propose to offer 58,000*l.* for the fields at Hammersmith known as Ravenscourt Park. A sum of 50,000*l.* was offered and declined. The local vestry will pay a moiety of the increased sum.

Mr. Edwin Arnold, C.S.I., author of "The Light of Asia," has addressed a letter to Sir Arthur Gordon, Governor of the Island of Ceylon, in favour of the restoration of the great Buddhist shrine at Buddha-Guya. It is now occupied by a college of Shivaite priests, who worship Mahadev there, and deface the shrine with emblems and rituals foreign to its nature.

A Meeting of the Worshipful Company of Plumbers was held on Wednesday at the Guildhall, Alderman Stuart Knill, Master of the Company, presiding, supported by Mr. F. Machin (Warden), Mr. W. H. Bishop (Renter-Warden), and Mr. George Shaw (ex-Master), for the further issue of certificates to plumbers passed by the committee of registration. Upwards of 200 master and journeymen plumbers from various parts of the kingdom were present. All the plumbers who presented themselves had complied with Clause 6 of the company's regulations.

Mr. F. R. Conder has been informed by the Metropolitan Board of Works that his iron process for the purification of sewage is not adapted to their purposes, and that they are not therefore prepared to adopt it.

The Architect.

THE WEEK.

The Imperial *régime* is recalled by the death of Eugène Petit, the flower-painter, who was employed on the decoration of Compiègne. He had only reached his forty-seventh year. M. Petit was a Parisian. Flower-painting can never gain high honours, and his only award was a third-class medal in 1873.

All the world has heard of the startling revelation of the appearance of the ancient Pharaohs by M. Maspero, but it was only on Friday last that he submitted a report on the unrolling of the mummy cloths to the French Académie des Inscriptions et Belles Lettres. It is evident from that document that there was a rivalry between M. Maspero and M. Brugsch, his co-conservator of the Boulak Museum. M. Brugsch wished to have the first peep at the ancient sovereigns, and, during M. Maspero's absence, he operated on Thothmes II., but it was found that the Arabs were beforehand, and the royal countenance was disfigured. Then an attempt was made on Queen Nofritari, but the embalmers had scamped their work, and it was necessary to bury the remains as quickly as possible. Operations were made on other mummies, and M. Maspero says he was in consequence compelled to interfere, in order to prevent the accidents which might ensue from a hasty unswathing. It is evident that M. Maspero does not consider that M. Brugsch holds a position sufficiently exalted for work of that kind, although his hands might be qualified to deal with the remains of plebeians. M. Maspero, therefore, resolved to gratify the Khedive by revealing what was left of a remote predecessor in the Government of Egypt—Rameses II.—and it was followed by the like performance on other kings and high priests. He was so far successful that the age of the individuals could be guessed. Thothmes II. was supposed to be under thirty years of age at his death. It is to be hoped that some day M. Brugsch may be induced to give his version of the story, for we fear that M. Maspero is not entirely impartial in his account.

Several of the pictures which Mr. Watts, R.A., has bestowed on the nation are now being exhibited in the Nottingham Museum. There are fifty-five works, including the *Fata Morgana*, *The Genius of Greek Poetry*, *Hope*, *The Birth of Experience*, *The Daughter of Herodias*, *Orpheus and Eurydice*, *Love and Life*, *Paolo and Francesca*. Among the portraits of celebrities are those of *Mr. Gladstone*, *Mr. Matthew Arnold*, *Mr. Burne-Jones*, *Mr. Calderon*, *Mr. Swinburne*, *Mr. Browning*, *Mr. William Morris*, *Sir F. Leighton*, with *Carlyle*, *Panizzi*, *Motley*, and *Stuart Mill*. The plan is adopted of publishing a penny guide to the pictures, containing explanatory criticisms. Something of the kind would be useful in most exhibitions which are intended to attract the humbler classes of visitors.

A meeting was held on Friday of the Society of Medical Officers of Health, to consider the draft of a proposed Bill for the registration of houses which certain amateurs in legislation desire to have introduced into Parliament. It may not be credited that the doctors opposed the scheme on the grounds mainly that architects were likely to become examiners if such a Bill were passed, and that as they are incompetent for such an office now they must always be so. Dr. Willoughby told the story of one of his patients, a most eminent architect, who went to expense in altering a house for his own occupation, but forgot all about the drains until diphtheria attacked his family, and the doctor argued that if the house had been let to a tenant, before the attack, a certificate of its safety would have been given, regardless of any examination of the drains. Dr. Corfield, whom the Institute of Architects has the privilege of counting among its honorary associates, was wroth against the scheme because the certificates of efficiency were to be given by his fellow members and members of the Institution of Civil Engineers. "I don't think," he said, "that anybody can deny that the vast majority of those gentlemen are entirely unqualified to give the certificates in question," and the doctor thought the certificates would not be worth the value of the paper they were written on. Dr. Blyth said that a trial was coming on about the demolition of houses in his district under Torrens's Act, and five or six architects will be forthcoming to testify that the houses are in the most excellent sanitary condition that is possible. The President was of opinion that many architects never saw a drain in their lives, and that the only competent examiners were medical officers like himself. This kind of stuff has been allowed to circulate too long, and it is time for architects to allow their forbearance to cease. There is only one way to put an end to it, and that is by speaking boldly of the blunders which medical officers of health commit every day.

The statement of the Chancellor of the Exchequer, which shows that the Government will oppose the renewal of the Coal and Wine dues, has caused much fluttering among the members of the various local authorities of the metropolis. When it is remembered that in the course of a century nearly ten millions have been laid out on public improvements, and that the money was raised on the dues, the stoppage of such a resource becomes alarming. Last year the dues amounted to about 450,000*l.*, and to find an equivalent will involve an additional taxation of about 4*d.* in the pound. It is needless to say that there are objections to the dues, for there never was a mode of taxation that was universally satisfactory. It may also be true that, from having such a resource, money is too freely raised and expended. But, looking at the long list of metropolitan improvements, can it be asserted that any one of the items was unnecessary? There is no city in which so few imprudent works have been undertaken as London. Moreover, many improvements are still desirable, and we think it will be found that the sudden stoppage of that source of income will be enough to impede works of the kind for a long period of time.

The late Viollet-le-Duc prepared plans for the restoration of the sculptured porch of the cathedral of Vaud, and the work was estimated to cost about 5,000*l.* The project was allowed to remain in abeyance; but the condition of the figures will no longer admit of delay. It appears that nearly 4,000*l.* is in hand, and the Government will supply the stone. What is now being considered is the kind of stone that should be employed. M. Assinare, Government architect, will have the charge of the work.

When the Tuileries Gardens were turned over to a legion of showmen, tumblers, and musicians for a part of the summer, the arrangement was viewed with apprehension by many. It seemed to be a forerunner to some great change in the place. Another stage is about to be reached, for it is proposed to erect a colossal monument of the Revolution of 1789, either in the centre of the gardens, or on the site where the palace of the Tuileries once stood. It is needless to say the former proposal, if carried out, will not only alter the character of the gardens, but take away much of their charm. In spite of all the variations of governments the gardens may be said to have continued in the form that was given to them by Le Nôtre. The alterations were few, and were principally those suggested by Robespierre, who, in imitating antique ways, ordered semicircular seats to be placed here and there, to accommodate the elders of the Republic as they watched the exercises of the youths who were to take their places. At present there is a fine perspective from the site of the palace to the Arc de l'Etoile, but if an object like the memorial intervenes, that view, which is one of the sights of Paris, will lose its effect. Nor is it evident why the gardens should be selected for the structure any more than the position in the Louvre courtyard was devoted to a statue of Gambetta. The Tuileries Gardens were not the scene of any important event in the history of the Revolution. The Revolution is already celebrated by the liberty which is afforded to everybody of enjoying the gardens throughout the year. Before 1789 the people were excluded unless on fête days. Would not a far better site be found in the garden of the Palais Royal, for it was there the spirits of the Revolution used to confer, and there Camille Desmoulins raised the cry, "Aux armes!" which was the prelude to the fall of the Bastille?

POLYCHROME DECORATION.

ANY of our readers who happened to be, a few years ago, in that part of Paris where the "Printemps" was being erected, will admit that they felt a good deal of surprise when a glimpse was afforded of the brilliant mosaic which exhibits the title of the building. At first it was natural to infer that a great part of what was shrouded by hoarding was embellished in the same way, and to suppose that the new building would be a marked contrast to those near, which were new and white. If the stranger inquired what so novel a building was intended to be, he was informed that it was to be a shop for ladies' dress; and, if he knew Paris, he must have recognised the importance, in a business sense, of having a name and a building that were alike unique. The Paris draper would be surprised at JULIET's question, for he is assured that prosperity depends in a great measure upon having a fantastic name for his house. He knows also that he must have novelty in other things as well as in his goods, and he is compelled, in consequence, to have recourse to the stratagems that are so truly described by M. ZOLA in his "Au Bonheur des Dames." When the scaffolding was cleared away, it was evident that in the "Printemps" the novelty was combined with good sense. Colour was only used on the exterior in such places as would serve to be an advertisement, and the iron construction which is the great feature of the interior might seem to be a device for allowing as much space as possible for the exhibition of goods. The area of the "Printemps" is much less than that of rival establishments, but it may be said that not a square inch is occupied by construction which could be spared. Whatever is to be alleged against iron as a building material, it cannot be denied that it saves space, and this property is fully exemplified in M. SÉDILLE's building.

It might be supposed that the architect would be satisfied with having produced a shop that is almost as characteristic of our time as a railway station, while it differs from structures of that class in the beauty of the work. The building may be examined on all sides, and it will be found that the architect's attention was given to the smallest detail, and that even a slab containing directions for the porters and carriers shows a designer's hand. But one of the remarkable things about Frenchmen is that they are not satisfied when they do something that is original in politics or art, and leave it to speak for itself. Like Chancery lawyers, they seek out some musty precedent for their work. The first Revolutionists tried to pose as the successors of antique Romans, and now we have M. SÉDILLE doing his best to prove that his drapery establishment is the legitimate representative of Greek and Roman temples and Mediæval cathedrals. That was the manifest meaning of the paper which was read at the Institute last week.

We cannot see there was any necessity for the effort. If the "Printemps" is beautiful, and serves the purposes of the owners by its convenience and attractiveness, what more is needed? The building is not a temple or a cathedral, and need not resemble either of those works. If precedent is indispensable, it should have been sought in the booths of the traders of a past age, and they had little that was architectural about them. M. SÉDILLE has not taken a booth for a *motif*, and if he considers he was free to choose in respect of form, why is he afraid of being independent in his use of colour? In such matters our time may well make a law for itself.

Besides, when authority is sought from the past all sorts of objections arise. M. SÉDILLE in his essay takes it for granted that there is no difficulty in accepting the restorations by the young gentlemen of the schools of Rome and Athens as veritable representations of the Greek and Roman temples in their pristine glory. With all our respect for the imaginative power of the students, we cannot suppose that their efforts are much better than would be the attempts of the literary students to restore some of the lost books of antiquity. There is no certainty about the colouring of the temples, and as every inquirer seems to have a theory of his own, it is impossible to say how far the stone was concealed by paint or another material.

M. SÉDILLE expended a good deal of pains in proving that colour was known in Europe during a great many centuries, an historical fact which, it may be assumed, was not unknown to the Fellows of the Institute. We may be enveloped in fogs in this country, but from time to time a little information from the Continent has reached us. M. SÉDILLE will therefore be gratified to learn that a few at least were already aware of the use of colour on Byzantine and Mediæval buildings, and that they had heard of a man named LUCA DELLA ROBBIA.

M. SÉDILLE was desirous to prove that France was the heir of the ages in respect of polychromy. But then the question arose, how was the succession broken when stone was left to its natural colour? M. SÉDILLE has a short and ready answer. According to him the evil was caused by BERNINI and the Jesuits, when they put forth white buildings as reproductions of those of Ancient Rome. If for the moment we assume that M. SÉDILLE is right, is not the explanation a satire on French scholarship and taste? For we must suppose that in the Augustan age of French literature and art, nobody was competent to explain the true character of ancient architecture. We have more respect for the men of that period, and we therefore offer another explanation.

The principal cause of the abandonment of wall-colouring at the time is to be ascribed to the influence of painters and sculptors. Colours used in that way had been falling into disuse; but when wall-paintings in which the figure was represented on a large scale became general, it must have been manifest that their effect depended in a great measure on the treatment of the surrounding parts. If the walls containing the picture were painted without any control from the figure-painter, his work was likely to suffer, and in most cases he would prefer a plain wall. Pictures on canvas or panel were produced in large numbers, and were presented to churches. They also helped to supersede the use of colour on walls. Tapestry was another cause of the decline of painted surfaces. In most cases the pictures and tapestries have been removed from churches, and the walls now appear bleak; but we must imagine what was the former state of the buildings when the walls glowed with the colour that was found in the paintings of a crowd of masters, for every village in Italy seemed to have painters among its residents. It is not necessary to discuss whether the colour was of the most appropriate kind; it is sufficient to know that the people preferred pictorial subjects in fresco or on canvas to conventional ornament.

The sculptors also must have hesitated when they thought of the contrast between their white figures and a coloured background. It is only necessary to look at any one of the small chapels in Notre Dame containing a white marble figure of an archbishop to discover how much sculpture can suffer when the walls enclosing it are painted with ornament. If the logic of art is accepted, statues should be painted when they are placed in positions of the kind; but as a rule the Renaissance sculptors were inimical to that mode of treatment.

It is to causes of this kind that we must ascribe the change in regard of colour, and they were in action before either BERNINI or the Jesuits appeared in the world. We are ready to admit that to the Frenchmen of his time BERNINI was a demigod. One act of his was sufficient to gain him such a position. He made a bust of King LOUIS, but there was a delay about the pedestal. Whereupon it was said that there was no need of one, for the whole world was too small a base for so great a monarch. BERNINI became still more sublime, for he wrote some verses, in which he asked what was the use of trying to find something to sustain so mighty a king, for he who supported the world wanted no support. After that, if the sculptor had asked the people of France to have black walls instead of white the request would have been carried out most joyfully.

M. SÉDILLE is not, we think, much more successful in his selection of a second cause. The Jesuits may be very convenient scapegoats when there is a historical difficulty about politics, for they are supposed to have more than human power, but they are not to be so easily used in architecture. We always thought that the Jesuits were disposed to imitate the owners of the Magasin du Printemps, and to employ whatever style of decoration or of architecture was believed to be most attractive to crowds of people, and the gaudiness that is said to be the prevailing characteristic in what is called Jesuit architecture is a proof of this.

Instead of being opposed to colour, they were lavish in its use, by means of marbles, metals, paint, gilding, &c. In this country the Order is free, and what do we find? In London there is a Gothic church because Gothic was supposed to be in fashion here. In Edinburgh the style is nondescript, for the church is a transformed shed, but the walls are covered with paintings. In Dublin, where Classicism was supposed to reign, the church is filled with sham marbles. Everywhere there is an adaptation to local circumstances.

In France if the Jesuits found a belief prevailing that white churches were in the best taste, they would be sparing in introducing colour. Unless we are mistaken, the church of St. Louis, now St. Louis and St. Paul, in the Rue St. Antoine, was their first important church in Paris. It is impossible to say what its original condition was, since it suffered much during the First Revolution. We suppose M. Sédille has heard of the medal that was struck for the laying of the foundation-stone, with its remarkable inscription, "Vicit ut David, ædificat ut Solomon," and which expressed the ecclesiastical estimate of the greatness of Louis XIII. When a king is said to build like Solomon much is expected from him, and Louis did not disappoint his eulogists. The marble in the church at present suggests that the building was not entirely white within. The church was completed in 1641. The works at St. Eustache had come to an end at that time, but there was no colour on the walls, although from the style it could be easily used. A few years afterwards (A.D. 1646) St. Sulpice was commenced without any provision for colour, and the same may be said of St. Roch, of which the first stone was laid in 1653. If M. Sédille will reflect he will discover that there was a need of "Apostles of Colour" long before a Jesuit was known in France. It might also be concluded that if the Jesuits were the introducers of white walls into Paris that would be enough to make the other churches blaze with colour. The Order was never in favour in Paris. This becomes plain from the memoirs of Pierre de l'Estoille. It is well, when treating a subject like the rise and fall of polychromy, to be accurate, and therefore we would suggest that M. Sédille is not always to be taken as a historical guide. An apostle may, we suppose, be excused from losing much time in researches of the kind. According to the official abstract, M. Sédille objects also to the solemnity of the architecture that was imported under the Grand Roi. That quality used not to be considered a defect in temples and churches, but we suppose that henceforth if solemnity interferes with polychromy it will have to succumb.

There are several cases where that occurred in Paris. Does M. Sédille believe that the walls of the Sainte-Chapelle in their present condition are calculated to inspire reverence? Does he consider that Saint Germain-des-Prés is made venerable by the striping of the columns, or that the paintings of Flandrin gain by the surrounding decorator's work? Does he admire the diapers made out of letters and fantastic things, and the strange colours that cover the walls of the side chapels in Notre Dame? If so, he has not taken a lesson from any of those buildings before designing his Magasin. M. Sédille has put colour in its right place, and has made it more effective by contrast, while in the churches we have named the decorators were allowed to have the upper hand. A better principle is fortunately applied in several of the new churches of Paris. No fault can be found with the Imperial church of St. Augustin, or with the less expensive but excellent church near the Invalides, where there is a good frieze by M. Lemeire. We are bold enough to say that a little chapel of ease at the back of the "Printemps" is a far more agreeable example of decoration than Viollet-le-Duc's in the Cathedral.

The early days of the revival of polychromy in Paris were not fertile in examples of ecclesiastical or secular work that were adapted to inspire confidence. If M. Sédille were to pass by Prince Napoléon's Pompeian villa on a few successive wet days, he would hardly be disposed to become enthusiastic over it. The coloured circus also assumes a woebegone appearance at such a time. Paint, like charity, can cover a multitude of defects; but it must be acknowledged that the attempt to create a new mode of architecture by its aid was not more successful with external work in Paris than in London.

There was an approach to a better state of things when the Paris opera house was constructed, although the building testifies to the truth of the architect's statement, that marble will not retain its beauty and polish in a climate like France. But in spite of that example, external decoration by means of coloured marbles or mosaics has not made much way in Paris. Indeed, if it had, there could not be so much wonder when M. Sédille's building was revealed, and the intention of the designer would be frustrated. In the use of colour, England has gone beyond France. As much was acknowledged by M. Sédille, for according to Mr. Aitchison, "he was delighted and amazed to find how advanced the English architects were in the use of glass mosaic and enamelled tiles, almost beyond those of France." If the almost were omitted, the words would come nearer the existing state of things.

When we were writing lately about Luca della Robbia we said, "If he were to arise again he would have to own that English potters have a claim to be recognised as his legitimate successors,"* and as regards the supply of means for external decoration England has little need to go abroad. We have better terra-cotta, better enamelled pottery, than the French, and we can have mosaic equally good, for in spite of M. Martin's praiseworthy efforts the French mosaicists must have recourse to Venice for tesseræ when they desire to do superior work. It will be said that the French have a finer eye for colour, but it must not be supposed that what will serve in France is equally adapted to this country. Care must be taken that we are not led to do extravagant things at the bidding of the "Apostles of Colour." There was no foreign drawing at the Institute that in subtlety of treatment surpassed some of those which Mr. Aitchison has from time to time sent to the Academy; but, to judge by his speech, he seems disposed to sink his own individuality before the superior sanctity of the two apostles. If so, it is to be hoped he may find few imitators. We have our own needs, and we should endeavour to accept the conditions that are around us. Mr. Phené Spiers very wisely pointed out at the Institute meeting that anything that is very brilliant is out of place in a city like London, and that is equally applicable to the majority of provincial towns. We cannot expect that French architects will get us out of our difficulty by displaying their attempts in Paris, which after all have had but a partial amount of success.

RICHARD WAGNER.†—III.

On his return from Paris to Germany Wagner had a double task before him. He was eager to have "Tristan and Iseult" performed in one of the opera houses, and no less eager to obtain money. There were always obstacles to the mounting of the opera, and for a time Wagner was compelled to give up negotiations with managers. He, therefore, undertook a series of concerts, and he appears to have found for the first time a financial success when his troupe reached Russia. On his return he settled in Vienna, and there he squandered nearly all the money he brought back. Hereafter people will not think worse of Wagner because he resembled Oliver Goldsmith in his manner of arraying himself in sumptuous apparel, for such conduct suggests that the philosophical musician was only a mortal like the majority of his fellow-sinners. Thieves broke into his house, and were able to carry off many valuables, but, as they spared all manuscripts, it was supposed they did not belong to the composer's band of worshippers.

Worse to bear was the neglect of "Tristan and Iseult." Managers and audiences were indifferent to this pessimistic work. Dresden was willing to take Wagner back, and even agreed to most of the exorbitant conditions which he stipulated. The Government was ready to pay him a large and life-long salary, to permit him to reside in the grand ducal palace, to give him a box in the theatre, to place the

* See *Architect*, August 28, 1885.

† *Richard Wagner: Sa Vie et ses Œuvres.* Par Adolphe Jullien. Ouvrage orné de Quatorze Lithographies originales, par M. Fantin-Latour; de Quinze Portraits de Richard Wagner; de Quatre Eaux-Fortes, et de 120 gravures; Scènes d'Opéras, Caricatures, Scènes d'intérieur, Vues de Théâtres, Pièces autographes, Costumes d'acteurs, &c., &c. Paris: J. Rouam. London: Gilbert Wood & Co.

grand ducal carriages at his disposal; but as soon as he proposed the adding of "Tristan and Iseult" to the *répertoire* the business came to an end. With all its enthusiasm for him Dresden could not stand that work. WAGNER was disgusted with a world that would not take its gospel from him, and he resolved to retire from it (and his creditors) to some retreat in Switzerland. Just at this time, however, the King of BAVARIA died, and as his successor, the unfortunate LOUIS II., believed it was his mission to propagate the new music, WAGNER might feel as elated as Sir JOHN FALSTAFF when, in SHALLOW'S orchard, he heard that his tender lambkin was king, and convinced himself that the laws were at his commandment.

The first act of the young King was to send a secretary with an invitation to WAGNER begging him to come to Munich, in order that he might finish his work. "I thought," said WAGNER when he received the letter, "that I was lost. Now I am saved. All my hopes are surpassed, for the King puts everything of which he can dispose at my disposition." WAGNER set about introducing many reforms in all that related to music in Munich, and it is needless to say he found many opponents. One of his first thoughts was to bring SEMPER to the city, in order that a theatre might be constructed on a scale that befitted the series of operas relating to the "Nibelungen."

In spite of the royal patronage the operas of WAGNER were hardly more acceptable to the amateurs of Munich than to those of Paris. There were some who were able to admire them, and others who affected to do so; still the majority continued to be loyal to the older methods. Munich is one of the few places in Germany in which something resembling public opinion has managed to thrive, and it was unfavourable to the composer. There were grounds for allegations against WAGNER. He brought strangers to the city to have them placed in high offices; he was the cause of a large expenditure of money which must be paid by the people, and, worse than all, he was supposed to interfere with political matters. WAGNER was not an ORPHEUS, with power to overcome men by the concord of sweet sounds. As soon as it was known that SEMPER had received orders to construct a new theatre, the agitation reached a height that compelled the King to sacrifice his favourite. WAGNER was once more turned adrift; but this time at least he was possessed of a viaticum in the form of a yearly allowance. He went first to Switzerland. Afterwards he was followed by his lieutenants, for Munich made no restriction in its clearance. However, when the "Master-singers of Nuremberg" was to be brought out WAGNER went back to the city, in order to control the arrangements. He took care to keep within his legitimate province while there, and the musical comedy was successful.

Swiss air had a curious effect in exciting WAGNER to become a publicist. We have already recorded how he tried to get up a crusade against Hebraism in music. This time the cry was against France. He professed to be as much afraid of the power of the "seductions of Paris" as of "the self-sufficiency of England" over the minds of his countrymen, so he appealed to the German rulers, and especially to the King of PRUSSIA, to lay the foundation of a new German civilisation, which might extend to the frontiers of the Fatherland. The meaning of it, according to M. JULLIEN, was "enable me to represent the 'Nibelungen.'"

The young King of BAVARIA did not need a pamphlet to incite him to a duty of that kind. His Majesty had ordered that a fragment of the trilogy was to be performed for his birthday in 1869, but owing to the difficulty of having all the machinery in working order, the "Rheingold" was put off for a few weeks later. The King's Wagnerism was a serious drag on the exchequer, for the birthday treat needed an orchestra of at least 120 instrumentalists, and the machinery alone cost 5,000*l.*

In spite of all the money that was expended the Munich opera house was insufficient for the proper display of the sections of the "Nibelungen." SEMPER had designed a theatre that was worthy of such an entertainment, but there was a limit to the King's purse in Bavaria, and so vast a building was therefore impracticable. As the school for singing which the King and WAGNER had established was only allowed to exist during two months, to propose the erection of a colossal theatre would be to run the risk of a revolution. WAGNER, therefore, resolved to appeal to the newly-united Germany. The French war, he said, had enriched the Government almost to superfluity, and how could a share of the money be better appropriated than in advancing national, that is, Wagnerian art? He tried to ingratiate himself by composing a coronation march for the Emperor, but the estimation in which WAGNER held himself as a sovereign in his way was different to that of the Imperial court's. WAGNER'S day-dream about the French spoil that was to come to him was rudely dispelled when he found he was treated as if he were only a regimental bandmaster, for all he received was a sum of 300 thalers, or say 45*l.* It is no wonder that he was indignant on discovering that there was to be little difference between the old and the new Germany. He therefore turned from kings to the people, and appealed to them and his admirers throughout the world for aid to enable him to erect a theatre, for which Bayreuth was selected as a site. Everybody is aware of the peculiar character of the building, which no theatrical manager would venture to imitate. The exterior was almost as plain as an Elizabethan theatre. The interior is restricted in division to a pit and two rows of boxes; moreover, the pit becomes narrower as it approaches the stage, the space at the sides being arranged as a series of projecting wings in order that it can never be utilised by spectators. The orchestra is placed below the level of the stage and is concealed from the house. But the building has many advantages, everybody can hear and see well, there is no colossal gaselier, figure-painting or decoration to attract attention or disturb repose. In its severity the Bayreuth theatre is more allied to Athens than to Paris. The audience is also supposed to attend for the purpose of hearing music instead of for the display of the latest fashion in robes. To realise what the characteristic Wagnerian opera is like one must make the journey to Bayreuth. It is only there that full justice can be rendered to the composer's and dramatist's idea.

The subjects of the operas were Germanic, and as far as possible the scenery and dresses were no less suggestive of the country. The museums were ransacked for materials that would suggest what ornaments were in vogue in prehistoric ages, and the scenery was derived from places where nature remains uncultivated. The elements of the spectacle were not superior to what is to be seen in Paris and London. The machinery that was employed to suggest the floating motion of the three Rhine nymphs, which was one of the most effective "hits," may be supposed to be more ingenious than what is to be seen in Drury Lane or in one of the great provincial theatres at Christmas time, but it deserves to be remembered that in the latter all that is needed is the display of mute supernumeraries for a few minutes, while the nymphs are important characters. As good scenery is to be seen in Paris and London, and a better display of colour in costumes will be found in London (for every impartial playgoer must testify that very crude dresses are to be seen in Paris especially when a crowd is placed on a stage), but, as we have said, the *ensemble* in Bayreuth has an individuality about it that we seek in vain elsewhere. In spite of much crudeness of colour, and the modernness of the materials in the dresses, there is a mythic character about the performers and their environment which brings the spectator into a true relation with the legends and with the strange music.

When the first performances were over, and the representatives, who came from places so far apart, were satisfied, surely a little elation was allowable to WAGNER, who was then able to see the realisation of what he had dreamt in poverty and exile. In the words which he spoke to the auditory he was not happy, for he appeared simply as an egotist, but afterwards he did more justice to himself. There was a touch of old-fashioned simplicity in the spectacle of WAGNER marching round the dinner-tables (the charge was five shillings a head) with a crown of silver leaves on his head, which he raised at times in order to salute the spectators.

But the usual fate attended the performances. In spite of all the enthusiasm there was a deficit of over 5,000*l.* WAGNER came to London to try and make up the deficiency. He could not be more warmly received in any part of

Germany, but again there was a loss of 5,000*l.* The reason is that it is difficult to do justice to WAGNER'S compositions without a large array of performers, and from the character of the music they must all be men who are skilled, and who can command good pay. It should accordingly be remembered, whenever his foibles are recounted, that WAGNER, in seeking to realise his ideas, was not inspired by the hope of making money. If he had been, his compositions would have borne a different character, and be more adapted for popularity.

While he was in London WAGNER was able to reveal to his friends the poem of "Parsifal," on which his next opera was to be founded. We are told by M. JULLIEN that the composer was for some time displaying a penchant towards mysticism and the miracles of Christianity, and of this new mood "Parsifal" was the expression. He was about four years employed on the music. "Parsifal" was heard with satisfaction in 1882, and, unlike the majority of the composer's works, there was a profit of about 4,000*l.* derived from the first representation.

WAGNER had predicted that "Parsifal" was to be his last work, and he was right. He was greatly fatigued by the rehearsals, and on the advice of his doctors he left Bayreuth soon after the performances, and took up his residence in the Vendramini Palace, Venice. There he seems to have suffered from melancholy, as if he knew the end was approaching. On February 13, 1883, as he was about to take a turn in a gondola, his anger was excited and he fell into a chair, saying, "I feel very ill." Afterwards he fainted. He was carried to bed, and a doctor was sent for, but when he arrived WAGNER was dead. His last words seemed to relate to his son, for whom he was unable to make provision.

It may be conceded that WAGNER followed a logical principle in the construction of his operas. In this way he corresponded with SEMPER ; but the two men, in common with all theorists, forgot that other principles than their own may be logical also. The old-fashioned notion of an opera was that it should appeal to our emotions rather than to our intellect. It was, as VOLTAIRE said, a spectacle—

> Où les beaux vers, la danse, la musique,
> L'art de tromper les yeux par les couleurs,
> L'art plus heureux de séduire les cœurs,
> De cent plaisirs font un plaisir unique.

Everything may be false, but it would be difficult to discover any form of entertainment on a stage—and we do not forget WAGNER'S compositions—which can be said to be true to nature.

The primary intention of an opera was to give an opportunity to combine several lyrics, and in this way to overcome the disadvantage of a concert. The early Italian operas were as simple as any of the English musical dramas of the "Midas" species. It was, no doubt, incongruous to have a speaker suddenly break into song, as in the "Beggars' Opera," "Rob Roy," or "Guy Mannering," which somehow still afford pleasure to an audience. Hence the next step in the evolution of the opera was the giving of a musical form to the parts between the songs, but it was of such a character that the simplest critic could detect where the parts joined, and the lyric still remained supreme. Often, as with the Italians, it might seem to be in excess. WAGNER'S aim was to have more unity in his work. He was not by nature a lyrist, for that form of music and poetry supposes a power that if intense is intermittent. Now WAGNER could always compose, and in such machine-like power he was not a bad representative of the age. He set aside established conventionalisms, and the extent of his revolutionary ideas is suggested when we find that he could keep a prima donna on the stage during an act without affording her an opportunity to utter a note. But, as usually happens in cases of reform in art, he substituted conventionalisms of another sort. If tested by a standard of realism, the finest Wagnerian opera is as absurd as anything by APOSTOLO ZENO or METASTASIO, and the seriousness of his intention makes matters worse. Although they may be indifferent to a melody, WOTAN and BRÜNNHILDE are as remote from every-day life as the TITUS or ANDROMACHE of an old Italian opera. We do not quarrel with WAGNER for creating a new species of opera. Art is not to be restricted within narrow bounds or to be cast in one mould, and it is no more possible to have a best style in dramatic music than in architecture.

WAGNER could not give vent to the genius which he possessed if we were bound down to poetry of this kind :—

> Si cerca, si dice
> L'amico dov' è ?
> L'amico infelice
> Risponde, Morì ;

he needed a more ample sort of metre. Indeed, WAGNER seems to us to have been one of the men who are impressed by magnitude in space, and his music is an attempt to express his ideas of the vast. In this respect he was a counterpart of DE QUINCEY, and, if ever there was a composer who was competent to express the immortal "Dream Fugue" in music, it was RICHARD WAGNER. He would have no difficulty in realising all that was meant by the Opium-Eater's wanderings "in the worlds of sleep, through storms, through desert seas, through the darkness of quicksands, through fugues and the persecution of fugues, through dreams and the dreadful resurrections that are in dreams."

It is time we spoke of M. JULLIEN'S book. His biography is as much of an innovation in the literature of music as WAGNER'S works were in music. No composer heretofore has had such a book devoted to him. As we said at first, it represents not only what was done by WAGNER, but what contemporaries thought of his work. It is for that reason that so much is made of caricatures which express at a glance the opinions that were common in Germany, France, and England about the music of the future and its creator. If, however, French artists occasionally made WAGNER wince when they made fun of his pretensions, his spirit can find compensation in the exquisite lithographs which M. FANTIN LATOUR has consecrated to the operas.

They form ideal representations of some of the characters, and they suggest how much tenderness and beauty an artist can discover in things that are supposed to have opposite qualities. A German would put a very indifferent interpretation on the characters, and would give more massiveness to the figures. M. FANTIN LATOUR has not, however, gone to the stage for models, but seeks rather to give the spirit of the creations. His plates are the tribute of one poet to another, and are enough to convert opponents into enthusiasts.

It would be vain to deny that at the present time the prejudice against WAGNER still prevails in France. The proprietors of the Librairie de l'Art have again proved their courage in undertaking so costly a work about the composer. But the bitterest enemy of WAGNER'S music would find interest in the book ; for whatever may be thought of the operas, WAGNER was one of the disturbing forces in our age, and in accomplishing his aims he proved that he had a hero's strength. The lives of men of his class will always be a fascination to humanity.

THE ROYAL INSTITUTE OF ARCHITECTS (IRELAND).

ON Monday a deputation from the Royal Institute of Architects (Ireland) presented an address to the Lord Lieutenant of Ireland at Dublin Castle.

The deputation consisted of Messrs. J. H. Pentland, W. Sterling, Rev. J. R. Carvell, W. Cox, Charles Geoghegan, W. J. Symes, Sir Charles Cameron, W. Gillespie, Cecil Orr, Thomas Drew, R.H.A., C. A. Owen, Albert E. Murray, hon. sec.

Mr. Drew, in the absence of the president, Mr. W. H. Lynn, read the following address :—

May it please Your Excellency,—We, the President, Fellows, and members of the Royal Institute of Architects of Ireland, desire to offer your Excellency our respectful congratulations on your arrival in this country as the representative of Her Majesty the Queen. Representing as we do one of the arts which ministers to the requirements of all classes of society, whether from an æsthetic or an utilitarian point of view, we believe that we can claim your Excellency's sympathy in our work. The character of the architecture of any nation has always been considered to be a fair standard of the degree of civilisation and refinement to which it has attained. Judged by this test, we believe that the architecture of our country is not unworthy of the genius of the Irish people. We

hope that with the return of prosperity to our country increased opportunities may be afforded to us for further advancement, as our art can only flourish concurrent with social and commercial progress. We wish to direct your Excellency's attention to the marked improvement which has been made of late years in the dwellings of our artisans and labouring classes. Although much remains to be done in this direction, yet we are confident that the progress that has been already made will continue, and that the moral as well as the physical well-being of the people must necessarily be promoted thereby. We desire to conclude with renewed assurance of our loyalty to Her Most Gracious Majesty the Queen, who is the patron of our Institute, and with the request that your Excellency will, as your predecessors in office have done for nearly half a century, be pleased to accept the position of vice-patron of the Royal Institute of Architects of Ireland.

W. H. LYNN, president, R.I.A.I.
ALBERT E. MURRAY, hon. sec.

His Excellency in reply said :—

Mr. President and Gentlemen,—I thank you most heartily for your personal congratulations to myself, and for the assurances of your undoubted loyalty to our gracious Sovereign, whom it is my high privilege to represent. I am fully sensible that the community are under many and deep obligations to your profession, and I assure you that your labours for the public good will always command my sympathy and regard. It affords me much pleasure to offer you my sincere congratulations on the general advance which architecture in Ireland has made within comparatively recent years. Since my arrival here I have been much struck by the numerous new and handsome buildings that adorn the metropolis, as well as by the many graceful villas that have sprung up around our city. The splendid churches and schools and other public institutions that have been erected throughout the country amply attest the skill of our architects and the excellence of their work. I have noticed also with pleasure the much-needed improvement that has taken place in the dwellings of our artisan and labouring classes, and I feel sure that the local boards and private individuals who take such an interest in this important question have derived much assistance from the advice you have afforded them. I am very glad to observe a growing tendency to utilise to a greater extent than in the past our excellent Irish marbles and slates and other native products, and I am confident that none will strive more earnestly to foster this movement, which must have an important influence on the extension of our Irish industries, than the architects of our country. It will give me much pleasure to accede to your request to become vice-patron of your society.

TESSERÆ.

Somerset House.

S. HUGGINS.

SIR WILLIAM CHAMBERS designed Somerset House, the great courtyard and external façades of which are perhaps unrivalled even in Italy. Among the English edifices it is for nothing more remarkable than for its completeness—completeness not only in architectural embellishments, but in appropriate sculptural accessories, executed by eminent artists, and of a high class of art. Its spectator feels no want; all is perfect and satisfactory around him, and he enjoys the pleasure arising from the presence and influence of unity and harmony of proportion and form, just relation and balance of parts, and a due measure and distribution of decoration. The river front, seen from the water in conjunction with the massive open arcade of rustic work supporting its terraces, has a degree of grandeur possessed by no other façade in London except the west front of St. Paul's. Mr. Fergusson, who has in his "Handbook of Modern Architecture" spoken somewhat disparagingly of the works and abilities of Chambers, thinks this façade too low—and certainly additional height would have increased its majesty of character; but it would, at the same time, by entailing additional height elsewhere, have rendered the rest higher than sufficient, and probably have had the effect of diminishing the apparent magnitude of the great court. Somerset House shows how eminently suitable is the Venetian-Italian style for a building of public offices—a building requiring architectural greatness of character externally, but minutely divided within into several floors and many apartments.

Early Norman Castles in England.

C. T. CLARK.

The original policy of the Conqueror was, as far as possible, to establish his rule quietly, and to come in as the heir to the throne. With this view, when the opposition of the English chiefs led him to root them out, he usually placed the Norman successor on the English seat. Thus nearly all these burghs or mounds having been the seat or *aula* of a Saxon lord, the change to the common people was not necessarily violent, though it often became so. The tenants dwelt round and paid duty and service at the accustomed spot; no alteration was made in the parochial unit, sokes and hundreds and other territorial divisions remained, with their courts, unchanged; and though land ceased to be allodial, and military service was sharply exacted, it may be supposed that Godwin and Harold and the great English lords had not scrupled to make their tenants follow them in the war, not as mercenaries, but more or less at their, the tenants, own charge. Hence, although the Conqueror occasionally ordered a castle, like the Tower, to be built on an entirely new place, more commonly, and especially with the mesne lords, the castle was nothing more than the old English residence, with its defences replaced by walls and towers, no doubt of formidable height and strength. The Norman made ample use of timber for military purposes, but it was rather for barriers and outworks and the light defences, than for the main walls of his stronghold, or for its towers or keep. Inside these, however, it was also largely used. The early floors were almost invariably, like the roofs, of wood, and the dwellings of the dependents long continued to be mere huts of timber, sheds built against the walls, always getting out of order, and a continual source of expense to the lord, or, as we see in the records of the royal castles, to the sheriff of the county. Where the site was new, as in London or at Newcastle, or where there was no mound, as at Corfe or Ludlow, Bristol, Carlisle, or Brougham, or Ogmore or Penlline, a rectangular keep was, as a matter of course, constructed; but where there was a mound, as at Arundel, Trematon, Warwick, York, Cardiff, Caerleon, Worcester, Builth or Ewias-Harold, Kilpeck or Lincoln, the keep became a circular or polygonal shell, or in some later cases, as Warwick and York, a tower of a quatrefoil pattern, thus preserving, but elevating, the older English type. The rectangular form of keep, being more durable and more striking to the view than the shell keep, has become the received representative of a Norman castle; but it is probable that at the least one-half of the castles erected between 1066 and 1200 were of the other type. The mounds which, for a century or two after their erection, would not have carried in safety any heavy masonry, became firmly consolidated, and, as the form of structure placed upon them was judiciously designed, any serious settlement is rare. There are but two instances at present known in which the mound and the rectangular keep are found in the same group, and in these two cases they are actually combined. They are Christchurch, where the mound is small, and the keep is probably founded, through it, upon the solid; and Guildford, where the mound is large, but the keep is built upon its edge or slope, and there also rests upon the virgin soil. At Oxford the remaining square tower, though Norman, was on the wall, and was not the keep. This was a shell, and crowned the large mound, which still contains a part of its subterranean works.

The Theory of the Arch.

JOSEPH GWILT.

It was comparatively late that the theory of arches attracted the notice of mathematicians. Dr. Hooke gave the hint that the figure of a perfectly flexible cord or chain, suspended from two points, was the proper form for an arch. Galileo considered the catenary as a parabolic curve, and John Bernouilli appears to have been the first who discovered its nature. Dr. Gregory ("Phil. Trans." 1697) published an investigation of its properties, and observes that the inverted catenary is the best form for an arch on account of its lightness. This is true so long as it is not pressed by an extraneous weight. It is not, however, capable of bearing a load on any part, much less of being filled up on the spandrels, which must be the case in practice. Other considerations must be involved before it can be fitted to receive a roadway or other weight, either upon its crown or haunches. In 1695 La Hire, in his "Traité de Mécanique," established by the theory of the wedge a method of determining the proportion in which the lengths of the voussoirs should increase as they approximate the springing. The historian of the Academy at Paris intimates, in 1704, that Parent, following the same theory, but without proceeding further than mechanical delineation, gave the extrados of a semicircular arch, together with its horizontal drift. Couplet wrote two memoirs in the volumes of the French Academy for the years 1729 and 1730. He trod in the steps of La Hire and Parent, and made but little advance in the scientific investigation of the subject. He treats chiefly on the drift or shoot of semicircular arches and the thickness of the piers, considering the arch-stones as infinitely smooth, and experiencing no resistance from friction. In the volume of the Transactions of the French Academy for 1734 is a memoir by Bouguer, "Sur les Lignes Courbes propres à former les Voûtes en Dôme." In this is an analogy between cylindrical and dome vaulting, the one being supposed to be formed by the movement of a catenarean curve parallel to itself, and the other by the revolution of the same curve about its axis. The wedge theory has since been followed by Belidor and others on the Continent, and the late ingenious Mr. Attwood

in this country. Such was the state of the progress towards a perfect development of the true theory of arches when our countryman, Mr. Emerson, in 1743, investigated the nature of a proper extrados of the different curves. Casting a new light upon this curious and useful subject, he exposed the fallacy of La Hire's wedge theory, and it is now completely exploded. Dr. Hutton, in his "Principles of Bridges" and in the first volume of his tracts, pursued the subject on the principles laid down by Emerson. He added the method of finding an intrados to a given extrados, which indeed seems the principal addition he made to this branch of science. Bossut, on the Continent, republished with additions, in his "Cours de Mathématique," a tract on the subject; and in 1785 Mascheroni published at Bergamo a work entitled "Nuove Ricerche sull' Equilibrio delle Volte," in which there are some propositions upon the equilibrium of arches, but it principally relates to domes on circular, elliptical, and polygonal plans.

Expression of Stability.

E. M. Barry, R.A.

With repose in architecture is associated stability. We must be satisfied of the one before we can appreciate the other. To obtain stability in an artistic sense a reserve of power is needed. It is not enough for us that a building stands. Our judgment must be satisfied that it ought to stand and that it will go on standing. We must obtain on this head perfect satisfaction. It is the want of this confidence which troubles us with so much of the iron constructions of the day. We see great spans covered or bridged. We look up at the roofs and are glad to get from under them. Will they last? The engineer will tell us the tensile strain on an iron plate, and the number of inches of sectional area necessary by calculation, and assures us that the stress upon his roof is well within the calculated strength. It may be so; our judgment may be convinced, but not in an artistic sense. The thing is bald and uninteresting; and we think of works of architectural art, as to which no such questions intruded themselves, because the requirements of true architecture were effectually supplied. The Mediæval architects were not always proof against the temptation of seeking to construct mere *tours de force*. Of such you may find an example in the Cathedral of Beauvais. Here the ambition of the architects to surpass what had previously been done, led them to mistake bigness and daring construction for art. The spire has fallen, the roof gave way soon after its erection, and the nave arches have had to be strengthened by the insertion of intermediate columns, bisecting the original arches. Want of repose and stability are fatal to the artistic effect of the design, which deserves study, however, as an exaggeration and a warning. I once heard a prominent civil engineer say that every railway station ought to be pulled down and rebuilt every ten years. The growth of traffic and of modern wants is rapid, and such structures are too often built for utility alone. Architecture, however, will not be satisfied with so brief an existence. It must aim at so much of permanence as it is permitted to mortals to attain; it must hand down the present to future ages, even as the past speaks ever to ourselves.

Induration of Stone.

C. H. Smith.

It is a characteristic feature in quarries of oolite that the stone procured from the uppermost beds is generally, perhaps invariably, of a durable quality, whereas the lowest beds are the first to decay, when exposed to weather. The cause of this difference is known to depend chiefly on the quantity and quality of the cementing substance, by which the particles adhere to each other. The cement that unites the globules into a mass is formed of the same elements as the globules themselves, but more crystalline; it is, in fact, the decomposition of the superincumbent mass, saturating and crystallising within the beds beneath. But this natural process of indurating is not performed in a day, nor in a year, but in ages; so slow or gradual is the process, that in scarcely any case is the lowest bed so hard, or so thoroughly saturated with the crystalline material as those above. It seems to me that if we could pursue or imitate this natural process, it might lead to the best means of improving the natural condition of soft stone, or, in other words, we might finish the stone which is imperfectly formed in the rocks, Nature not having had time to complete her work. Man can command Nature in no other way than by obeying her laws; in all our experiments or performances it is not we who operate, but the laws of Nature which are set in operation. The durability of compact carbonate of lime, in a crystalline state, either in the form of stalactites, or that of a porous material, rendered dense and durable by impregnation, may be witnessed in numerous instances in this country, especially in the petrifying caverns of Derbyshire. In the South of Italy and in Sicily the production of excellent building stone, entirely formed by deposition from water, has been going on abundantly from the earliest ages of the world to the present time. The temples of Pæstum, constructed more than two thousand years ago, with aqueous deposit from the neighbouring rivers, are still but little decomposed, so far as the stone is concerned. Most of the modern buildings in Rome, including St. Peter's, which are constructed with a similar material, travertine stone, or calcareous tufa, are generally in excellent condition. In the waters which produce these petrifications there must be some solid body as a nucleus to begin upon, but what constitutes it is in no respect important; any substance will do for the waters to commence their petrifying works upon. Hence, at the caverns, "the wonder seeker" is invited by the guides to purchase birds'-nests, purses, and various other articles, said to be changed into stone, whereas, in fact, the objects themselves are merely encrusted with stony matter. Although this natural process is progressing now, and has been during all ages, and, to a certain extent, is well understood by chemists and others, yet it has not been applied to any important purposes, and certainly never to artificially indurating and preserving soft stone. If we could successfully imitate Nature in this respect, and apply our efforts to the purpose now under consideration, I think they would be more likely to answer than any plan heretofore attempted. It is not in my power to tell you how to proceed, but the principle appears so clear and simple, that I am induced to believe the proper mode of application would soon be found if scientific men would turn their attention in that direction.

Permanent Set of Cast Iron.

Edwin Clark.

Since the extension of cast iron is not uniform in proportion to the weight, we cannot deduce a modulus of elasticity calculated on the assumption of equal extension for equal weight. It appears that cast iron is extended about $\frac{1}{4262}$ of its length by one ton of tensile strain per square inch of section, and about $\frac{5{\cdot}6}{4262}$ of its length of six tons. We shall, therefore, for practical purposes, assume the extension at $\frac{1}{5000}$ per ton per square inch, or double that of wrought iron, as this proportion is easily remembered and very convenient for application. The following formula will be found also very correct and convenient for deducting the permanent set from the extension of cast iron, viz.:—

$$\text{Permanent set} = {\cdot}0193l + 64\,\frac{2}{l}$$

l being taken in inches.

The mean ultimate strength of cast iron we shall find is seven tons nearly per square inch of section, its ultimate extension being $\frac{1}{600}$th of its length, and this weight would compress a bar through $\frac{1}{775}$th of its length. With respect to the ultimate tensile strength of cast iron, very different conclusions have been arrived at by various experimenters, who have drawn most erroneous conclusions from the fracture of cast-iron beams. It is certain that the strength of this material is considerably dependent on the amount of surface. When cast in thick bars, the external portions become rapidly cool, form a solid shell around the internal part, which is thus prevented from contraction, and cools in a state of tension. The effect of this is to crystallise the internal portion of the metal, the crystals being larger in proportion to their distance from the surface, while the outside skin, as it is termed, is close and extremely hard and considerably stronger than the interior, either as regards extension or compression. Experiments have accordingly been made with metal cut out of the interior of large castings, and the falling-off in their strength has been found very considerable. Hence, results drawn from small bars or beams cannot be depended on when applied to larger castings.

Unity of Periods of Art.

Violllet-le-Duc.

When a community of artists and artisans is strongly imbued with the logical principles that require all form to be a consequence of the destination of objects, style manifests itself in every work which comes from their hands, from the commonest urn to the greatest monument, from the kitchen utensil to the richest piece of furniture. We admire this unity in the good periods of Greek art; we find it again in the best epochs of the Middle Ages, though with another character, because the two forms of civilisation were so different. We cannot assimilate the style of the Greeks, because we are not Athenians. We cannot master the style of our ancestors of the Middle Ages, because times have changed; we can do no more than affect the Grecian manner or that of the thirteenth century. In a word, we can but make pasticcios. But, if we cannot create the same things as they created, we can at least proceed as they proceeded, that is to say, we can imbue ourselves with true and natural principles like theirs, and then our works will possess style without any striving for it on our part.

NOTES AND COMMENTS.

SOME weeks ago we gave a short account of the class of masonry at the City and Guilds of London Institute. Since then the members of the first class have met twice. The classroom now resembles a practical mason's yard, in which each workman had his allotted number of stones to cut. An account of the work done by each member is kept in a book, besides which, each stone is signed on the face by the member who cut it, so as to be clearly recognisable when set up in the wall. The members of the class seem to be much interested in their work, although they found it harder than they anticipated. We may remind those who have not yet joined that the second class, which will begin on December 14, will enjoy the advantage of being assisted by a staff of foremen taken from the members of the first class, and this arrangement will much facilitate the future operations.

THE Professorships of Construction and Perspective, in the Ecole des Beaux-Arts, Paris, are vacant. The former was held by M. BRUNE and the latter by M. CHEVILLARD, with the aid of M. JULLIEN. It is a rare event to find two professorships vacant at the same time. The appointments will be made by M. GOBLET, the Minister of Fine Arts.

ACCORDING to an article by M. DE VEYRAN in the last number of *L'Art*, an inhabitant of the town of Grasse possesses four characteristic works by FRAGONARD, which were obtained under remarkable circumstances. They were painted for Madame DU BARRY, who had ordered them for her château of Luciennes. But when LOUIS XV. followed the common lot, Madame DU BARRY had to fly, and finally found her way to the guillotine. Her ladyship could have had no more suitable painter, nor FRAGONARD a more suitable patroness. The pictures, were rolled up and remained in his studio until the Revolution broke out. The painter saved his head by taking a seat in the Convention. That was a risky honour, and in a short time FRAGONARD was compelled to flee to his birthplace, Grasse, and to seek refuge with a friend, a M. MALVILAN. The painter offered his friend the Luciennes pictures at a low price, and in this way they came to Grasse. After the Reign of Terror FRAGONARD was safe. He visited Grasse occasionally, and painted *amorini* to fill up the spaces between his pictures on the walls. He also suggested the kind of furniture that was best adapted to go with the paintings, and even designed the carpet. The room might have been arranged for a king's favourite. The pictures form a love-story—in the FRAGONARD-ish sense. They consist of *The Meeting*, *The Rendezvous*, *The Coronal*, *The Letters*, and a fifth, which was afterwards commenced but remains unfinished, is *The Abandonment*. The room is as the painter arranged it, for the grandson of FRAGONARD's friend is too respectful to the history to allow an alteration.

PROFESSOR HAYTER LEWIS, in his article on architecture in "The Companion to the Almanac," is always able to take a view of the architecture of the year, and to note its tendency. This time he says the progress is towards a Transitional style of Gothic forms, with Renaissance details. Judging from the exhibition of the Academy, the Professor considers that for houses in town such a Transitional style is in favour, while Gothic of a Perpendicular kind serves for the remainder. But in ecclesiastical buildings, Early English continues to hold its own, and it is only in municipal and public buildings that Renaissance is found. While recognising the picturesqueness of the new Transitional style, Professor HAYTER LEWIS says that although details may be quaint, there is no necessity to have them coarse and ugly.

THE regulations of the Salon which are issued yearly are watched with as much interest as the Standing Orders of the Houses of Parliament by engineers and surveyors. It is impossible to understand why alterations should be made in the English or French enactments, but an oversight might have serious results in both cases. There is little difference between this and next year's Salon regulations for architecture, and the reason of that little is not apparent. It used to be said that copies of designs were not acceptable; next year there will be no restriction of the kind, although we can hardly believe that copies are admissible. Photographs may again be sent—an arrangement that should be considered by the Council of the Royal Academy, but what is the use of manuscript or printed monographs? Was it ever known that a visitor read one of those productions? There is nothing about "mentions honorables" for next year, and the Médaille d'honneur will not be awarded on less than two series of votings. This year drawings could be sent in between April 2 and 5, next year the time is April 3 to 5.

MR. C. H. SHOPPEE suggests that the removal of Staples Inn should be taken as an opportunity to construct a new street, which would serve as a continuation of Gray's Inn Road and form a junction with Chancery Lane. The new street would be 55 feet in width, in almost a direct line from Holborn Bars to Bream's Buildings, and thence by an easy curve into Chancery Lane, opposite Carey Street, the width of Chancery Lane at its lowest end, viz., from Carey Street to Fleet Street, being increased to 55 feet by pulling down the old houses belonging to the Rolls Office. If this improvement were made, a first-class direct route would be formed between the Law Courts and the railway termini at King's Cross, and the new street would prove an important link in the contemplated improved communication between Gray's Inn Road and Islington. There is no doubt that an improvement of the kind has become a necessity. Chancery Lane is too narrow for the traffic between the northern and south-western parts of the metropolis. If the street were made, it might reconcile some of the opponents of the removal of Staples Inn to what is inevitable. The line of street might be so laid out as to save the old hall, which is the only part of the Inn having any value.

THE town of Port-Andemar is not much of a place, and few would expect to find a museum there. By the efforts of the local architect, M. LECLERCQ, a room was assigned for the purpose, but all the treasures that were available were a few prints and casts contributed by the State, and a couple of pictures. M. PAUL LEROI has, however, come to the rescue of the little town. He has sent several valuable etchings, drawings, and medallions, and in this way a collection has been set up which the inhabitants can visit without undergoing a sacrifice. The town is able to contribute no more than 20*l.* to the undertaking. If somebody in England could be persuaded to imitate M. PAUL LEROI's example, all the manufacturing towns would soon have their local museums.

THE British Institution, which was founded in 1805, was one of the best of English societies. According to the by-laws, the object of it was "to encourage and reward the talents of the artists of the United Kingdom, so as to improve and extend our manufactures by that degree of taste and elegance of design which are to be exclusively derived from the cultivation of the Fine Arts, and thereby to increase the general prosperity and resources of the empire." The Institution was, in fact, the complement of the Society of Dilettanti. The exhibitions were originally confined to pictures by "artists of or residents in the United Kingdom," and the earliest were of the works of REYNOLDS, HOGARTH, WILSON, GAINSBOROUGH and OPIE. The subscribers paid at least fifty guineas. Although the Institution was liberal in premiums, and purchased several works for presentation to the National Gallery, yet, so well were affairs managed, there was a large balance remaining in the hands of the trustees, and now it is said to amount to 30,000*l.* What is to be done with it? The Charity Commissioners, it appears, have laid claim to the money, but there are enough benevolent people in England without appropriating funds that were raised for the promotion of art. It might be said that the money could be given in support of the proposed National Exhibition of the works of artists who are discontented with the Academy. But that purpose would be contrary to the intentions of the donors, for the British Institution was intended to extend and increase the beneficial effects of the Royal Academy—it gave preference to pictures that were once hung in the Academy, and the galleries were closed on principle during the Academy exhibitions.



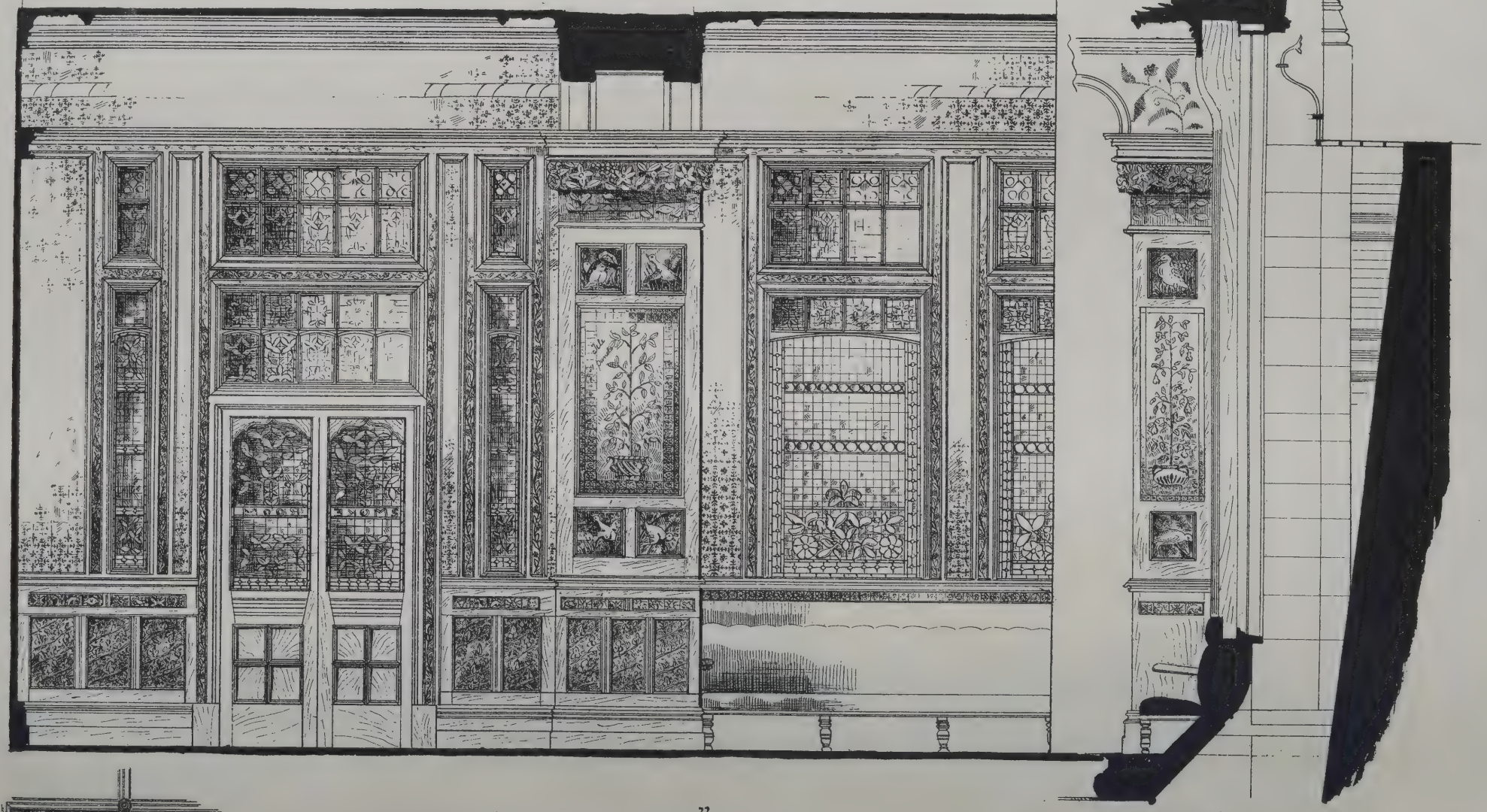


DECORATIVE PANEL.

By M. TONY FAIVRE.

VICTORIA HOTEL Manchester

Basement Smoke Room

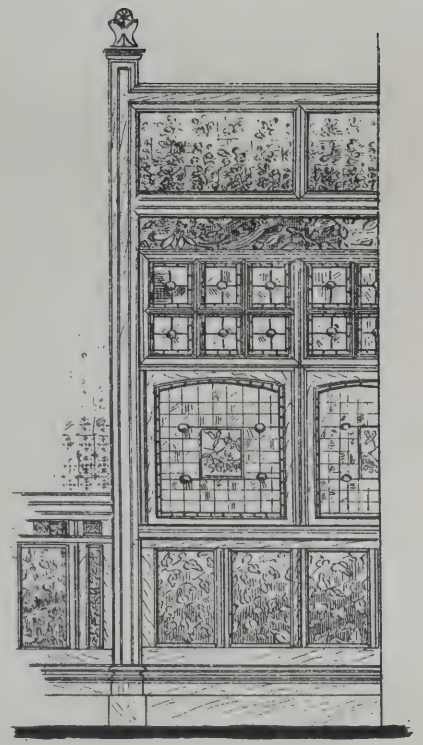


Elevation on "AB"

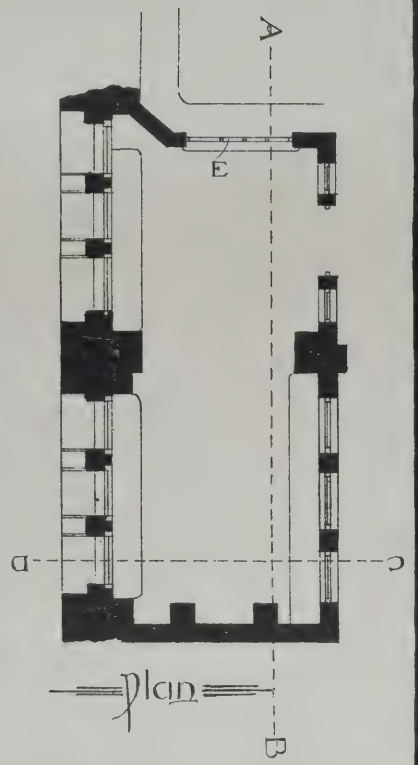
Section



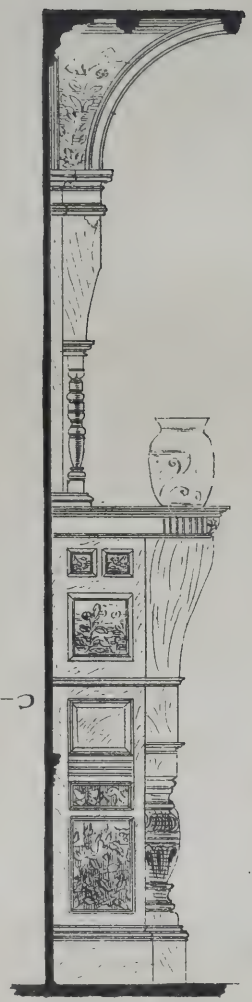
Part of Ceiling



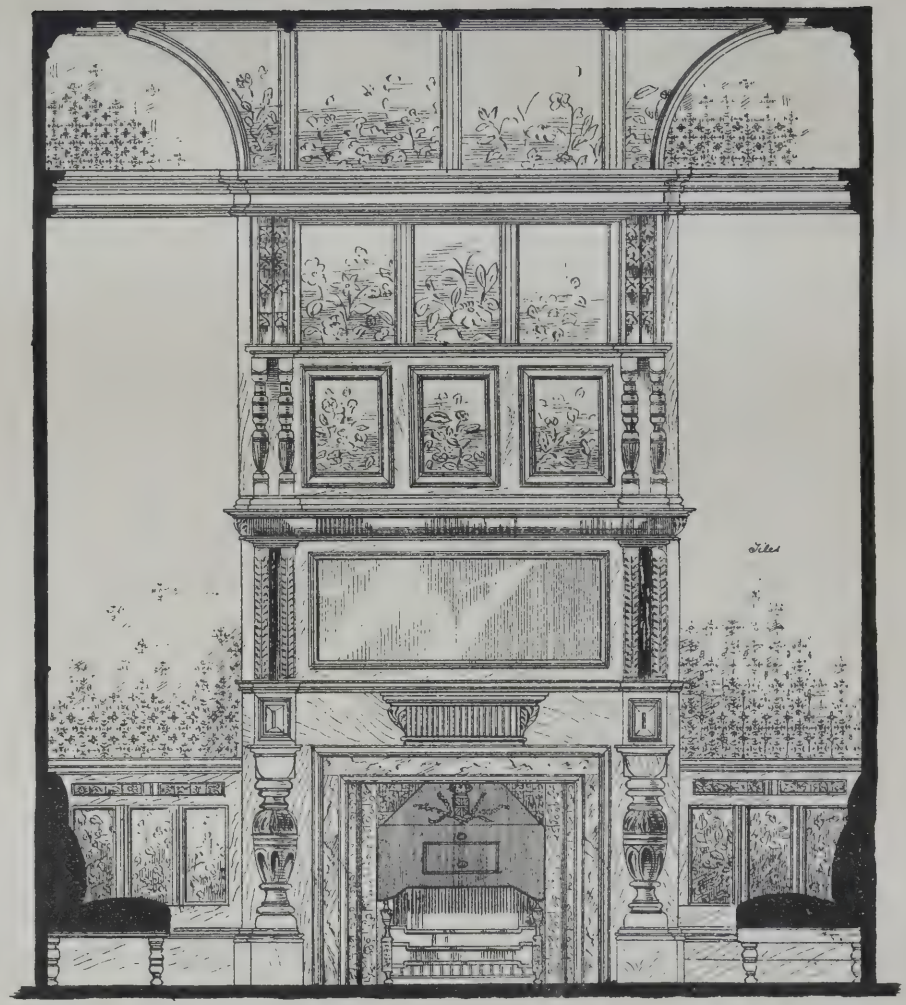
Bar Screen at E"



Plan



Side



Elevation on CD"

William Dawes Arch'

Scale of 1 inch feet



The Architect. Nov.26th 1886.

G.C. HORSLEY.

INK PHOTO SPRAGUE & Co 22, MARTINS LANE, CANNON ST LONDON E.C.



G. C. HORSLEY

"INK-PHOTO." SPRAGUE & Co 22, MARTINS LANE, CANNON ST. LONDON E.C.

ILLUSTRATIONS.

DECORATIVE PANEL.

A SERIES of illustrations that is representative of the styles of the leading decorative painters in France would be incomplete without an example by M. Tony Faivre. He paints figure pieces on large and small scales, but his countrymen consider him to be unsurpassed now with subjects of the class which is shown this week. It is a style which at one time was largely patronised, and it still is found to be very suitable. There is no reason why decoration should be confined to figure subjects, and M. Tony Faivre demonstrates every year that charming combinations of landscape and architecture are still to be utilised. The painting we have reproduced has a companion, which, of course, is differently treated.

ARCHITECTURAL ILLUSTRATION SOCIETY.

No. 38.—WEST DOOR, ABBAYE-AUX-DAMES, CAEN.

No. 39.—DOORWAY, ST. GIOVANNI, LUCCA.

BASEMENT SMOKE-ROOM IN THE VICTORIA HOTEL, MANCHESTER.

IN *The Architect* has appeared from time to time illustrations of various portions of the Victoria Hotel, Manchester, and of the important block known as the Victoria Buildings, of which the hotel forms a part. The subject of our present illustration is the basement smoke-room. This room, which is near the grill-room and adjoining the billiard-room, is situated below the street line, and depends therefore for its light on two large areas faced with white glazed bricks. The windows looking into these areas are glazed with ornamental leaded lights somewhat similar in character to those shown in the borrowed lights and doors opening into the main corridor. The walls above the dado are covered with ornamental tiling, and the dado itself is composed of walnut wood framing, panelled and filled in with tiles rich in design and colour. The floor is laid with Italian mosaic, warm in tone, and the ceiling, which is panelled, is formed of fibrous plaster richly decorated. The chimneypiece is a combination of walnut wood, marble, tiling, and Lincrusta Walton, as indicated in the sketch. The pilasters are panelled and filled in with Burmantoft faïence of beautiful design. This smoke-room, as will be gathered from the illustration, is elaborately decorated, original in treatment, and strong in tone, but throughout a harmony in colour. In the Victoria Hotel there is an endless variety of design and decorative treatment, each room being different from the others, and there is probably no hotel out of London so splendidly finished.

The hotel and buildings have been erected at a cost of 230,000*l.* Mr. William Dawes, of No. 2 Cooper Street, Manchester, was the architect.

THE OFFICE OF SUPERINTENDING ARCHITECT.

AT the meeting of the Metropolitan Board of Works on the 19th inst., the deputy-chairman, Mr. Edwards, brought up a report from the Works and General Purposes Committee recommending that the following resolutions of the Board of July 2, 1886, be revoked :—"That the salary of the superintending architect be 1,500*l.* a year, inclusive of travelling and incidental expenses." "That the age of the person to be appointed to the office of superintending architect be not less than 35 and not more than 50 years."

Mr. Edwards moved the adoption of these recommendations, which, after a discussion, were put and agreed to by a large majority.

Mr. Selway then moved that the resolution of the Board of July 2, "That the duties of the office of superintending architect do remain as at present," be revoked. He did not ask the Board then to deal with the subject, but asked them to let it go back to the committee for a free and full discussion. Under section 52 of the Building Act the superintending architect was required not to undertake or deal with any duties but such as the Board imposed upon him, and he certainly thought they had acted wisely in making such a regulation. He found that the superintending architect was to do nothing but discharge his duties to the Board. When any subject or matter arose which the engineer or solicitor was unable to deal with it had to go to the superintending architect for him to do so. He also found under the regulations that he had at one time to deal with all matters connected with the storage of petroleum, but that had very properly been placed in other hands. There were the district surveyors, and the superintending architect had to supervise the whole of their duties, to arrange the lines of frontage of buildings, a large number of which were brought before the Board every year, and every one of these the superintending architect was expected to see with his own eyes. He also had to superintend the laying out of new streets, and to give advice upon them, which required not only a large amount of general but of structural knowledge. The Board had also placed him in charge of the Fire Brigade stations in every part of the metropolis, and he also had to superintend the arrangements for parks and open spaces. The entire subject of labourers and artisans' dwellings was under his direction, and with all these duties combined he certainly believed that they were quite enough for any human being to undertake. He had taken the trouble to go into the figures, and he found that during the last six years the Board had voted for public improvements no less a sum than six and a half millions—that is, more than a million a year had to be dealt with by the superintending architect, from which sum the Board derived 100,000*l.* from ground rents annually, and they held land of the value of 2,500,000*l.* He thought, therefore, it would be well to see whether some rearrangement of the duties could not be made in the future by a division being made between those of the superintending architect and chief surveyor. He moved that the subject be referred to the committee of works and general purposes for consideration.

Mr. Jones seconded the motion.

Mr. E. R. Cook hoped that the Board would not agree with the resolution, as the subject had been fully discussed, the duties and salaries having been agreed to, and it would be simply a waste of time to go further into the question. Instead of seeking to separate the duties of superintending architect and chief surveyor, they ought rather to try and concentrate them and bring them into a harmonious whole. As the whole matter had been well discussed, he trusted that the Board would not consent to reopen the question.

After some further discussion the motion of Mr. Selway was negatived by a majority of 28 to 22.

THE ARCHITECTURAL ASSOCIATION.

THE third ordinary meeting of the Association was held on Friday last, Mr. J. A. Gotch, president, in the chair.

The President, referring to a notice that had been circulated among the members with regard to a proposed memorial to the Queen, said that the Association was not concerned with what he might call the matters political of the profession to any extent, but as an educational body they were greatly interested in the supplementary part of the proposed new charter, which dealt with educational advantages, particularly in connection with examinations, and, being an educational body, they should do what they could to support the passing of the supplementary charter. He proposed the following resolution :—"That the Architectural Association should memorialise the Queen in Council, in support of the supplementary charter presented by the Royal Institute of British Architects, inasmuch as it will, if granted, materially advance the special educational objects which the Architectural Association has in view."

Mr. Leonard Stokes seconded the resolution, and it was carried by acclamation.

Mr. J. D. Sedding then read a paper, from which the following is extracted, under the title of

Notes on Church Planning.

Mr. Sedding said :—Do not take up this or any other subject as unfledged specialists. Nowadays we have our "church," our "house," our "café," our "workhouse," our "theatre" architect. If you have brains to dispose rooms charmingly, an eye for the picturesque, and a nose for drains, you will be ticketted a "house" architect. If you have done a passable thing or two in church design, you will be dubbed a "church" architect, and will be expected to know all the conventionalities of that modern trumped-up trade called by log-rolling advertisers "Ecclesiastical Art." To do one thing passing well nowadays would seem to prove your inability to do anything else. For a young man with a future to cultivate one branch of an architect's work at the expense of the rest is bad, for it is bound to make him and his work groovy, modish, and partial. If you have special aptitudes time will discover them, and you may some day find that a grateful world has turned you into a specialist ; but in the meantime be a free man. To any young man about to become an architect I would say that while he cannot begin to study architecture too early in life, he can't delay cultivating himself into a specialist too long. Having eased my mind, I can proceed more freely. No one here is

going to be a mere "church" architect, yet one and all are going to build churches, and are as anxious as I am to build them aright. The treatment I propose to follow, and ought, is first to consider church planning historically, and then practically. I cannot wander all over Christendom, however, to demonstrate the enormous varieties of church plans that exist, nor the causes of variety. I cannot treat of the changes of outer forms and architectural ornament, the improvement of constructive skill and the rest of it—nor can I deal with the grammar of the science touching domes, vaulting, arches, and features such as you are so admirably instructed upon in your classes. This is only a telescopic, and not a microscopic, treatment of this vast subject.

Mr. Sedding, having considered the purpose for which a church is built, went on:—So much for my telescopic view of the basis of the science of church planning, and for the character and underlying *motif* of a church plan. There are, as I have said, such a variety of types—each type having its own nursery-ground of local initiation and its sequel of wider influence when transplanted into the great garden of the world—that I must leave the whole of this side of the subject alone. But, for reference only, let me send you to Willis's "Architectural History of Canterbury Cathedral" for an admirable insight into early church planning as demonstrated by his researches at Canterbury. He shows how Augustine and his monks brought with them the ideas of their native land; how they produced at Canterbury as far as possible the Italian basilica that has since proved so fruitful a type to English builders. This and vastly more you will find in this most lucid history written by a man of learning, of trained instinct, and deep historic sense. To speak of the Basilican type of our churches and of the "Canterbury influence" is, however, to tell only half the tale. For the rest, go to Mr Micklethwaite's capital little tractate upon "The Growth of English Parish Churches": he here demonstrates that just as the English Church traces her origin partly from the ancient British Church existing in the land before the coming of the Saxons, and partly from the Romans through the mission of St. Augustine at the end of the sixth century, so the buildings in which she worships show evidence of having been derived from the same two sources. Let me also refer you to Mr. G. G. Scott's most valuable "History of English Architecture," and to Mr. Birch's learned treatise "Concerning the Fabric of the Church and the Form Thereof," which appears in the Transactions of the S. P. E. S. It suits my purpose now to glance at the development of primitive types of church planning, as seen in different countries. In northern lands there are the churches of Canterbury, Wells, Maulbroun, Gelnhausen, and Albi—all typical, and all with their screens and nave altars. The Italian type is very different, even though monastic hands reared these fabrics as well as the English and the other instances named. The characteristics of the two Florence churches of St. Croce and Sta. Maria Novella and the church of St. Domenico at Siena is that these churches take the shape of the Tau, there being practically no upper arm to the cross that forms the basis of the outline of the church. Further, in the southern type nearly the whole of the church is given up to the people's use, while in the northern type the choir and sanctuary which the monks and canons appropriate consume usually a full half of the whole church. Our parish churches were largely built by or under the direct influence of the monastic orders, England being practically converted by them. The Benedictine influence was very prevalent. Mr. G. G. Scott sums up what, in his opinion, are the characteristics of English parish churches thus:—1. Square end. 2. Transepts lower than nave, and not forming a crossing bay in the nave. 3. Central western tower. Mr. Scott holds that, with rare exceptions, a tower should always be on the centre line east and west of the church, either at the crossing or in the centre of the west end, the former being the collegiate or conventual type, the latter the parochial. And now, having epitomised the history of church planning so far as was necessary to carry me onwards to the purpose of this lecture, we will look at church planning as a practical science.

In planning a new church, having settled your general proportions, begin planning at the altar. This is God's house, and there are certain matters connected with the decencies and dignities of worship which are arbitrarily required, and it is well to comply with these at the outset. The altar will be of variable length, from 6 feet upwards, to suit the width of the church, and from 3 feet 3 inches to 3 feet 6 inches high. One finds the tables of modern altars as much as 3 feet wide, even where the space in front is cramped for room; but 1 foot 9 inches or 2 feet is ample for the ministrations of the priest. The foot-pace, or planum, should never be less than 3 feet clear in front of the altar, and the deacon and sub-deacon's steps from 2 feet wide. Having arranged for these three steps, as many more may be added as the size and character of the church demands. The method of returning the upper steps is rarely found in old English churches: the Benedictine builders used to carry all the steps across the chancel unreturned at the sides, as may be seen, for instance, in Gloucester Cathedral at the high altar and the Lady-altar. A common but cruel error, both for priest and communicant, is that of placing the communicants' rail on the topmost of two steps set close together. I have economised space in planning a new chancel by making the low chancel screen do duty as communicants' rail, as one sees done abroad. I need not here urge what is becoming a thing generally accepted as needful and right, a second altar for early celebrations. I remember that on our Oxfordshire excursion we came upon several churches where second altars were provided, and the practice commended itself even to some of us who are not churchmen as both convenient in itself and as adding wonderfully to the artistic interest and furnished character of the sacred building. Vestries should be large and conveniently placed. It was the Bishop of Liverpool who said the other day that modern vestries were mostly like the Black Hole of Calcutta.

Chancel seats vary according to the size of the church. I do not know that we gain much by having return stalls, except by pleasing what the Americans call our desire for "archæological accuracy." But I should always put them in an old collegiate church, and wherever desired by the bishop. Avoid the isolated parson's desk in the chancel, it is an abomination. Put it out in the nave without a scruple, if it is wanted. My notion of a really popular service is, however, to have the minister in the pulpit as they do in Nonconformist chapels and Roman Catholic churches. Avoid ugly gaps in chancel or nave seats. The chancel seats in new and restored churches mostly give one the impression of having been chucked down by the carpenter when the dinner whistle went, and he never finished his job. Surely, as in houses so in churches, furniture should fit into a place. I know that Mr. Redtape would be shocked to know that any one advocated the hacking away of stonework in order to fit your seats into their places; but, then, he is a man accustomed to strain at gnats and swallow camels.

What the old masters did I do, and for the same reasons, and in the same unscrupulous manner. Nave and aisle passages should be as wide as possible—aisle passages never less than 5 feet wide, to allow for processions, if you can get the room, and always provide a good space in front of the chancel screen, and an unbenched bay at the west end of the church, if possible. That there should be screens to fence off the chancel from the rest of the church, both a sense of reverence and an eye for art would seem to demand. A high screen always gives interest and scale to a church. What a pitiful sight is an old cathedral victimised into an unobstructed tunnel for the sake of a vista: why, one can get a longer vista down Gower Street any day. As to screens, the question whether your screen is to be high or low, close or open, should be determined by reference to the character of the people for whom the church is built. Cultivated people like close screens of wood or iron; poor people like low screens, or open screens, if high, and they like a large rood, with the figure of the Saviour upon it, and this will either rest on your high screen, or, if there is no high screen, upon a trussed beam across the church. Always endeavour to get parclose screens: they add much to the artistic effect of a church where are arches opening into chancel aisles.

The question of galleries is growing in importance. The churchman does not like them because they smack too much of the auditorium, with their stepped seats varied in height, and the architect thinks they are apt to destroy dignity. But where they are in the mind of the architect from the first they can be made to produce excellent effect. Mr. Pearson's churches at Kilburn and Red Lion Square show what effects can be got by galleries by a skilled architect. The Jesuits' Church at Antwerp gives an admirable treatment of galleries where they have even got altars at the east end of galleries. A most interesting Mediæval example of galleries is to be found in the church at Flavigny, in France, where galleries stretch over three south aisle chapels, at the west and east ends of the nave. (See King's "Mediæval Architecture," vol. i.)

I venture now to give a few detailed examples from cases that have arisen in the course of one's own practice. An ounce of demonstration is worth many pounds of theoretic talk. I spoke just now of the misery of a pinched sanctuary. The treatment I have followed at St. Matthew's, Sheffield, and hope to shortly carry out at another modern church, St. Bartholomew's, Bethnal Green, is to add to the length of the chancel by absorbing into it the first bay of the nave. True, I am taking from the body to give to the head, but the head was disproportionate, and I am only making it of the proportionate size it should have been from the first.

In the case of a new church the local committee objected to the waste of space in my sanctuary, which was really not an inch too long. So I reduced it by bringing the east wall 6 feet further west, and I took a corresponding space out of the nave beyond the structural chancel, and so it is built, and everyone is pleased, myself included. At Henley-on-Thames I have to deal with a somewhat difficult problem. Here is a church with a peculiarly scattered wide plan—a church with nave and double aisles (one a modern aisle), and the chancel a mere

tunnel, with choir-seats so closely packed together that you can barely sit in them. If there is to be a "popular" service with a large choir here, it is clear that the choir must be brought out of the tunnel into the nave, which is what I propose to do.

At Box Church, Wilts, is a case of even more problematic character. Not only is the chancel very narrow, but the central tower is narrower still, only 12 feet across, and the tower arches very low. To complicate matters, the church demands extension. The radical "restorer" would pull the old tower and chancel down, which ought never to be done. By bringing the choir west of the tower, and by forming a sanctuary under the tower, this destruction is avoided.

At Axbridge, where there is a long chancel and central tower, and wide nave with nave aisles, we have brought the choir under the tower. But in this and the other cases the old single row of stalls with "returns" have been restored in the old structural chancel. In Axbridge Church, as at Chard, the altar is projected some feet from the east wall. Practical reasons, such as affect the ordinary administration of worship, seem to me to justify such disturbance of the nave or chancel arrangement as I have indicated. No structural alteration is entailed in either of the cases named: in fact, the old structural chancels are made as they were in time past, return-stalls and all. Of restoration generally I would say—save all you can of the immediate past, recover all you can of the far past, and accommodate things as well as you can to the wants of the living church at the least cost to the history of the building.

I had purposed to make a few detailed remarks upon the subject of cathedral church planning, and, with Mr. Beresford Pite's valuable collection of cathedral plans before me, it is hard to resist, but time will not permit. On one point only I should like to say a word. At the outset we considered church planning (including cathedrals) historically, and afterwards we dwelt upon its practical side. Now it seems to me that if there is one feature more than another that has historical and practical value in our cathedrals—one feature that connects them with the past, and renders them practical for Divine worship of the approved popular kind in the present day—it is the choir-screen. There is a wonderful consensus of opinion among both ecclesiastics and architects about the folly of our cramming our ordinary Sunday congregations into the choirs of cathedrals. No one defends the practice. Every one knows it to be in direct violation of the intention and true capacities of the fabric, and yet in desiring to mend matters the thoughts of reformers run only upon destructive and not upon constructive lines. They like to be radically original, to show what bold reformers can do. There are two ways of meeting the difficulty about the choir-screen that cuts our cathedrals in twain. The first way is to shirk the root of the matter by doing something that, while it relieves the strains upon the choir, does not really advance the popularity of the service in which a nave congregation is supposed to participate. The present undignified, huddled-up arrangement of a cathedral service in choir is "popular" just because it is centralised—altar, singers, canons, congregation all together. But once decentralise the service, and the "popularity" of the service is gone—only pedants like it. The altar, the singers, the canons are far away. To cultivated people who use service-books it does not much matter whether the altar is 400 feet or 500 feet distant. Their minds follow what their ears cannot catch. But to poor people everything should be centralised, open, and easy of access. To remove the screen, then, is not to untie the knot; it is only to cut it.

It is a scandal to the English Church that she cannot make the naves of her cathedrals as useful for Sunday popular services as the choirs are for the week-day choir offices. The old builders knew their ground; they knew what they wanted, and they provided it. The old builders had to meet precisely the same case as ours—they had to provide a popular service for the people in the nave, and so they put a people's altar in the nave—perhaps under a canopy—and if we were not so pig-headed and prejudiced nowadays, we should meet the same identical needs by using the same identical means. Lord Grimthorpe has done many execrably foolish things at St. Albans, and has given to the nineteenth century a supreme example of how *not* to restore an historic building; but at least to him be given this negative praise—he has not *yet* removed the nave altar and stone screen behind it.

Mr. Sedding then passed to the consideration of the collection of modern church plans lent to him for the evening's lecture, noticing in the first place that Gothic still held the field.

The PRESIDENT, in opening the discussion, among other comments remarked that notwithstanding Mr. Sedding had so ably set forth his type of church, it was often the case that committee-men held views more nearly approaching those of the men of Wren's times, and that the High Church plan would not be adopted in every case, nor for congregational churches. Also, in referring to Mr. Sedding's remark that so many during the excursion left churches to sketch cottages, he said that it would not fall to the lot of all to build so many churches as Mr. Sedding, and many no doubt were intent on solving problems that would more nearly concern them than those of church building. He himself had noticed of late that students seemed to have turned their attention more to domestic work.

Mr. WM. WHITE, F.S.A., proposed a vote of thanks to Mr. Sedding for the paper. He spoke of a distinctive feature in English churches, namely, a thoroughly well developed chancel. As to chancel steps, it was not so much a question of the number of steps at the chancel arch and altar as of their being so graduated as to give good perspective to the chancel as seen from the nave. Chancel stalls should be neither too high nor too crowded. The opposite practice was far too common in the small village church, the result being that the chancel was lowered, and dignity of effect was lost. The old Mediæval stalls of Lincoln Cathedral were far lower. A church should not be planned with the largest possible nave and the narrowest of aisles, for care must be taken as to proportions, or the acoustics of the edifice would suffer. If limited for money, effect must at times be sacrificed for accommodation, and then they must have recourse to aisles—to broad aisles.

Mr. E. C. Robins seconded the vote of thanks, which was supported by Mr. Hudson and Mr. Vacher. It was passed by acclamation, and the meeting closed after a few words from Mr. Sedding.

LIVERPOOL ARCHITECTURAL SOCIETY.

A PAPER was read at the meeting on Monday, by Mr. J. H. M'Govern, on "Antiquities of Kirk Braddon Cemetery and Peel Castle." He stated that Ptolemy classed the Isle of Man under the head of Irish islands, and the Manx race belonged to the Goidelic branch of the Celtic race. In referring to the runic crosses at Kirk Braddon, he said the difference between the Celtic and the Scandinavian runes was that the former were known by their ornaments of geometric interlacing knotwork and Celtic names, and the latter by their draconic ornaments and Norse names. The inscriptions are in a Norwegian dialect and written with a Scandinavian alphabet, the letters of which are termed runes, and the alphabet bears the name of the Furthork from the first six runes. The origin of the runes has been held to be from the Hellenic alphabet in the Greek colonies on the Black Sea, sixth century B.C. After referring to the historic associations of Peel Castle, made famous by the author of "Peveril of the Peak," Mr. M'Govern spoke about the Round Tower in the castle grounds, which he held to be of Irish Celtic design, and that the round towers were used as belfries for summoning people to worship in connection with chapels, and not as some authorities hold, as watch towers, like the Danish ones, or as ecclesiastical prisons.

THE EDINBURGH INTERNATIONAL EXHIBITION.

THE Executive Council of the Edinburgh International Exhibition met last week. The most important subject which came before the meeting was the request from the recent meeting of medallists, that an extraordinary meeting of the Association should be called to consider the desirableness of providing gold, silver, and bronze medals for the exhibitors who were successful in gaining awards. Nearly an hour was occupied in the discussion of this matter, in the course of which more than one member called the attention of the meeting to the fact that the request was not that the Council should deal with the question, but that they should merely call a meeting of the Association for the purpose. A majority decided that the Executive Council do not provide the successful exhibitors with medals, but that they should abide by the terms of their regulations. Another subject discussed by the Council was one which has been creating some little stir in fine art circles since the close of the Exhibition. It appears that at the commencement of the Exhibition there was an agreement come to between the executive and the artists exhibiting pictures in the galleries, that when any of the works were sold 10 per cent. on the catalogued price should be retained, evidently by way of commission. In many cases the pictures disposed of were sold at prices considerably lower than that stated in the catalogue, and a number of the artists, it would appear, now demur to paying the percentage originally agreed upon and declare that it should be exacted only upon the actual price realised; while others, it is understood, have suggested that in view of the financial success of the Exhibition, they should receive the full price without any deduction. Considerable sympathy was expressed by members of the Council with these views, and on the motion of the Lord Provost it was decided that the Fine Art Committee should be empowered to pay over at once to those artists whose pictures had been sold the price realised, less 10 per cent., and the hope was expressed that the percentage might be refunded to them when the accounts of the Committee

have been squared. The Council agreed to vote 50*l.* to Miss Dunlop for services rendered in connection with the publication of the book of "Old Edinburgh." The latter part of the meeting was occupied with receiving reports from various committees. The work of dismantling the buildings, it was stated, is proceeding rapidly, already three of the courts having been taken down. It is intended to advertise the Grand Hall for sale, and the material of the temporary portion will as soon as possible be sold by auction. Old Edinburgh has not yet been touched. The Committee expect a communication from Paris at an early date, making an offer for the building, and until then it will be allowed to remain.

THE IMPERIAL INSTITUTE.

IT is officially announced as a result of the meetings which have been held of the Prince of Wales's Committee on the proposed Imperial Institute, of the Colonial representatives and of the Exhibition Commissioners, that though the Queen will lay the foundation-stone of the Imperial Institute next June, it will probably not be opened for three years, as it will take at least that time to get the buildings ready. It has been decided that the Exhibition will not be reopened next year in any form. Most of the Commissioners are rapidly dismantling their courts and returning exhibits, as they could not be left in sheds for three years. If possible, the buildings lying between the new public offices in Whitehall and Great George Street, Westminster, which belong to Government, will be pulled down and the Institute established there. It is suggested that the Colonies should occupy the ground floor, and the mother country the floor above, the Agents-General also being located in various parts of the buildings, which will have an area of 400,000 square feet. In this case the city scheme will be united with the Prince's. If this ground cannot be obtained, then a purely exhibitional arrangement will probably be made at South Kensington, and a commercial museum in the city. It is understood that none of the present Exhibition staff will be retained. The estimate of the cost of the building is 300,000*l.*

The sub-committee of the Imperial Institute Committee have also conferred with the Agents-General for the Colonies. The Committee have agreed to advise His Royal Highness that it would not be expedient, as part of the scheme of the proposed Jubilee Memorial Institute, to reopen the present exhibition in the same or a similar form next year, and that it would not be practicable at so early a date to open a new Institute. The Committee are now considering what form the proposed memorial should take, but they have at present arrived at no conclusion upon the point, and have not tendered any advice to His Royal Highness upon it.

MEDIÆVAL GUILDS.

AT the meeting of the Edinburgh Architectural Association on the 18th inst. the following paper was read by Mr. Colston:—At no time in the history of our country has there existed a greater desire for information regarding our ancient laws and customs than at present. It is probable that the publications of two societies—one in England and the other in Scotland—have contributed largely to this archæological taste. We refer to the publications of the Early English Text Society, which contain much valuable information, and to the volumes that have been issued by the Scottish Burgh Records Society, under the able editorship of Dr. James David Marwick, town clerk of Glasgow. The subject is one of wide-reaching interest, and by the dissemination of accurate information in regard to it, the past may be made to speak to the present, and both combined may be made to speak to the future. In those days, when the question of Local Government is obtaining so large a share of public attention, and when there exists a great diversity of opnion among all classes of politicians as to what would be a satisfactory solution of the difficulty, any contribution, however small, which has a tendency to disseminate a knowledge of our ancient laws and usages cannot fail to be one of public interest.

The general desire throughout France and over Europe to get rid of the feudal control, and to establish municipal rights and freedom in towns and large communities, led to the establishment of guilds. This also was the case both in England and Scotland. Mr. Hensleigh Wedgwood thus describes the origin of the word "Guild," namely, "Danish *gilde*, feast, banquet, guild, or corporation; Platt-Deutche *gilde*, a company, corporation, society of burghers meeting on stated occasions for the purpose of feasting or merrymaking. The primary meeting is a feast, then the company assembled; and the same transference of signification will be observed in the word 'company' itself, which, signifying in the first instance 'a number of persons eating together,' has come to be applied to an association for any purpose, and in the case of the city companies (of London) to the very associations which were formerly denominated guilds."

Writers on the subject of guilds have placed these in four distinct classes:—1. The Family Guild; 2. The Religious (or Social) Guild; 3. The Mercantile (or Town) Guild (the Frith Guild); 4. The Crafts (or Trades) Guild. It will be abundantly evident that the Family Guild must take precedence of all the rest. In a state of society when there was comparatively little association or intercourse, as following out the old patriarchal method, the family roof was naturally looked upon as the centre under which all the dependents on the head of the house must come. But, as time rolled on, and civilisation increased, and enterprise was developed, a new state of things began to be evolved, namely, the creation of associations—or rather unions—with the most pious intentions, flowing out of a most generous sympathy for their fellow men, one of the finest traits that is to be found in human character. Concerning guilds of England, which can be traced back to the eleventh century, issuing their statutes from time to time, it need not be surprising from what we have already said, that the first inception of these was largely mixed up with religious worship. The Cambridge Guild was established for very different purposes. It was a union of brethren, the object of which may be defined in two words, help and defence. Its results, therefore, might have a bad as well as a good tendency. While there was one friendship, there might exist also one enmity, in respect that it was a brotherhood sworn to avenge every insult, a personal affront being regarded as a common one. The Judicia Civitatis Lundoniæ, or Statutes of the London guilds, which were reduced to writing in the time of King Athelstan, seemed to have been passed for a similar purpose to those which were enacted at Berwick-upon-Tweed in 1284. In consequence of these statutes, all smaller guilds were merged into one great guild, which developed a better system of police than had previously obtained, by framing regulations for the good government of the town. Every month there was a common meal, at which the general interests of the guild were discussed, and the remains of the viands after the feast were given to the poor. One very strange statute consisted in this, that when a brother of the guild died every member had "to offer a loaf of fine bread for the benefit of the soul of the departed, and had to sing fifty psalms, or get them sung, within the space of a month." It may thus be safely assumed that love, friendship, and good fellowship were the motive powers in the creation of the religious and social guilds which existed to so great an extent all over Europe in the Middle Ages.

While to a certain extent the same elements characterised the mercantile and trades' guilds, which began to flourish and rapidly increase in this country in the fourteenth, fifteenth, and sixteenth centuries, yet in these organisations is to be found a large amount of self-interest. In fact, they were protective associations, for the benefit of those who obtained the privilege; and as apprentices were indentured to and lived with their employers, they too became an integral part of the same system. In Germany there are hardly any records of guilds during the Middle Ages. Brentado attributes this to the measures taken for their suppression by the princes and bishops. Nevertheless, at a later period, there seemed to exist the most intimate relations "the highest guild" (*summum convivium*) and the town, which became, according to Wilda, one of the greatest authorities on the subject of guilds, "the germs of the towns' constitutions." This, also, as we have sought to prove, was the case in this country. In regard to Germany, the most important of these frith guilds were those of the Rhenish towns. Possibly the most elaborate system of statutes of towns' guilds which any nation can show comes from Denmark. It is supposed that their system had been transplanted about the middle of the eleventh century from England to that country under King Canute. This would appear from the fact that they placed themselves under the patronage of what they termed three royal saints of the land, namely, St. Canute, the king; St. Canute, the duke; and St. Eric, the king. The functions of both were to maintain law, security, and order. There was an alderman as presses of the guild, and sergeants or stewards to support him. A pure life and undefiled character, and a spotless reputation, were the conditions of guild freedom, and each one had to take the *sacramentum* (oath) for preserving inviolate the statutes of guild. We need not say that the towns' guilds were chiefly mercantile. Like the modern so-called "factories," which exist in North America, Asia, and Africa, the merchants being the most important trading body in the community, speedily saw and carried into effect a system of municipal rule for self-protection, and for the peace of the community. The division of labour principle which, in these later times, has exercised so large an influence in the production of commodities—in the way of expedition and cheapness—was no doubt at this time beginning to exercise a certain effect. Brentado tells us that, in consequence of this state of matters, "an ordinance was repeated in Danish,

German, and Belgian guild statutes, that no one 'with dirty hands,' or 'with blue nails,' or 'who hawked his wares in the streets,' should become a member of the guild, and that craftsmen, before being admitted, must have foresworn their trade for a year and a day." Eventually, however, as a rule, the craftsmen were excluded from the guild, and became oppressed by it, which frequently led to civic dispute and turmoil. Nevertheless, let us not condemn these guilds. They served their day well. But municipal independence, with emancipation from lordly control, having been attained, the old and honourable spirit of freedom seemed quickly to die away. The municipal rulers became proud, avaricious, and overbearing. The exclusion of the craftsmen from the brethren of the guild was a step in this direction, which soon led to a system of oppression on the part of the latter towards the former—the guild being the local governing power. Great was the party spirit, and numerous were the conflicts, which took place during the thirteenth and fourteenth centuries.

Towards the end of the fourteenth century the trades guilds prevailed. They were successful in obtaining a share in the civic administration. The origin of the craft guilds, it will thus be seen, was occasioned by the necessities of the period. Combination was the only way by which they could successfully resist the oppression of the mercantile guilds. Foremost among the craft guilds were the weavers, who were a kind of middle class between patrician and plebeian. The craft guilds, at an early date after their institution, began to see that it was indispensable to have a responsible elected chief. This official they called "the warden," whose duty was to regulate the trade and manage the guild. While trades guilds, or craft guilds, became prevalent in England, as they were also on the Continent, there seems to be no evidence whatever of their existence in Scotland, in so far as can be traced from the earliest records of the Scottish burghs. Nevertheless, the same feelings appeared to be at work, and the same desire for oligarchy which prevailed among the members of the merchant guild can easily be traced, for they became the frequent cause of civic disputation and strife. The mercantile portion had, however, eventually to give way, and to admit the trades to a certain share in the municipal management and control. Further, the town councils granted them the privileges of incorporation, by what is known as a seal or cause. Had it been practicable for mankind to have remained in a state of primeval simplicity, the cultivation of the arts and sciences would have been altogether unnecessary. Man would have continued to have lived in a state of comparative barbarism. But as society increased, and as men began to regulate the affairs of their every-day life by craft, ambition, and emulation, it became absolutely necessary to institute a more permanent and exclusive right to the soil. But though opportunity was thus afforded to cultivate those arts which have raised the human species to their present dignified position, there were various elements which tended to prevent it. Men as yet unpractised in policy and discrimination sought no other protection against violence and injustice than the selection of a few persons who had distinguished themselves in the chase or in the field, and in these practically was vested what might be termed the exercise of civil government. It was practically to put an end to such control that the frith guilds were called into existence. They offered a noble resistance to, and eventually conquered, the baronial control, and they were the first organisation to develop the grand idea of a free popular civic administration.

THE ELLAND TOWN HALL COMPETITION.

THE following architects sent in plans for this competition, the number being less than usual owing to the peculiarity of the conditions:—Mr. C. F. L. Horsfall, Halifax (two); Messrs. Collings & Lockwood, Huddersfield; Mr. Walter Hanstock, Batley; Mr. E. W. Farebrother, Grimsby; Mr. John Lord, jun., Brighouse; Messrs. Horsfall & Williams, Halifax; Mr. H. A. Cheers, Twickenham; Mr. J. Crawshaw, Ripponden; Messrs. Jackson & Fox, Halifax; Mr. R. F. Rogerson, Brighouse; Mr. T. C. Hall, Bradford; Mr. George Hepworth, Brighouse; and Messrs. Walsh & Bulmer, Halifax and Bradford.

It was unanimously resolved by the directors that Mr. Horsfall's design, marked "Interest," should be adopted subject to any alteration the directors may desire to make, and subject also to the tenders, when received, being such as can be accepted. The secretary to the company, Mr. J. L. Garsed, was directed to convey the thanks of the directors to the gentlemen who sent in plans.

According to the *Halifax Courier*, the accepted design is Classic in style, and the building will present a handsome, substantial, and imposing appearance. When erected it will be in two blocks, and have three frontages, the main being to the junction of Southgate and Huddersfield Road respectively. The Southgate wing will include the large hall, and the principal entrance will be from the chief frontage, there being also a side entrance to the back seats and gallery in Southgate. The landing to the large hall will measure 24 feet by 20 feet, and the hall itself will be entered from a corridor 8 feet wide. The large hall will be 100 feet long by 46 feet wide. The body of the hall will measure 70 feet long by 46 feet wide, and the platform 30 feet long by 46 feet wide. The platform, it may be stated here, will be arranged so that it can be used as a lecture room when the large hall is not required. This will be done by means of revolving shutters which will lift up from under the platform, and the size of that room, so formed, will be 46 feet by 27 feet. The height of the large hall, from floor to ceiling, will be 30 feet, and over the back seats of the hall will be a gallery 46 feet wide by 20 feet deep. The body of the hall will be made to seat 810 persons, and the gallery 240, making a total accommodation of 1,050 persons. The floor will be concreted (fireproof), so as to make it solid, and then boarded, preventing any sound being heard below. The heating will be by hot-water pipes, to be fixed down the sides and centre of the hall. The room will be ventilated from the windows by inlet fresh-air flues, and outlet flues in the ceiling, to be carried in the roof to turrets. Underneath the large hall will be two lock-up shops, a keeper's house, and four shops with living accommodation. These shops and houses are to be so arranged that the shops can be let off as lock-up shops, and houses let off separate from the shops. At the entrances to the large hall will be ticket offices, cloak-rooms, and other accommodation. The Huddersfield Road building will include one lock-up shop, and five shops with dwelling-houses to each. The outwalls are to be built of flat-bedded stone, with boasted ashlar dressings with cavities, and relieved with pilasters. The woodwork will be of red memel and yellow pine, fit up to correspond with the building in design. The total cost, including heating, lighting, ventilation, and drainage, the architect states will not exceed 5,000*l*.

EXAMINATION OF LOCAL SURVEYORS.

THE following papers were given to intending candidates for local surveyorships at the last examination at the Sanitary Institute:—

1. Mention the chief Public Health and other Acts in force relating to:—(*a*) Water supply; (*b*) sewerage. Give a brief statement of the main features of each.

2. Define a by-law. What is meant by—(*a*) Provisional order; (*b*) special drainage district; (*c*) contributory place; (*d*) inquiry by Local Government Board; (*e*) power of entry?

3. What are the chief principles to be observed in the sewerage of a town or district, and how would you proceed to determine the size and capacity of the outfall sewer? What size of sewer would you propose for a town of 20,000 population where the gradient is 1 in 300? Illustrate your answer by sketches.

4. Write a specification for laying stoneware pipe sewers.

5. Supposing a sewer to have a gradient of 1 in 300, how much would the velocity and discharge be increased by altering the gradient to 1 in 100?

6. Give a description of the process termed intermittent downward filtration. State what area of land you would require with a gravelly soil for applying this method of purifying sewage to a town with a population of 20,000 inhabitants; and state the arrangements you would adopt for dealing with the rain-water falling on the roofs, yards, and streets.

7. Describe and illustrate by sketches the essential points to be observed in carrying out a system of house drainage, and the best means of providing urinal and closet accommodation for schools, workhouses, and similar institutions.

8. In arranging the water supply for a manufacturing town of 30,000 inhabitants, state what you consider of importance as to—(*a*) Sources of supply; (*b*) quantity required; (*c*) distribution.

9. Describe the general characters derived from—(*a*) The chalk; (*b*) the new red sandstone; (*c*) the carboniferous formations; and the methods by which water should be obtained from each.

10. In what ways is water liable to be polluted after collection, during its distribution to houses, and in houses? What means would you adopt to prevent such pollution?

11. What fittings, and plumbers' work generally, are required for a high-pressure constant water service? How would you make the connection with the main? Describe the kinds of joints which should be used on the branches.

12. There is great difficulty in obtaining a supply of good water for a country house, and it is therefore necessary to obtain as much water as possible from the roofs, and to use it for drinking and cooking purposes. The total area of the roof of the house and offices is 8,000 square feet, and the average annual rainfall is about 40 inches. Calculate what size the

storage tank should be, and give a sketch of it and its appendages.

13. To what extent does the size of a room affect the quantity of fresh air required for effective ventilation, and what quantity of air would be required per hour for a room containing 8,000 cubic feet, occupied by fifteen people? How would you ventilate such a room? Illustrate your answer by sketches.

Bygones.

"*Antiquity after a time has the grace of novelty.*"—HAZLITT.

DE PILES'S "BALANCE OF PAINTERS."

THERE are two names in the art literature of the seventeenth century which must always have an interest for Englishmen, viz., those of Charles Alphonse du Fresnoy and Roger de Piles. Both men were painters as well as writers, and the reputation of both is inseparable. Du Fresnoy was the author of the Latin poem *De Arte Graphica*, or "Art of Painting," which was dedicated to Colbert. It was brought out in 1688 with a prose translation in French, by De Piles, on alternate pages. Few books were more honoured. John Dryden did not think he was demeaned by undertaking a translation of it. "Many of our most skilful painters and other artists," he said, "were pleased to recommend this author to me as one who perfectly understood the rules of painting, who gave the best and most concise instructions for performance, and the surest to inform the judgment of all who loved this noble art." Indeed, according to Dryden, the poem was supreme as an authority, for "Bossu has not given more exact rules for the epic poem, nor Dacier for tragedy in his translation of Aristotle than our Fresnoy has made for painting." But "Glorious John," although he stood at the head of English writers, was not ashamed to say that he was not sufficiently versed in art for the translation of such a masterpiece. "I freely own," he said, "that I thought myself incapable of performing it, not but that I understood the original Latin and the French author perhaps as well as most Englishmen, but I was not sufficiently versed in terms of art." The youngest reporter would now scorn to make such a confession. Dryden said he borrowed two months for the translation from his "Virgil," and the fine essay, called a "Parallel of Poetry and Painting," which he prefixed to it, was written in twelve mornings. The translation appeared in 1695.

A further honour was paid to Du Fresnoy and De Piles when Pope sent a copy of Dryden's translation to Jervas, the portrait painter, with a poetic epistle. Mason, the poet, also translated the original into English, and Sir Joshua Reynolds imparted value to this version by his notes.

Of the two Frenchmen whose names are inseparably associated De Piles was the more voluminous writer. Between 1677 and 1684 he wrote "Conversations on Painting," "Dissertations on the Works of Famous Painters," and the "First Elements of Practical Painting," all of which were accepted as standards in their day. De Piles was, however, most esteemed for his attempt to assess the respective values of the great painters by means of figures, and which we now reprint. What connoisseurs thought of his numerical valuation may be judged by the criticism which the Abbé Du Bos passed upon it. In his "Réflexions Critiques" he says:—"Monsieur De Piles, a grand amateur in painting, and who also handled the pencil, has written much on the art with which all the world should be acquainted, but there is one of his writings which is worthy of all the praises that are given to original works. Everybody can there see at a glance the merit of any painter in each of the four parts into which the art of painting is divided." Du Bos was of opinion that there ought to be five divisions instead of four, that is, he would divide composition into picturesque composition and poetic composition. He maintained that it was hardly correct to make Nicolas Poussin have the same value in composition as Veronese, although, according to Du Bos, the Italians gave the precedence to the Frenchman, as they considered him superior in the poetry of painting to Paul Veronese.

The following is De Piles's "Balance," with his introductory explanation of the process he employed:—

The method I have taken is this:—I divide my standard into twenty parts or degrees. The twentieth degree is the highest and implies sovereign perfection, which no man has fully arrived at. The nineteenth is the highest degree that we know, but which no person has yet gained. And the eighteenth is, for those who, in my opinion, have come nearest to perfection, as the lower figures are for those who appear to be further from it.

I have passed my judgment only on the most noted painters, and in the ensuing catalogue have divided the chief parts of the art into four columns, viz., Composition, Design, Colouring, and Expression. By Expression I mean not the character of any particular object, but the general thought of the understanding. And thus against each painter's name we see his degree of merit in all the aforesaid divisions.

We might introduce among the most noted painters several Flemings, who have very faithfully shown truth of nature, and were, moreover, excellent colourists; but we thought it better to set them by themselves, because their taste was bad in other points of art.

It now only remains to be observed that, as the essential parts of painting consist of many other parts, which the same masters have not equally possessed, it is reasonable to set one against another in order to make a fair judgment. Thus, for instance, Composition arises from two parts, viz., Invention and Disposition. Now a painter may possibly be capable of inventing all the objects proper to a good Composition, and yet not know how to dispose them so as to produce a good effect. Again, in design, there is taste and correctness, and a picture may have one of them only, or else both may appear jointly, but in different degrees of goodness; and, by comparing one with another, we may make a general judgment on the whole.

I am not so fond of my own sentiments as to think they will not be severely criticised, but I must give notice that, in order to criticise judiciously, one must have a perfect knowledge of all the parts of a piece of painting, and of the reasons which make the whole good, for many judge of a picture only by the part they like, and make no account of those other parts, which either they do not understand or do not relish.

Names of Painters.	Composition.	Design.	Colouring.	Expression.
Albano	14	14	10	6
Barocchio	14	15	6	10
Bassano (Jacomo)	6	8	17	—
Bellini (John)	4	6	14	—
Bourdon (Sebastien)	10	8	8	4
Buonarotti (Michel Angelo)	8	17	4	8
Caracci (The)	15	17	13	13
Caravaggio (Polydore)	10	17	—	15
Correggio	13	13	15	12
Da Caravaggio (Michel Angelo)	6	6	16	—
Da Cortona (Pietro)	16	14	12	6
Da Vinci (Leonardo)	15	16	4	4
Da Volterra (Daniele)	12	15	5	8
De Udine (John)	10	8	16	3
Del Piombo (Baptista)	8	13	16	7
Del Sarto (Andrea)	12	16	9	8
Del Vaga (Pierino)	15	16	7	6
Diepenbeck	11	10	14	6
Domenichino	15	17	9	17
Dürer (Albert)	8	10	10	8
Giorgione	8	9	18	4
Girdano (Luca)	13	12	9	6
Gioseppino	10	10	6	2
Guerchino	18	10	10	4
Holbein (Hans)	9	10	16	13
Jourdaens (Jacob)	10	8	16	6
Lanfranco	14	13	10	5
Le Brun	10	16	8	16
Le Sueur	15	15	4	15
Muziano	6	8	15	4
Palma the Elder	5	6	16	—
Palma the Younger	12	9	14	6
Parmesan (Mazzuola)	10	15	6	6
Penni (Francesco), "Il Fattore"	—	15	8	—
Perugino (Pietro)	4	12	10	4
Pordenone	8	14	17	5
Pourbus	4	15	6	6
Poussin	15	17	6	15
Primaticcio	15	14	7	10
Rembrandt	15	6	17	12
Reni (Guido)	—	13	9	12
Romano (Julio)	15	16	4	14
Rubens	18	13	17	17
Salviati (Francesco)	13	15	8	8
Sanzio (Raphael)	17	18	12	18
Teniers	15	12	13	6
Testa (Pietro)	11	15	—	6
Tintoret	15	14	16	4
Titian	12	15	18	6
Vandyke	15	10	17	13
Vanius	13	15	12	3
Van Leyden (Lucas)	8	6	6	4
Veronese (Paolo Cagliari)	15	10	16	8
Venius (Otho)	13	14	10	10
Zuccharo (Taddeo)	13	14	10	9
Zuccharo (Frederico)	10	13	8	8

We are disposed to believe that De Piles was often used by Sir Joshua Reynolds when preparing his Discourses for the

Academy. In the second discourse we find the Caracci put forward as the best examples of style, and in consequence the students were advised to allot a large portion of their time to Bologna. Now in the "Balance" the Caracci have no less than fifty-eight marks, Raphael having only seven more. Titian was the only one of the Venetians that Reynolds admired, and De Piles gave him precedence. Bassano was considered by the President to be allied to the Dutchman, and we see he has a low value in the list. There are many other examples of correspondence which could be adduced if space was available.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

ON Monday evening the fourth ordinary meeting of the Leeds and Yorkshire Architectural Society was held, when Mr. A. W. Blomfield read a paper on "Church Architecture: Past and Present." Mr. C. R. Chorley presided, and there was a good attendance. Mr. Blomfield said of all the arts that of architecture was the most prolific; and of no branch did they hear so much said as that of church architecture. The great bulk of church-going people would tolerate none other than Mediæval architecture. The innovations that had been made on the old forms had not been on account of the changes in secular constructions. It must be clear to every intelligent person, however, that there was plenty of room for the further development of their work, and also ample scope for originality. The day had gone by when a clergyman would dare advise his congregation to warm themselves with their prayers, and not to trouble themselves about the manner in which the church was warmed. The most important thing in connection with the building of a church, as, of course, with any other edifice, was the preparation of the plan. In this the architect must give due consideration to acoustic properties, warming, and ventilating requirements, and many other necessaries. On entering churches of ancient construction a feeling of awe was more frequently experienced than in those of modern build. It was essential that this devotional feeling should be maintained, and the longer and more closely the old rules were studied the better for the success of their endeavours in that direction. Architects who made the church their special study had generally given more attention to the beautiful effects to be presented by their work than to the necessary arrangements of the interior. The lecturer remarked upon the improvements which had taken place of late years. In making a plan special attention should be devoted to the altar, which ought to be raised so as to be in full view of the congregation. In conclusion he urged his audience to apply themselves to the study of church architecture, and to produce well executed work. On the motion of Canon Scott, a vote of thanks was accorded the lecturer.

GLASGOW ARCHÆOLOGICAL SOCIETY.

THE thirtieth annual meeting of the Glasgow Archæological Society was held on the 18th inst., Professor Veitch in the chair.

Mr. W. G. Black, one of the hon. secretaries, read the annual report, which stated that 30 members had been admitted during the year, and that the total membership was 11 honorary and 252 ordinary members—in all, 263. It further recommended that Professor Lindsay should be elected president.

The report was unanimously adopted, and, on the motion of Mr. C. D. Donald, a vote of thanks was awarded to Professor Veitch, whose three years' term of office as president had now expired.

Professor Veitch, in acknowledging the compliment, said that he had never presided over a society where a better and fairer spirit was manifested. From his earliest years he had taken an interest in archæological matters, and that had enabled him to associate with many places human feeling and the human life and all its past interests, and to connect these with his present life and experience. He also remarked that during the past nine years the membership of the Society had made a great advance. In 1879 the membership was about 18, but in 1882 there were admitted 79 members, so that from 1880 might be dated the time of its prosperity. Archæology at the present time was going into the antiquarian line, and had done so most beneficially for the last twenty-five years, and especially during the last ten years. A number of books, such as the Burgh Records, had been published by various societies, and the character of these was in a great measure local history. They referred to the home and to the domestic side of the nation, and to the feelings, the faith, and the manners of the people. These books were throwing a new light on the source and the motives of history and of historical characters. He believed this was true at least in regard to Scotland. There had been such an abundance of new materials of this character that it was necessary that there should be a new historian of Scotland—at least from the time of Malcolm Canmore downwards.



M. Paul Sédille and the Architecture of the Future.

SIR,—In the excellent paper on colour by M. Sédille, of Paris, which was read at the Institute last week, the author summed up with two propositions—1st, that granite would render modern polychromy as lasting as the edifices of which it would one day be the inseparable adornment; and 2nd, that natural coloured materials must themselves form part of modern structure.

I imagine that no one will object to this, but I shall be glad to be allowed to support the proposal for other reasons than those adopted by the author. The colours of burnished granite are as beautiful as they are varied, but as a building material in London granite possesses a quality of still greater importance, viz., its wonderful and unique power of resisting the acids discharged from manufactories, and which destroy the freestones that our most important buildings are constructed with.

Since the invention of the requisite machinery for its conversion into useful forms for the builder there would be no extra cost, provided the architectural details were such as t h nature of the material suggests, and not a copy of those worked in quite another kind. Elaborate mouldings would appear to be quite unnecessary, as flat surfaces display the beauty of the material much better. Plinths, strings, archivolts, and cornices could all be worked out with large and small splays, as was done in some of the noblest edifices of past times. Modillions and dentils, if used at all, would have to be built in. Indeed, it is probable that the intelligent use of this material would be a source of economy, as the necessity for spending thousands of pounds annually upon restorations would cease utterly, for granite is imperishable, even in the noxious atmosphere of London. The prime cost of the material is not greater than that of the best freestone, and the machine works flat surfaces with astonishing rapidity. For example, a block of rough granite placed upon a moving trolley, and passed under a drum armed with steel cutters, and revolving at lightning speed, is surfaced at the rate of a square foot in ten minutes, and the burnishing (a process necessary to display the different colours) is such a simple process, that it is to a great extent done by boys.

Taking all these matters into account, no one will be much surprised that a comparative estimate shows a granite façade to cost only 3 per cent. more than one of the same size in carved and moulded freestone, which, in London, soon decays. Another advantage of the general use of granite in City architecture would be that streets which are now of dull and forbidding aspect would become bright and cheerful, for the granite is of all colours, from nearly pure white through greys, reds, and greens, to black. In conclusion I cannot, perhaps, do better than quote a general description of a complete granite building from a letter of mine in the *Times* of September 11, 1879:—"With these splendid and imperishable materials—the white or pearly grey for the burnished walls, the ornamental details of doors and windows in geometrical mosaics of the coloured varieties contrasted with intaglio work of curvilinear patterns, with figures and historical subjects designed by a Leighton occupying friezes and panels rich in colour and always clean (for being flat and burnished every shower would wash them down), and which would be excellent substitutes for the besmirched and melancholy looking statuary on the exterior of the British Museum and the Royal Exchange, a magnificent edifice, strikingly characteristic of the age, would be the result."

Your obedient servant,

Woodside, Wimbledon. HENRY TRAVIS.

NEW BUILDINGS.

Cardiff.—The Plas-Newydd Square Schoolroom or Mission Hall, Cardiff, was opened on Sunday, October 31. The building is in the Gothic style, of a plain character, and built of local stone and Yorkshire dressings. The plan consists of a large hall, accommodating about 400, a large lecture-room or classroom, and minister's vestry. At present the building will be used as a chapel, but when funds permit a large chapel will be built on the adjoining ground, which is being retained for that purpose. The cost of the building is 960*l*. The builder is Mr. David Thomas, Richmond Road, and the work has been carried out from the designs and under the supervision of Mr. J. H. Phillips, architect, Cardiff.

Kendal.—The ceremony of cutting the first sod in connection with the Victoria Jubilee Almshouses and Mission Church, Kendal, was recently performed by the Mayoress of Kendal (Mrs. Bindloss), in the presence of the Mayor and the architect, Mr. Eli Cox, when the latter presented that lady with a spade

for the occasion. The buildings are the gift of Mr. John Sleddall, formerly of Kendal, but afterwards a merchant in Liverpool, and now retired. The buildings are estimated to cost about 12,000*l.* with endowment. They are intended to be opened in the jubilee year.

SCHOOL BUILDINGS.

Balsall Heath.—The memorial-stone of Wesleyan Sunday-schools, Lime Grove, Balsall Heath, has been laid. The schools are being erected by Mr. John Bowen, builder, of Balsall Heath, from the designs and under the superintendence of Mr. William Hale, architect, of Colmore Road, Birmingham. The work generally will be of a plain character, the only ornamentation being in the front towards the road, where a little moulded and carved Penkridge stone will be used in the entrances and windows, to give more expression to the design, which is based on a late kind of Gothic. The walls generally will be of good ordinary bricks, built hollow and picked for outside works. The roof will be slated, and carried by open-timbered trussed principals, supported by cast-iron stanchions. All the floors of the schools will be of wood, those of the assembly-room and twelve of the classrooms and infants' room being laid with solid blocks on concrete. The cost of the buildings, exclusive of land, will be about 2,000*l.*

CHURCH BUILDING AND RESTORATION.

Askern, Doncaster.—A north aisle, newly-erected at St. Peter's Church, Askern, has been opened. The work has been carried out, at a cost of 600*l.*, from the designs of Mr. Fowler Jones, architect, York.

Wem.—The parish church has been reopened after alterations and renovation. The works have been executed by Mr. Henry Tommy, of Wem; the gas fittings by Mr. Shrivell, of Castle Street, Long Acre, London; the mosaic and marble work by Mr. Robert Davison, of Marylebone Road, London; the painting and decorating by Messrs. Campbell, Smith & Campbell, of Newman Street, Oxford Street; the lectern, cross, candlesticks, &c., by Messrs. Gardners, of Albert Embankment. Mr. George H. Birch, of Devereux Chambers, Temple, London, is the architect.

Ryton-on-Dunsmore.—The parish church has been reopened after restoration, which has been carried out from the designs of Mr. Ewan Christian, by Mr. Watson, of Napton.

ARCHÆOLOGY.

Mediæval Relics at Warrington.—The interesting excavations for relics of the Old Priory founded in 1379, of which all traces had been obliterated, have been continued. A chancel has now been unearthed to its entire length, which is 60 feet 6 inches, and the breadth 20 feet 3 inches. The great size of the chancel shows what an important church the Austin Friars must have had, and this is further evidenced by the wall at the east end of the chancel being found to be 4 feet 7 inches in thickness. Those at the south-west and south sides have now been bared, and each of them is 4 feet 7 inches square. The workmen are now engaged in following up this east wall. On the south side at the entrance into the chancel a doorway has been discovered, the stonework on the west side of which is of a very elaborate description. Beyond this doorway, and continuing to the south, tiles have been found in position, and it is exceedingly probable that this doorway would lead into the cloister. The fine line of pillars down the nave has not been explored beyond the first two on the north side. There is no doubt that those on the north side exist below the little lane leading to the site of the present excavations, and that the west front will be discovered at the termination of this line of pillars. The tiling in the chancel is being found in position, and it is now seen that there are several varieties of design, all of them being very beautiful.

Discovery of an Ancient Cross at Rothesay.—The shaft of what has apparently been a Celtic cross, of Iona pattern, has been unearthed recently in the churchyard of Rothesay. It consists of a rough, crooked slab of the quartzite slate found in the immediate vicinity on Barone Hill, is 5 feet 7 inches long, from 10½ to 13 inches broad, and 3½ inches thick. Nearly hidden by grass and moss, it lay unnoticed till lately. The sexton, cleaning it at the instance of the parish minister, laid bare, amid the interlaced ornamentation peculiar to Norse and Celtic monuments, the well-executed figure of a horse with its rider. When turned over, the stone displayed more elaborate sculpture, and the conjecture of the Rev. Mr. Hewison that it was a cross-shaft was fully confirmed. The obverse side had been divided into three compartments, the lowest of which is occupied by a representation of a Latin cross over a foot in length, cut like all the other figures in bold relief. This cross rests on a base, and its finials terminate in rounded bosses, and, most striking feature of all, it is surmounted by two crested birds, billing each other, which sit upon the "inviolable wood," like the eagle and its royal adversary the wren of Iranian mythology. In the second compartment a grotesquely-shaped cat seems walking with fore-legs in one direction, in another with its hind ones, which are human in form. Above this is a horse, also in the attitude of walking, mounted by a rider who either sits obliquely resting on its haunches or is in the act of falling. All the figures, though weather-worn and splintered, are distinct. The edges of the stone are much weather-worn, and are not carved. The most remarkable, if not unique, feature of the slab is the existence at its upper extremity of a tenon, indicating that the transverse part of the capital had been a separate piece fixed in a mortice-joint, so as to complete the form of an Iona cross, the lower quadrants of which had been let into carefully-bevelled sockets, still visible on both edges of the stone, at a distance of 7½ inches from the check. Unlike stones of a similar character, this is narrowest at its base, and retains the natural curve of the slate bed from which it had been split. Happily, this antique memorial is not without an eventful history. Blain, in "The History of Bute," mentions that crosses formerly stood at "Cross-Beg" and "Cross-More" (perhaps the boundaries of the sanctuary), farms near the old church dedicated to St. Brieux. Early in this century the shaft was found in a field near these farms, was preserved by the finder, and at his death was laid by his grave in the burial-place of the Mac-Alesters. The fall of a monument during a storm nipped the stone in two, but, with the consent of those patrimonially interested, the relic has been neatly repaired, and erected where last found, for preservation. Still better steps, however, ought to be taken for its safety. To its age, in the absence of lettering of any kind, there is no direct clue, although its distinctive features point to a late Celtic period. Bute was an important centre in the Celtic Church in the seventh century, having a bishop, who died in 660 A.D. The early Christian churches and cemeteries are nearly all obliterated except in name. Of the little fane and once popular graveyard of Inch Marnock—a verdant slope keeping their memory green—only a little sculptured stone remains. It is a cist-cover, having three St. Andrew's crosses, one above the other, cut in relief upon a rough slab of slate. Of the rest, a strange story, mythical-like, but true, can be told.

GENERAL.

Mr. H. Herkomer's Portrait of the Bishop of Dover will be presented on Wednesday next.

The Plaster Cast of a colossal statue of Wallace, for the Abbey Craig, Stirling, has been completed by Mr. D. W. Stevenson, R.S.A.

The Chester Sketching Club has just held its first winter meeting.

Mr. Charles Lynam read a paper on Encomb Church, Bishop Auckland, at the last meeting of the British Archæological Association.

A Winter Exhibition was opened on Thursday in last week at the Bradford Art Gallery and Museum.

Mr. Warrington Wood has been commissioned to execute a bust of the late Dr. Fraser, for Bolton town hall.

Mr. Ford Madox Brown has undertaken the production of eight cartoons of heroic dimensions to illustrate the arts, commerce, and science of this country for the Manchester Exhibition. The cartoons, painted in sanguine on a tessellated and decorated background, will fill in the spandrels of the great dome and form a keynote to the whole scheme of decoration.

The Liverpool Architectural Society has sent a petition in favour of the charter of the Royal Institute of British Architects.

A Bijou Theatre for concerts and other entertainments is to be erected at Stratford-on-Avon by Mr. Charles E. Flower.

Land for the purposes of a public park at Crewe is about to be given to the town by the London and North-Western Railway Company.

The Saxon Chapel, at Deerhurst, has been completely repaired. An inscribed stone found in use as a window head has been let into the wall in a position of safety.

A Railway Viaduct was opened last week near Dalbeattie, over the Urr. The weight of metal employed is 7,000 tons; masonry, 7,000 tons; concrete, 500 tons—total, 14,500 tons. The cost has been about 15,000*l.*

The Report of the Glasgow Sanitary Protection Association states that during the past year 131 houses had been examined for the first time, and of these 104, or 80 per cent., were found seriously defective. The defects were of the usual character. Fifteen of the houses were fresh from the builder's hands.

The Architect.

THE WEEK.

HER MAJESTY has lent three pictures to the Royal Academy for the forthcoming Winter Exhibition of Old Masters and Deceased Artists of the British School. They are :—WILKIE'S *The First Council*, and LESLIE'S *The Administration of the Holy Communion to the Queen at her Coronation*, and *The Baptism of the Princess Royal*. They were painted to command, and as they relate to events in the early part of the present reign they will be appropriate. Two of them are well known from engravings. The exhibition will also be enriched by fifty-two pictures from the Dorchester House collection.

THE French Council of State have considered the subject of the donation of Chantilly. As was anticipated, the property has been accepted. But it was found to be necessary to comply with a condition which was overlooked hitherto. According to the Civil Code no donation of property is legal unless there is a deed signed by the giver and receiver or their representatives, and which is to contain an exact description of the property. The Council have therefore accepted the gift of the Duc D'AUMALE provisionally, and has applied for a complete inventory of the furniture, pictures, books, bijouterie, and other contents of the château. When this document is ready the proposal will be again submitted, and, unless some unexpected event intervenes, formally accepted.

AT the meeting of the Manchester Architectural Society, which was held on Wednesday, a paper was read by Mr. DAVIES-COLLEY in which the prospect of obtaining a really representative collection of the fine arts at the forthcoming Jubilee Exhibition, which would adequately set forth the progress of the last half century, was examined. It was suggested that two or three sub-committees of representative professional men should be at once appointed to assist the executive. In this way a more thorough and systematic scheme was likely to be adopted, and in architecture a collection of the most typical and artistic buildings would be secured. The meeting approved of the suggestion.

PROVINCIAL schools of art are rarely self-supporting, and in consequence the masters and officials have an anxious time whenever accounts are balanced. The Leamington school could not hold out any longer, and the doors are now closed. Although the town is supposed to be a fashionable resort the residents do not seem to care for art. It is considered by some that the Free Libraries Act is applicable to the support of museums and art schools, but while 525*l.* a year was spent on the library the school of art was allowed no more than one-twentieth of that sum, or 25*l.* The closing of the school is not creditable to the town and may affect its interests in many ways. Efforts are, accordingly, being made to obtain support. It is said that by a moderate amount of aid, that is, a guarantee of 75*l.* a year, another trial of the school of art could be attempted. So much has been revealed lately about the uncertainty of local support that the authorities will have to face the difficulty.

AN extraordinary general meeting of the Glasgow Institute of Architects was held on Tuesday, with Mr. D. THOMSON as chairman, for the purpose of giving effect to the following rules, recommended by the Council, who had had "recent competitions" under consideration :—1. That in a competition where the cost is specified a competitor is not entitled to submit a design which he knows could not be carried out in all respects as shown for the stipulated sum. 2. That in a competition so restricted a professional assessor is bound to set aside every design which he is satisfied would exceed the stipulated sum by more than ten per cent. 3. That in all competitions where a professional assessor is employed his report should be shown to the competitors. It appeared that a letter had been received from Mr. JOHN BURNET, who raised the question whether the passing of the proposed rules was for the advancement and the interests of the profession. Mr. JOHN HONEYMAN moved, in terms of the recommendation, that the Institute approve of the rules. These rules, he remarked, imposed no new restriction upon competitors, they simply declared that competitors must abide by conditions which they had voluntarily agreed to come under. Mr. SELLARS seconded. It was moved by Mr. BAIRD, as an amendment, that the time was inopportune for the Institute to interfere in the matter. This was seconded by Mr. HALKET. Some discussion followed. It was suggested that Mr. BURNET'S letter should be read, but the meeting was decidedly averse to this, as it was thought the writer had viewed the proposals of Council from a personal point of view. It was ultimately agreed that, in view of Mr. BURNET'S letter, the meeting be adjourned and the whole matter be again considered by the Council.

AN effort was made to excite curiosity about the mysterious cupboard in Sir JOHN SOANE'S house, Lincoln's Inn Fields, but it did not succeed. He was not the sort of man to conceal a skeleton; on the contrary, he was rather disposed to proclaim his professional and family troubles to the world. However, on Monday the trustees, consisting of Mr. WATERHOUSE, R.A., Mr. GODWIN, F.R.S., Mr. C. S. PERCIVAL, F.R.S.A., Professor T. HAYTER LEWIS, F.S.A., Professor FLOWER, F.R.S., Dr. FRESHFIELD, V.P.S.A., Dr. RICHARDSON, F.R.S., and Alderman Sir R. W. CARDEN, together with the curator (Mr. WILD), and the solicitor to the trustees (Mr. UPTON), formally opened the cupboard in the Museum. They were confronted by a document dated December 6, 1837, which stated that the repository was opened in order to see if it contained anything which could be mulcted in probate duty. The papers which were then left were found in the drawers on Monday, but apparently they merely relate to some of Sir JOAN SOANE'S works, and to the dispute with his son. Sir JOHN died on January 20, 1837, and it is remarkable that a few days before his death he amused himself with the preparation of a design for a pedestal for the statue of WELLINGTON, a project which is again under consideration.

WITH all his foibles Sir JOHN SOANE was generous with his money. He was Superintendent of Works to the fraternity of Freemasons, and when the hall adjoining Freemasons' Tavern was proposed he subscribed 500*l.* towards the cost. He also gave 1,000*l.* to the committee who had undertaken the erection of the York column. He presented 750*l.* to the Institute of Architects, and 250*l.* to the Architectural Society. His gift of the house and contents in Lincoln's Inn Fields was valued at 60,000*l.* A little time before his death he paid 500*l.* for a collection of drawings belonging to GEORGE DANCE, R.A., in whose office SOANE assisted. A clerk of works who was employed under him at the Bank of England enjoyed a pension of 150*l.* from Sir JOHN, and he made a provision that it was to be continued during the man's life. To another man at Chelsea Hospital he left 50*l.* a year. His assistant, Mr. GEORGE BAILEY, was provided for by being made the first curator of the museum, and Mr. RICHARDSON, who was also an assistant, received a bountiful legacy. With proofs of this kind on record it was absurd to imagine that Sir JOHN SOANE could leave money concealed in a cupboard.

THE annual general meeting of the Society of Antiquaries of Scotland was held on Tuesday. It was stated that the Society had lost twenty members by death during the past year, and that thirty-five new members had been added during the same period, the total number of Fellows being 674. The annual report of the museum indicated an increase of 19,195 visitors over last year, the total number for the year just ended being 103,193. The number of donations to the museum and library during the year had been 171, and 2,747 specimens had been added to the museum by purchase. The Marquis of LOTHIAN was elected president, and three painters, viz., Sir WILLIAM FETTES DOUGLAS, Sir J. NOEL PATON, and Mr. R. HARDMAN are on the Council, but, as is usual, there is no architect.

THE CONSULTING ARCHITECT.*

IT is less easy to discover a title for a book than to write several pages, and we can see an illustration of the difficulty in Professor KERR's latest volume. What is meant by a "consulting architect"? Reasoning from the practice in engineering and medicine, we might suppose him to be an architect-specialist, who, on a formal application, was prepared to give advice to his brother practitioners. Thus the late Mr. E. W. GODWIN described himself as the "consulting architect" for one town hall, and we find him inquiring whether his friend Mr. BURGES did not hold a similar office in respect of another building of that class. In such a case the consultation would relate to design and archæology. An architect who advised on planning or construction would also be justly entitled to be considered a consulting architect. Now Professor KERR's book can only be said to treat indirectly of the art or science of building, and it can hardly be called a guide to the duties of a specialist. It is simply a treatise on the legal procedure in which the majority of architects are likely to take a part, and the consultation means giving information to a client or his solicitor rather than to another architect. The book can therefore serve a more general use than is to be inferred from its title. It will not enable a young architect to be an expert, and it will not, like the readable "Country Banker," become a revelation to the public of the position of an influential class of men; but as an adviser in what may be called architectural jurisprudence, Professor KERR's book will be found invaluable to the novice, and there is much in it to recommend the pages to men of a different class. There are already books by lawyers on the law of building, but they do not treat the subject as if seen from the architect's point of view. Professor KERR does this, and his experience in courts both as a witness and a litigant gives him a claim to be recognised whenever he stands forth as an authority on that branch of practice.

It is, moreover, a safe book, for it is not written in a litigious spirit. Every one who has had much to do in courts must have observed that there are certain judges, who, soon after cases are opened, send down bits of folded paper to counsel, which are recommendations of compromise. Their lordships' interference may be inspired by consideration for the parties to the action, or by a feeling of weariness, since, after a time, legal contests lose much of their excitement for onlookers. Professor KERR ought by this time to be *blasé* with light and air cases and proceedings in the police court, and this probably explains why so much is made in his book of the virtues of compromise. Combativeness and bumptiousness have at times their uses, and in London architects are to be found who try to gain a reputation for having the qualities, as a fighting witness is supposed to be indispensable in some cases; but men of that class are not in general request, and a client who employs them in law courts would hesitate about entrusting a building to their hands. A solicitor who tries to settle a cause out of court is regarded as a treasure, and he never loses by his apparent self-sacrifice. The same rule applies to an architect, and Professor KERR acts wisely in recommending his readers to become peacemakers, if it were only on the ground of expediency, for, as is suggested by the lawyer's maxim, "a good settlement is better than a good fight."

His book has a dozen sections, viz, Construction and Evidence, Arbitration Cases, Structural Damage, Easements, Ancient Lights, Support, Sanitary Cases, Leaseholds, Valuations, Building (Contracts, Supervision, &c.), Metropolitan Building Act, Architects' Disputes and Etiquette, or in other words it discourses upon the relations of an architect to clients, contractors, and fellow architects.

In treating of the varieties of the relations, Professor KERR never supposes that the architect is to become a partisan. The architect, he says, is not the servant of his client, but in a sense his master, and it is his office to insist that justice is done to all. This spirit inspires the pages. A lofty view is taken of professional duties, and, whether acting as arbitrator or as witness, the same desire to see justice prevail is supposed to be alike influential. A lawyer might not endorse all that is written to attain that end. For example, when the architect is advised about the risk of causing a practical wrong when insuring a legal right, and when it is said to be "never fair to ask him to accept as his function the legal enforcement of hardship against his own practical and professional sense of equity," we have the germ of a doctrine that would overtop statute law, and, if it prevailed, a lawyer would hardly know where he stood, or how to deal with a building case.

But, while eager for the dignity of his profession, the author does not uphold the sufficiency of factitious arrangements which are occasionally accepted. Thus, we find him arguing that the practice by which the taking out of the quantities is assigned to a surveyor is not always advantageous, since a client may with reason object that "the financial part of his business, the most important of all, is handed over to he knows not whom, to do what he pleases with it out of sight." In a country like England, where everything turns on money, it is not surprising that the surveyor is becoming recognised as belonging to the more practical species of architects, and that unless in exceptional cases it is considered a prudent act to deal directly with him, and allow him to have charge of the whole work of a building. Professor KERR advocates the taking out of quantities in the architect's office, under his personal control, and, where convenient, with his personal participation. Everybody knows of course that there are numerous architects who will not participate unless under compulsion, for they find the work is not congenial with designing. We refer to this subject in order to suggest that the contents of the book touch everyday practice, for, as legal actions often are the consequences of quantities that are unsatisfactory to somebody, it is only right to consider the various ways in which they are obtainable.

The book is, however, mainly intended to prepare the reader for being a witness. He will do well, therefore, to bear in mind what is said in the first page about opinions being well grounded "on sound principles as well as ample experience." Indeed, witnesses are most often staggered in courts when suddenly confronted with a scientific principle. A case occurred not long ago where a building surveyor, who brought an action to recover damages for a serious injury in a railway accident, was confounded when one of the jury displayed a little scientific knowledge, and asked a question which was an application of the laws of gravitation. The surveyor was unable to explain, and lost his case, for, as he was an expert, it was inferred that he could answer but dare not. As long as a witness is allowed to testify to what he saw he may be thought to be safe from principles; but the cases are few in which a man can escape so easily. A barrister may not know much of the details of a building case, but his client's interest may be served equally well if he is able to embarrass a witness, and this can be done either by applying some principle that seems contradictory, or by making the witness demonstrate that he is not omniscient. We are disposed to agree with Professor KERR when he says that most building cases are decided on false issues when tried in the ordinary way, and as much may be said of most technical cases. But it must be remembered that THEMIS will always have her own way of weighing things.

It is surprising that we have not imitated our French neighbours, and set up a tribunal of experts in order to escape false issues, if that be advantageous. The action of the Railway Commissioners suggests the utility of the arrangement, for owing to the experience acquired by the members cases are now settled more satisfactorily and at less cost than formerly. It is true arbitration is becoming more general, but there is no body of arbitrators as in France, and experience is as much needed in this class of work as in any other. If it be objected that arbitration is costly and tedious, the allegation cannot be denied. Professor KERR says that "an experienced architect-arbitrator ought always to be allowed to discourage the prolongation of the inquiry by unscrupulous tactics," but it ought not to be a case of allowing. If the arbitrator felt he had the support of a body of men like himself, he need not recognise the "law's delay," and could make short work of the inquiry. As it is, judges, out of mercy to the parties, often decline to

* *The Consulting Architect: Practical Notes on Administrative Difficulties and Disputes.* By Robert Kerr, F.R.I.B.A. (John Murray.)

send building cases to arbitration. "A man of harmless antecedents," to use Professor KERR's phrase, may be potent in affording opportunities to run up enormous bills of costs. The objection to arbitration which exists in the legal mind arises from the absence of all assurance that an architect who is called upon to preside has mastered the conditions of evidence. There is nothing to show that the subject has been comprised specifically in the training of the profession; and although business may impart a power of the kind a lawyer is not to be supposed to take that for granted. A revelation is given of the shortcomings of proceedings before an architect, when we read in the book that a legal referee attends patiently to all that is said, however elementary it may be, while "an architect is too apt to remind an anxious advocate of his own profession that it is unnecessary to waste rhetoric upon a tribunal so perfectly informed." That mode of hearing a case, if described in a court, would be enough to overcome the gravity of the Bench, for it suggests that the elements of legal procedure are unknown. Professor KERR says that an architect-arbitrator "ought certainly not to play the lawyer." That is right enough in one sense, but the arbitrator ought not only to play the lawyer but play him as closely as his imitative powers will allow whenever he is dealing single-handed with evidence. Both in its reception and its sifting there is much to be taught by the practice of the courts.

From Professor KERR's experience there is especial interest in the chapters on Ancient Lights and the London Building Act, which are the longest in the book. Cases relating to the former are among the most difficult that enter the courts. They are supposed to relate to facts of which evidence might be always forthcoming of a conclusive sort, but the power of a witness's vision seems to be determined by the side on which he appears. If a man says that he was able to read a badly-printed newspaper in the parlour of a public-house before the neighbouring premises were raised, while afterwards that enjoyment was denied him, who can say he is wrong unless a witness who has observed him afterwards luxuriating with small print? A judge naturally hesitates to conclude that such a reader is untruthful. The late Vice-Chancellor MALINS, who was disposed to let his face express the action of his mind, generally held an opposite theory, for in light and air cases he used to look as if counsel and witnesses on both sides were only trying how they could bewilder him, which was never an impossible undertaking. His Lordship was, therefore, fond of examining the premises himself, which is a course of action that is not always to be recommended, owing to the variations in the impeding power of the London atmosphere to the sun's rays. Light and air cases are generally complicated by the animosity of at least one of the litigants, and as long as such a state of things continues the aid of courts will be invoked, and architects will have to share in the fray; but where it is simply an affair of buying and selling a privilege, Professor KERR is right in saying, "The best advice that can be given to men of business and others who have a reputation to lose, and neither time nor temper to waste upon foolish and reckless contention, is to put themselves in the hands of an experienced expert." The chapter on the Building Act, if read with attention, will have the effect of removing a good many of the prejudices by which district surveyors are surrounded.

The chapter on "Architects' Disputes and Etiquette" contains much to excite reflection, and of a sorrowful kind. There is no body of men in England with less coherence or solidarity than architects, and no body to whom the poet's "heap of uncementing sand" is more applicable. The truth of Professor KERR's statements cannot be denied in any case where an architects' dispute is brought into court. It is too well known that "architects of prominent position will consent to be retained as insidious advocates to defeat and degrade their colleague," and "there are men of what is called the highest standing who will accept a retainer of this kind cheerfully in any case that comes to hand." It is manifest that Professor KERR does not write from hearsay on the subject. It is, moreover, a historic fact that so deplorable a condition of affairs has originated since the Institute was set up. The founders were so sanguine it would promote "mutual good understanding," that they did nothing to bring about that sort of millenium, and one of the Presidents was forced to confess that "mutual scorn" was the true attribute of the profession. Professor KERR is over credulous in his belief in the Institute, but in spite of himself he has to testify that not even the schedule of professional charges is treated with respect. "This has been in force for twenty-five years," he says, "under the very seal of the Institute, and yet there have been gentlemen of position in the Institute who could permit themselves to be retained, against the personal claims of other members, in a court of law to explain away its provisions with all the license of advocates at the bar." When this is the manner of acting of the gentlemen of position, what is to be expected from the rank and file?

A chapter on etiquette is essential to a book of the kind, for when architects do not meet in a spirit of mutual goodwill their consultations are not likely to end in a compromise that will be advantageous to clients. The relations between architects are not, however, confined to law cases, and what is written by Professor KERR will have its use in many circumstances connected with practice. As we have said before, he takes a rational view of life, and does not suppose that an architect is an exalted being who can evade the collisions that are inevitable to the majority of ADAM's sons.

AMATEUR PHOTOGRAPHY.

AT last week's meeting of the Dublin Sketching Club Mr. J. L. Robinson, architect, read a paper, which was illustrated by several of his photographic transparencies. Mr. Robinson said that although what he was to say had been called a lecture, he wished to impress upon them that it was not a lecture, but a description of a series of photographs taken by himself on his holiday last August in England and France. He asked his audience to extend their indulgence to any defects in the transparencies, as he was but an amateur photographer. He went on to say that Dr. Frazer in his lectures laid great stress on the advantage which photography gives to the lovers of good etchings by the marvellous reproduction of the greatest engravings of priceless value. He trusted that the views which he was about to show them would prove that, although photography was described by some as being purely mechanical and destructive of all true art, it was of the greatest advantage to the painter and student, and that by the selection of the points of view and judgment of light and shade, good work can be done by the photographer, and the painter may secure passing effects such as clouds, waves, light, &c., which could not otherwise be obtained, and would prove of the greatest assistance to him when converting his sketches into easel pictures. He said that for the past six years he had taken part in the annual excursion of the Architectural Association, a professional body numbering about 1,000, which had its headquarters in London. The excursionists numbered usually from thirty-six to forty, and spent a week together each year. He then described the arrangements made for the week. Their headquarters this year was Town Malling, in Kent, between Tunbridge and Maidstone, the centre of the hop country, and may truly be called the garden of England. On the first day of the excursion the weather was very bad—raining heavily—consequently very little work was done. Each of the following places mentioned were well shown on a large sheet by means of a very powerful lantern, which lent a great deal to Mr. Robinson's description of the various places. The first place visited was Malling Abbey, the remains of a Benedictine convent, founded by Bishop Gundulph, of Rochester, in 1090. Portion of the west end remains, showing remarkably similar features to that of the Norman portion of Rochester Cathedral. The abbey is used as a dwelling-house, but the church is in ruins. The gatehouse is very interesting, being now used as an orphanage by the Anglican nuns. A drive along the Medway, with numbers of factories on either side, brought them to Rochester Castle, Norman in style, but of no particular architectural features. Close to the castle stands the cathedral, another uninteresting pile of building. The rain here was so great that photography and sketching had to be abandoned. In consequence of having sheltered from the rain he missed seeing some very picturesque old houses in this place. Rochester is famous for having been visited by Mr. Pickwick and his club. Leaving Rochester, they went on to Cobham, the seat of Earl Darnley, and as the rain had ceased he was able to make very interesting photographs, which he exhibited. Cobham is a large mansion of the Elizabethan style, dated 1662, of little architectural interest. Thence he went to Maidstone, and exhibited numerous photographs taken, the principal ones being Maidstone Church, tomb of John Wooton, Aylesford Mansion, bridge, &c. He then proceeded to enumerate the different places visited during

the excursion. Mr. Robinson afterwards visited France, and took some very fine photographs of French cathedrals, including Amiens, Abbeville, and Beauvais. The hall was densely crowded.

TESSERÆ.

Planning Theatres.

W. TAYLOR.

NO modern theatre can be required to hold above 2,500 people. Perhaps a very cheap place of amusement, with unusually large gallery and pit, may require room for 3,000—lucky is the director who can fill it for any length of time. If you can build so large a house as this, no shape is as good as that of Her Majesty's, viz., the half circle continued with straight sides very slightly contracted as they near the stage, the tiers one exactly beneath the other, no one projecting beyond the other. At Drury Lane the tiers are unusually deep, from one house having been built inside the other, but this is not so good for sound. If it is a small house, an adaptation of the balcon principle must be adhered to in order to get sufficient places. One of the best studies of this sort of house is that at Mayence, given in Fergusson's "Handbook of Architecture." The round corners at the stage end of the balcon at the Adelphi are very unsightly in shape; they should come sharp away from the side. As to sound all the elaborate theories have failed to produce a perfect house. The very best theatre in the world for sound is Her Majesty's, which was certainly built without any such scientific principles. But I will explain how it is that you do hear so well in that theatre. The shape of it is like a drum, and the wall of the auditorium is flat. The brick wall ought always to be at the back of the boxes, although for safety against fire you require another wall at the back of the lobby. If the wall at the back of the boxes be only of canvas or plastered you cannot expect good acoustics; hangings, curtains, papers are all against good sound. At Her Majesty's there are no projecting ornaments of any kind—the outside of the boxes is flat and even. This is a great secret in theatrical decoration; all ornament in relief is fatal to sound, it stops its progress and true course. The pit tier fits tight on to the floor; there is no walk underneath the lower tier at the back of the pit, as is very common in small houses; and, finally, the crowning effect of all is the ceiling: it is perfectly smooth and even, without any ornamentation in relief, and in form is a slight dome; it fits on to the top of the house like the top of a violin—in fact, a theatre ought to be a sort of a violin, with the audience sitting inside it. The top of the house ought to follow the shape of the lower part exactly. Never was there such an egregious mistake as building a square top to a theatre that is round below, as at Covent Garden. The ceiling must fit on like the top of a pomatum pot, right away from just above the proscenium, which should flow with a smooth continuous curve into it. Architectural pillars and other excrescences by the stage boxes I look upon as perfect abominations; they are hideous, and spoil sound. Nothing is so beautiful as the smooth run of the boxes straight up to the proscenium frame, and nothing is so excellent for sound.

Ostentation of Gothic Architecture.

J. FERGUSSON.

The Gothic architects went even beyond the Romans in this respect. They prided themselves on their constructive skill, and paraded it on all occasions, and often to an extent very destructive of true architectural design. The lower storey of a French cathedral is generally very satisfactory; the walls are thick and solid, and the buttresses, when not choked up with chapels, just sufficient for shadow and relief; but the architects of that country were seized with a mania for clerestories of gigantic height, and which should appear internally mere walls of painted glass divided by mullions. This could only be effected either by encumbering the floor of the church with piers of inconvenient thickness or by a system of buttressing outside. The latter was the expedient adopted; but notwithstanding the ingenuity with which it was carried out, and the elegance of many of the forms and ornaments used, it was singularly destructive of true architectural effect. It not only produces confusion of outline and a total want of repose, but it is eminently suggestive of weakness, and one cannot help feeling that if one of these props were removed, the whole would tumble down like a house of cards. This was hardly ever the case in England; the less ambitious dimensions employed in this country enabled the architects to dispense in a great measure with these adjuncts, and when flying buttresses are used, they look more as if employed to suggest the idea of perfect security than as necessary to stability. Owing to this cause the French never were able to construct a satisfactory vault in consequence of the weakness of their supports; they were forced to stilt, twist, and dome their vaults to a most unpleasing extent, and to attend to constructive instead of artistic necessities. With the English architects this never was the case; they always were able to design their vaults in such forms as they thought would be most beautiful artistically, and, owing to the greater solidity of their supports, to carry them out as designed. It was left for the Germans to carry this system to its acme of absurdity. Half the merit of the old round-arched Gothic cathedrals on the Rhine consists in their solidity and the repose they display in every part. Their walls and other essential constructions are always in themselves sufficient to support the roofs and vaults, and no constructive contrivance is seen anywhere; but when the Germans adopted the Pointed style, their builders—they cannot be called architects—seemed to think that the whole art consisted in supporting the widest possible vaults on the thinnest possible pillars, and in constructing the tallest windows with the most attenuated mullions. The consequence is, that though their constructive skill still excites the wonder of the mason or engineer, the artist or the architect turns from the cold vaults and lean piers of their later cathedrals with a painful feeling of unsatisfied expectation, and wonders how such dimensions and such details should produce so utterly unsatisfactory a result.

A French Sixteenth-Century House.

ARSÈNE HOUSSAYE.

If you would glance with me at the curious childhood of Callot, rebuild, by the aid of your historical associations, at Nancy, near the old Hôtel de Marque, a somewhat lofty house-front, its doors and windows ornamented with carvings, rusted by the rain and corroded by the moonbeams. Between the two windows on the ground floor is a stone bench for beggars and pilgrims; on the first floor are two casements—that is to say, stone crosses, each forming four openings; on the second floor two attic windows open in the roof above the gutter—they are surrounded by moss, a few tufts of grass, a stray flower sown by the wind or by a bird; on the summit of the roof is one tall chimney which continually smokes. On entering this house we find it furnished in a severe style, in harmony with the pale light that penetrates through the little lozenge-shaped panes; walnut-tree presses, a desk for prayer, an ebony crucifix surmounted by consecrated garlands, amongst which the spider has never time to spin his web; settees in carved oak, Gothic tables with twisted feet, a vast chimney over which hangs an ornamental mirror; upon the mantelshelf silver goblets, handsome in form and ample in contents, chiselled in a century when men knew how to drink; between the two casements a Gothic clock, on the shelves of the press a brilliant display of pewter vessels, earthen pots embellished with wreaths, and a beautiful cup of Bohemian glass. At the first glance we perceive Jean Callot, in velvet breeches all puffed and slashed, walking up and down deep in thought; or Renée Brunehault, seated at the chimney corner and busy with her distaff. In such a house as this was Callot born in 1592.

Indian Houses.

J. G. MEDLEY.

Some specialities of construction which are common to most Indian buildings attract the attention of the new-comer. Except in the presidency towns, they have no upper storey, partly from considerations of expense and partly because the upper rooms get very hot during the dry months. The roofs are either thatched or tiled, or else are flat and covered with brick and lime plaster. The thick beams supporting the roof are, as a rule, left exposed below, as ceiling cloths are apt to harbour vermin and conceal the depredations of white ants. The room walls are very rarely papered, being usually plastered and whitewashed. Wooden floors would be too perishable and dear, so floors of flat tiles or of lime plaster are substituted. Doors are numerous, and invariably double, opening in the middle. Verandahs all round a house are considered indispensable.

Sinking Wells.

B. LATHAM.

In sinking ordinary wells in loose strata, an excavation is made to such a depth as the strata will admit without falling in. A wooden curb is then placed in the bottom of the excavation, and the brick steining laid upon it, and when carried up to the surface, the work of the excavation is carried on; but the way in which it is now proceeded with depends upon the method adopted in extending the steining. If the steining is intended to be added below the curb, the earth is excavated flush with the interior sides of the well, so that the earth underneath the curb supports the brickwork above. When the excavation has been carried on as far as convenient, recesses are made in the earth under the previous steining, and in these recesses the steining is carried up to the previous work. When thus supported, the intermediate portion of earth between the portions of brickwork carried up are cut away, and the steining completed. By a succession of operations of this kind the well is

sunk, and the steining carried to the required depth. On the other hand, if the steining is added from above, the curbs are supported by iron rods, fitted with screws and nuts from cross timbers over the mouth of the well, and as the excavation is carried on below, brickwork is piled on above, and the weight of the steining will carry it down as the excavation proceeds, until the friction of the sides overpowers the gravitating force or weight of the steining, when it becomes, as it is technically called, earth-bound; then a set-off must be made in the well, and the same operation repeated as often as the steining becomes earth-bound, or recourse must be had to the first method of underpinning. Brick steining is executed either in bricks laid dry, or in cement; when the work is laid dry, a ring or two of brickwork in cement is often introduced at intervals varying from 5 feet to 12 feet apart, to strengthen the work and facilitate the construction of the well. The bricks are laid flat, breaking joint; and, to keep out moderate land springs, clay, puddle, or concrete is often introduced at the back of the steining. For most purposes concrete is the best, as in addition to its impervious character, it adds greatly to the strength of the steining. The same measures used in sinking brick steining are adopted with iron.

Polychromy of Exteriors.

F. P. COCKERELL.

If we accept the lesson which Nature teaches us, as we find the Greeks did in her geographical distribution of colour, we shall find that the exterior decoration of the ancients affects us very little. The brilliant colours which produce so good an effect in a southern climate would be staring and crude under our grey and clouded skies. Any colour, therefore, which we apply to our buildings externally must necessarily be of a very subdued kind—a combination of half-tones; and how can we hope to produce such harmonies as Nature will establish for us by a few years of exposure? There is another very important consideration in comparing the works of the Greeks with our own, namely, the difference of scale. The Greek temples were the merest toys compared with our great modern buildings. This does not prevent our using colour in some small objects, and in parts close to the eye, as in shop fronts, &c. But the taste for exterior polychromy has been in a great measure rejected in the best times of northern art, indeed, so far that a large use of varied coloured materials is comparatively exceptional. The combinations of brick and stone and the occasional introductions in stone buildings of coloured marbles of small quantities have been canonised by the approbation of centuries, and their good effect cannot be denied. The insufficiency of paint in our northern climate is sufficiently shown in some of the buildings in the Champs Elysées, Paris, as the Cirque Impérial and several café restaurants which, with all their pomp of Classical orders, &c., are reduced by their trumpery paintings to the appearance of buildings in a fair. Our climate is not bright enough to give value and brilliancy to paint. If we use colour, therefore, it must be of such material as having an intrinsic value shall supply to the mind that interest which the eye does not feel. Finally, if the foregoing observations should seem to be directed exclusively to the buildings in the country, and which are to harmonise and enter into combination with the objects of Nature, it will be found by carrying out the principle which I have endeavoured to establish that, if strong colour cannot be brought to harmonise with our landscape, sky, &c., *à plus forte raison*, it will appear crude and inharmonious amid the greys of London.

Aspect of Houses.

H. REPTON.

I consider the aspect of infinitely more consequence to the comfort and enjoyment of the inhabitant than any prospect whatever; and every common observer must be convinced that in this climate a southern aspect is most desirable; but few are aware of the total difference in the effect of turning the front of the house a few points to the east or to west of the south; because, although the south-east is the best, yet the south-west is the worst of all possible aspects, for this reason, viz., all blustering winds and driving rains come from the south-west, and consequently the windows are so covered with wet as to render the landscape hardly visible. At Organ Hall, in Hertfordshire, the living room was towards the south-west, and during a heavy storm of wind and rain we accidentally went into the butler's pantry, which looked towards the south-east, where we found the storm abated and the view from the windows perfectly clear and free from wet; but on returning into the other room the storm appeared as violent as ever, and the windows were entirely covered with drops, which obstructed all view. On considering the prevalence of south-west winds it was determined to reverse the aspects of the house by changing the uses of the room, making a very comfortable house of one which, from its aspect only, was before hardly habitable; since no window, nor hardly any brick walls, will keep out the wet where a front is exposed to the south-west. For this reason, it has been found necessary in many places, as at Brighton, &c., to cover the walls with slates or pendent tiles, and to use double sashes to the windows so situated. If we had only one front or one aspect to consider our difficulty would soon vanish; but the prevailing partiality for variety of prospect seems to require that in every direction the views should be retained; and as the opposite walls of the house must be parallel, and the corners at right angles, we must consider the effect on each of the four sides. First, the aspect due north is apt to be gloomy, because no sunshine ever cheers a room so placed. Secondly, the aspect due east is not much better, because there the sun only shines while we are in bed. Thirdly, the aspect due west is intolerable, from the excess of sun dazzling the eye through the greatest part of the day. From hence we may conclude that a square house, placed with its fronts duly opposite to the cardinal points, will have one good and three bad aspects. Let us now consider the effect of turning the principal front towards the south-east, then the opposite front will be to the north-west, an aspect far better than either due north or due west, because some sunshine may be preserved when its beams are less potent than in the west, and the scene will be illuminated by those catching lights so much studied by painters. An aspect open to the north-east would be objectionable during the cold winds of spring.

The Ecole des Beaux-Arts, Paris.

H. L. DE BOISBAUDRAN.

Young men who take part in competitions direct all their efforts, as is but natural, to obtain the prizes which follow success. Unhappily, the means which usually commends itself to them as being both the surest and easiest is the imitation of works which have previously obtained the approval of the judges, and have been shown with honour and *éclat*, as if with the intention to afford examples, and to point out to younger men the straight road to similar success. Do people realise the whole effect of such a stimulus, when they see the majority of the competitors abandon their individual inspirations, to follow with complete docility the recommendations of the Ecole des Beaux-Arts, which seem sanctified by success? With but very rare exceptions, mere admission to the competition cells is only achieved after long periods of study exclusively directed to the one purpose, and it is the long duration of this unnatural preparation which makes it so fatal to the freshness of original gifts. Pupils delayed in this way end by resembling those aspiring baccalaureates whose aim is rather a diploma than the acquisition of knowledge. Two tests are demanded before admission to a cell is allowed, a sketch or composition of any given subject, and a painted figure from a model. Preparation for this double test becomes the one idea of young artists. Their only studies are the daily repetition of these sketches and commonplace figures, always executed in dimensions, within a limit of time, and in a style identical with those required for the competition itself. After whole years devoted to such practice, what can remain of the more precious qualities? What becomes of *naïveté*, sincerity, naturalness? The exhibitions of the Ecole des Beaux-Arts tell us only too clearly. At times certain competitors imitate the style of their respective masters, or that of some famous artist. Some seek inspiration from the works of former laureates, others borrow from recent successes at the Salon, or from other works which may have left lively impressions upon them. All these various influences may give a certain diversity to a few of the exhibitions, but they do not give anything like natural variety, or the original character flowing from individual inspiration.

English and Continental Gothic.

R. WILLIS.

Foliation, as a regular practice, appears to come from Germany, where early traces of it may be found in the Rhenish churches; but I am by no means sure that the Pisans may not have a claim to it. Tracery is probably due to the Germans or French. Its value as a national characteristic has been sufficiently spoken of elsewhere. With respect to the regular styles of the Gothic, England may claim the honour of inventing the Early English, the germs of which, however, are to be found in France; and I conceive the Decorated or Complete Gothic to be derived from Germany; from which country emanating, it superseded all the established styles in other countries except Italy. The Perpendicular is our own, and heartily may we congratulate ourselves upon it, when we compare it with its sister styles in France and Germany. The prevailing vice of these two styles is the excessive use of interpenetration amongst the mouldings; no moulding is allowed to stop or rest firmly upon a surface, but must always appear to pierce it, and, if possible, to make its appearance on the other side. The Germans and French have two different modes even of using this method, so destructive of all apparent stability, and of which some insignificant traces may be found in our own country.

NOTES AND COMMENTS.

IT must be confessed that the project of the Edinburgh Municipal Buildings is not found to be as satisfactory as was anticipated. There is no doubt that many members of the Town Council are opposed to the proposed building. On Tuesday there was a meeting of the Council, when an attempt was made to set aside the project, and, although defeated by sixteen votes, still that is no great majority. Notice was also given that at the next meeting it would be proposed "That no Bill relating to the proposed Municipal Buildings be deposited or promoted during the ensuing session of Parliament." We suppose that proposition will also meet with defeat; but, when there is so much wrangling over a project, a competitor is likely to lose heart, and even give up the attempt. In at least one case a competitor has applied for the three guineas he deposited, and the money was returned to him.

THE works at the great church of Montmartre continue to be carried out as expeditiously as means allow. The rate at which subscriptions arrive will be judged from the receipts for October, which amounted to 99,413 frs., or not quite 4,000*l.* Up to the end of that month the total receipts have been 17,569,736 frs., or, say, 700,000*l.* The total expenses have been 16,945,301 frs., leaving a balance in the treasury of 624,435 frs., or about 25,000*l.*

THERE was a good deal of bustle in the streets of the City on Thursday morning when it was known that the church of St. Mary Magdalen in Knightrider Street was on fire. The street is very narrow, and it was difficult for the firemen to work. As soon as the flames caught the roof of the church it became evident there was no hope for that part of the structure, and it collapsed in a short time. The walls are safe, but the church may be said to be ruined. The ease with which the destruction was accomplished must excite apprehension about the safety of some others of the City churches.

ONE of the oldest structures in the town of Vannes is that known as the Porte-Prison. It was built in the fourteenth century by Duc JEAN IV., who was a benefactor to the town, and consists of two towers, of which the townsfolk were proud. The decree for the demolition of the ancient gate has gone forth, and there is in consequence much indignation among Vendeans and Bretons. The municipal council was interviewed by deputations of the inhabitants, but for some unknown reason there is a prejudice against the Porte-Prison, and in a little time no trace of it will remain.

MESSRS. WINSOR & NEWTON have published in their shilling series a capital little book by Mr. OWEN W. DAVIS on "The Rudiments of Decorative Painting." It is intended mainly for the use of amateurs, and, as the directions are clearly expressed, we may expect a great improvement in the decoration of suburban villas. The style adopted by Mr. DAVIS is a compound of Pompeian and Italian, and, from his great experience and skill as a designer, it is hardly necessary to say that everything is well treated, and that his advice may be followed with confidence.

FOR some weeks past the architects and builders of Dublin and the Corporation officials have been a little excited about some of the Corporation contracts. It was said that favouritism was shown in the letting of contracts, and in the lenient manner of overseeing the work. Reports were obtained from independent architects which were not favourable to the existing system. It was not considered wise that suspicions should grow, and on Monday the following resolution was adopted by a majority of the Corporation:—"That the Institute of Architects in Ireland be requested to name three architects of their number to inquire into and report to Council—(1) whether the plans and specifications for the erection of the Fire Brigade Station were drawn so as to provide for the construction of a suitable station, having regard to the site proposed, and if due care was taken to protect the Corporation with respect to extras on the original contract; (2) whether the work was properly carried out by the contractor." Whether by accident or design the full title of the Irish Institute, it will be seen, is not given, for the Irish Institute stands in the same position as the British, since it has the privilege of being styled "Royal." Another resolution passed on the same occasion is a sign of a new departure in contracts, and will give extra work to builders' clerks. It is as follows:—"That in all building contracts tenders must be accompanied by a priced bill of particulars, the details of which must be added up, showing the total amount as detailed; and should the detailed particulars exceed by more than 10 per cent. the sum tendered for, such tender shall not be received. The detailed estimate which is accepted shall form the basis for all extra works, omissions, or variations, unless at any time it should appear that such prices have not been fairly made up; and should it appear that any addition to or deduction from the gross amount of the estimate, or any section thereof, has been made by way of percentage, so as to increase or reduce the amount of the net sum at which the tender is offered, each rate in detail, in being applied to the schedule of prices, will be subject to increase or reduction by a corresponding percentage."

LITHOGRAPHY is so essentially a French art (for although invented by a German, it was perfected in France) that the death, on Friday last, of the artist who was the *doyen* of the artists is not allowed to pass unnoticed. ISIDORE LAURENT DEROY had reached his ninetieth year. He received a medal as far back as 1835, and twenty-six years afterwards a *rappel* of a similar honour. Like so many artists of the same class, he drew his own designs on stone. DEROY was best known as a landscapist, and albums containing collections of his views along the chief rivers of France and in Italy are familiar to collectors.

WE have drawn attention more than once to the good work which the Plumbers' Company have undertaken in establishing a register of qualified plumbers. The guests who accepted the invitation to dinner of the new Master, Mr. A. STUART KNILL, were a recognition of the value of the service which the Company has rendered to the country. Sir ANDREW CLARKE did not exaggerate when, speaking as a physician, he said the new movement was the commencement of a revolution aiming at the sanitation of our houses, in which women and children spent three-fourths of their lives, and the sanitary influences of which at present were detrimental alike to the present and to the future. The Master stated what every architect must know to some extent, that the plumber's craft is subject to a continual influx of unqualified men, and that the present state of affairs is owing in part to the falling off in the apprenticeship system, and in part to the rapid extension of buildings and the consequent competition of builders, obscuring the real lines of distinction between the crafts, and allowing labourers and others than plumbers to carry out plumbers' work. If the public will support the Plumbers' Company by giving a preference to builders who employ qualified workmen, there will soon be an end to the dangerous practices which are an enduring cause of illness.

A CONGRESS of Swiss engineers has been held at Lausanne, where it was decided that it is feasible to construct a tunnel through the Simplon. It would be about ten miles in length, and the cost is estimated at 2,500,000*l.* With modern appliances the work could it is said be accomplished in seven years.

MESSRS. RAPHAEL TUCK & Co. have this year introduced one striking novelty in their Christmas cards. It is a large size copy of the painting by RAPHAEL which was lately acquired for the National Gallery at so large a cost to the nation. The work is difficult to reproduce, but the copy is so successful that it will bear comparison with the prized works of the Arundel Society. Both colour and drawing are admirable. It is to be hoped that the firm will meet with enough success to warrant them in undertaking similar works hereafter. The outlay for a work of the kind was necessarily large, for the style of execution differs from that of the majority of oleographs and other prints in colour. All the cards which are produced this year by Messrs. TUCK show good taste in the selection and production of the subjects.





G F Watts R A pinx

J Bromwell Clark sc

PALLAS JUNO AND VENUS

An Etching from G F Watts

Printed by Sprague & Co 22 Martins Lane Cannon St EC


South Marston Church.
Interior View
as restored.



"INK-PHOTO" SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E C



"INK-PHOTO." SPRAGUE & Co 22, MARTINS LANE, CANNON ST. LONDON, E.C.

STAPLES INN, HOLBORN

The Architect, Dec.r 3rd 1886.



INK PHOTO PRAGUE & CO 22, MARTINS LANE CANNON ST. LONDON E.C.

ILLUSTRATIONS.

PALLAS, JUNO, AND VENUS.

MR. WATTS, R.A., is one of the few artists in England who are eager to co-operate with architects in producing decorative work. Like Mr. ARMITAGE, he was willing to paint on walls without any thought of profit. In his evidence before a Royal Commission in 1863 he said:—"I insist upon mural painting for three reasons—first, because it is an exercise of art which demands the absolute knowledge only to be obtained by honest study, the value of which no one can doubt, whatever branch of art the student might choose to follow afterwards; secondly, because the practice would bring out that quality and nobility deficient in the English school, but not in the English character, and which, being latent, might therefore be brought out; and, thirdly, for the sake of its action upon the public mind. For public improvement it is necessary that works of sterling but simple excellence should be scattered abroad as widely as possible. At present the public never see anything beautiful, except in exhibition rooms, when the novelty of sight-seeing naturally disturbs the intellectual perceptions. As I believe the love of beauty to be inherent in the human mind, there must be some unfortunate influence at work; to counteract this should be the object of a fine art institution, and I feel assured, if really good things were scattered among the people, it would not be long before satisfactory results exhibited themselves." It was with that intention he painted the large fresco in the hall of Lincoln's Inn, and it inspired the sacrifice through which he made over so many noble works to the public.

The etching from *L'Art* which we publish to-day, by permission of Mr. WATTS, is from a painting which gives a new version of an ancient theme. The three goddesses have often been represented in painting and sculpture, but in no other case is so little to be found of the sensuous. Mr. WATTS has painted the figures in a Greek spirit.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 40.—SOUTH MARSTON CHURCH.

STAPLE INN, HOLBORN.

THE opposition to the sale of Staple Inn has benefited the Prudential Assurance Company, since the buildings were sold at a lesser rate than was anticipated. In Mr. WARREN'S sketch the Holborn elevation is given, and this part is more suggestive of antiquity than the interior court. The illustration will be a record of one of the last blocks of Old London.

THE HALL, SNOWDENHAM.

THE hall is part of a house built for Mr. ROBERT COURAGE, at Bramley, Surrey. The exterior has been already illustrated in this journal. The work is of oak, carried out by Mr. PINK, builder, of Milford, Godalming. The panels of the double stairs were carved by Mr. WALTER SMITH, of Lambeth, and the rest of the carving done by J. EASTAUGH, under the care of Mr. PRATT, of Guildford, from drawings supplied by the architect, Mr. RALPH NEVILL, F.S.A., of Guildford and New Bond Street. The drawing was in this year's Royal Academy Exhibition.

MR. BURGES'S WORK AT WORCESTER COLLEGE

A PARTY of members of the Oxford Architectural and Historical Society lately visited Worcester College, where Mr. Daniels, in the absence of Mr. Parker, acted as *cicerone*. He said that in 1877 the decoration of the Hall was commenced from Mr. Burges's designs, but so elaborate were they, so thickly did he heap ornamental details one upon the other, that the authorities were forced to cry, "Hold, enough!" Many a long sitting did the committee spend over the designs, Mr. Burges using all his persuasive eloquence against the obstinate resolutions to be as parsimonious as was befitting.

In the chapel Mr. Daniels said that he felt much difficulty in discharging his office of iconographist to such a mass of details. He would, however, touch as briefly as he could upon the salient points in the design. He pointed out that the roof was decorated with pictures of the Temptation of our first parents and their Fall, and that the general design of the walls was a mingling of the ideas expressed in the Te Deum and the Benedicite. The words of the former are worked in the wood panelling at about two feet from the floor, the latter runs round the cornice. We have, as it were, a combination of natural and revealed religion—one section of the border to the roof gives the theological virtues, the other the natural ones. The spaces between and about the windows are filled with examples from the different genera of birds, beasts, and fishes, creatures inhabiting or existing in the air, the water, or the earth, the various animate and inanimate objects which the three holy children invoked to bless and praise God for ever. On a gold ground, about level with the eye, are depicted groups which illustrate the opening verses of the Te Deum. On the north side the heavenly host, and facing them the representations of the earth, or human society; next to these the prophets, and opposite to them the apostles. Last, on the south side, the martyrs, the holy innocents, Stephen, and others, down to Huss, Jerome of Prague, Latimer, and Hooper. The opposite series represents the Church in its various manifestations and energy—Augustine and Ambrose, the Empress Helena, and Monica, Charlemagne and Benedict, Catherine of Sienna and Elizabeth of Hungary, Thomas Acquinas and Wycliffe, Luther and Pascal. The series of figures were executed by Mr. Henry Holiday. On the floor is the completion of the history of the Church, viz., within the sacrarium, the Parable of the Sower, in the body and above the lectern the four doctors of the Western Church, and below it a still further limitation to the English branch of that Church, kings, martyrs, builders and saints. The windows have for their subject "Christ the Light of the World." Sir J. Millais furnished a design for one of these, but Mr. Holiday, an artist who has made glass his speciality, was finally fixed upon, and the actual manufacture was entrusted to Messrs. Lavers, Barraud & Westlake. The gilded figures in the four angles of the building are the four evangelists.

Professor Westwood, in thanking Mr. Daniels for his explanation of the "motive" of this most noted of Mr. Burges's designs, expressed his opinion that there was no English building extant in which so much study had been devoted to a scheme of ornamental decoration, and such care given to the execution of the designs.

SOME THOUGHTS ON APPLIED ART.

AT the annual meeting of the School of Art, Winchester, on November 23, the Mayor in the chair, Mr. Hugh Stannus, Lecturer at the National Art Schools, South Kensington, distributed the prizes and gave an address to the students, of which the following are some of the points:—

I have been asked, by those who have the well-being of this school at heart, to say a few words to you this evening. I could discourse most eloquently, in other men's words, of the dignity of art, or I might endeavour to speak to you on those higher arts of architecture, sculpture, and picture-painting; but you have heard on these branches in former years from greater men.

It may be that you expect me, as a South Kensington man, to defend it and all its works. That is not my business; but I may say that whatever mistakes may have been made were the mistakes of those who were initiating a new order of things, and had to learn by their failures. Critics and assailants are plentiful enough; but when you consider the steadfast endeavours to grapple with the difficulties of the art education of a nation which, in the systematising of education, was a century behind, you will admit that the early errors of judgment may be condoned. They have erred, but that is no reason why every critic in want of a theme should think South Kensington a fair mark. As a part of the system, the museum and the libraries, each the best of its kind, must be mentioned. They tend to preserve the balance between craze and continuity. Our English art will be very much like our language, gathering and assimilating the good and characteristic points of others, and it will have its periods of craze and of pulsation backwards and forwards, like the piston of an engine; but institutions like the South Kensington, and like this school, serve the function of the flywheel, carrying on the momentum from period to period, and, like the old colleges in the "dark ages," are the true conservators of the energy of the time, handing it down to posterity. Still, though not speaking on the general South Kensington question, there are some details of our aims, our school work, and our minor methods there, which may be interesting and useful to you here.

Amateurs.

But, firstly, let me say a few words to you who are Amateurs. I am pleased to see you, and to have seen the results of so

much good work done by you. I congratulate you on having a place and appliances and a master so well fitted to help you as Mr. Roberts. You will find how painting adds to our enjoyment of this beautiful world. Those of you who paint landscapes will bear me out in saying that the enjoyment increases with the powers of imitation; and that there are more and greater beauties in Nature eluding you at first and only to be seized as you progress in power; and this will be an endless enjoyment. You will find that your study, whether in landscape or in any other branch, will give you a power of expression you would not otherwise gain. The habits of accurate observation, clear draughtsmanship, and sympathetic tone and tint will give you what may be termed another language. Further, the association with beautiful objects will refine your taste. And, lastly, by the power of the purse, by your judgment in purchasing, you can bring pressure to bear on the manufacturers. Making good designs is only half the battle: getting the public to purchase the good and to refuse the bad, is the other half; and we look to you to see to this. If you decline to buy, the shops will cease to keep such ridiculous affairs as some of the "novelties" we see: the inkstands with the ink contained in jockeys' caps, and the pens supported by combinations of whips and spurs, and other equally foolish things.

It may be interesting to recall what happened at the inception of the State-teaching of art in England. The Schools of Design were first set up to teach design to designers only; it was then found they were in advance of the public taste, and the scheme was altered to teach everybody—the purchaser as well as the producer. This has long ago had its effect in the higher class of work which is purchased, and it rests with you to raise the standard and to boycott all vulgar novelties.

If I may venture to speak on so delicate a subject as ladies' hats, I would like to say how grieved all artists are to see the fashion of wearing birds or portions of birds' bodies. They are doubtless purchased without thought because they look pretty; but the purchase is an encouragement to the slaughter of beautiful creatures whose only offence is that they are beautiful. An Italian friend over here some time ago, in remarking on what he saw in London, was impressed, not with its size or populousness, or with the buildings, but with the tameness of the "piccoli uccelli" he saw everywhere. I was proud when he attributed it to the humanity of the English, and have been since pained and humiliated at this fashion of birds, which, though not so degrading as the attendance of aristocratic and other females at disgusting and brutal pigeon-shooting matches and battues, is an encouragement to cruelty that the study and associations of art should counteract.

Plant Form in Design.

I am glad to observe that you paint Plants from Nature well and much. This is an important branch of the study in any school of applied art. Pray note, however, that this is not the end of your work, but only a means or a commencement. After the most careful and painstaking study of a plant, you will then be in a position to make use of your acquired knowledge, and to apply it decoratively. You might be able to paint flowers as well as Monnoyer or Van Huysum; but if you stop there you will only have produced pictures of them. When, however, in addition to this, or rather in continuation of it, you proceed to apply them decoratively; you have gone a step further and done "a bigger thing," you have utilised your knowledge for the benefit of others, you have contributed to raise and beautify the objects which surround us, with which we are in daily contact, and which have, consequently, a greater though unfelt influence over us than all the mere furniture-pictures we hang about on our walls.

The use of natural foliage in decorative work fell into disrepute some years ago, principally through the unsound teaching which had prevailed. Students were then taught to make "botanical analyses" of plants, to cut through their stalks and buds and flowers, and make "patterns" out of these sections; to draw the flowers spread out flat upon the ground of the design, as if they were pinned to the board, like butterflies' wings are set out by entomologists; and to pull the flowers to pieces, drawing the petals, &c., in a similar manner. This, which has been termed the "vivisection of plants," is useful enough in a botanical museum, but altogether out of place in decorative art.

There was then another method in which the student was taught: first, to sketch out what he considered in his own mind to be good curves and spiral scrolls; and then to bend about the selected plant or to stick leaves and flowers on to these scrolls, utterly regardless of their growth in Nature. This is even worse than the vivisection method, and is little short of blasphemy. The Great Designer has settled how each plant shall grow; how its stems and branches shall separate, each to seek its own share of air and sunshine; how its leaves shall stand erect or droop, according to their functions, but always in perfect beauty of subtle foreshortening; and then comes this second theorist who, forgetful of the fact that the forms of the branches are as much a part of the character of the plant as are those of the leaves and flowers—and so dull that he cannot see the beauty of natural growth in stem and branch—proceeds to clothe his own ugly, uninteresting stems with these leaves, &c. And, not content with that, he flattens them out as before, and gives us the flowers with all the delightful change of curve which is seen in the perspective ground out of them in his mechanical mill. All this, which is merely a masquerade of Nature, is termed "Conventional" by its teachers; and hence the very word "Conventional" has become a term of opprobrium. It was a mere cloak for incapacity; and is, I am glad to say, dying out.

The True Conventionalism.

The true Conventionalism for us, either in plants or other things, lies, not in altering the growth or flattening out the forms, but in the method of representation according to the material and process we are using, *i.e.*, according to the technical limitations. If we paint with a complete palette on a perfect ground—*i.e.*, if we have perfect means—we may aim at a perfect result. But so far as our means are imperfect, when, *e.g.*, we must forego the nicety of tint in colour and be satisfied with a limited number of tints, as in wall-papers, or when we have to omit colour altogether trusting to texture, as in a brocade, we may then simplify but not misrepresent (as Mr. Ruskin says) the beauty we cannot wholly give. The method at South Kensington, for which I am responsible in some degree, is an effort in this direction.

The student, having made a careful painting of some simple flowering plant, is then required to make a design from it, either in a panel, a border, or as a diaper. This design involves a sympathetic knowledge of the plant and its ways, because, as you will see in the Art Directory of the Department, it is to be treated "without doing violence to the natural growth of the plants." And, further, it requires a decorative feeling for the particular shape chosen, in order that the work or pattern shall be fairly distributed, and that no angles or spaces shall be left vacant or appear bare.

Technical Treatments.

When the design is settled, and the whole is faithful in resemblance, pleasing in distribution, and harmonious in colour; the student is then brought face to face with Technical questions.

These are of the highest importance. We have been too long content to rest on our oars; we have relied too much on the quality of our materials and the excellence of our machinery. If our manufactures are to hold their own in the markets of the world, the cry must be, now and for a long time to come, technical education.

There is no provision for the actual teaching of technical processes to handicraftsmen under the rules of the Department, except as regards the underlying art and science of each; but it is possible to show how they affect design; and this side of technical education is impressed on the notice of the students, some of whom, like our National Scholars, are the designers of the present; and others, like the Masters in Training, will be the art teachers of the future. Accordingly, every master, as part of his academic work, in addition to the plant design I have mentioned, has to prepare three modifications of it, showing how he would treat that same design for three differing manufacturing processes, the particular three being chosen by himself. He then realises that the intricacy of a printed tile cannot be worked in embroidery, and he simplifies by omitting unimportant details; that the blending of tints, which is so great a charm in embroidery, is not possible in a woven damask, and he draws the leaves, &c., in such a manner that they will be effective without shading, and so on. And thus he learns the technical limitations, is saved himself, and, let us hope, will save others from making designs which are either impracticable, or which require alteration at the risk of spoiling them in adapting them to the particular process of manufacture for which they are intended.

I have reason to know that this method, introduced about four years ago, is bearing fruit; and I anticipate great things in these two directions, namely, (*a*) the natural treatment of plant form, and (*b*) the technical treatment in design.

Design.

With regard to design in the abstract, I would suggest, if your committee offer any prizes, that the so-called "Original" Design should not be asked for, but that the students should be invited to state, in the margin of their drawings, the source whence they have adapted their work. Fitness is a higher quality than originality. In all good designs the idea has been taken and improved upon from something which has gone before. In the gradual evolution of our glorious Gothic, each cathedral or church was a development of the features or an avoidance of the faults contained in its predecessors. So to you students I would say, do not be ashamed of fairly owning your indebtedness. Try fitness and fairness first, and in good time, if you have it in you, originality shall be added unto them

I am interested to know what is the local outcome of your school. I observe that three years ago Mr. Stopher, who was then your mayor, suggested a class of wood-carving, to the end that carving might be carried on in the home in winter, as in the Black Forest and Switzerland. This was a most valuable suggestion; it is to be hoped that the idea may not be lost sight of, but take shape as a mercantile speculation. Why should there not be Winchester furniture and Winchester chairs? The material lies close at hand, and is cheap enough. What is required is that it shall be made in sympathy with the old tradition of utility and comfort first, and quaint shaping added thereto. There is enough of old work in your grand old city to serve as models in founding a local school of Winchester work, which would create a demand; and so with other handicrafts.

As a help in your studies, the class for teaching the characteristics of the Historic Styles will be found to be of great use. And here I would add a caution—not to attempt to cover too much ground. Do not seek to know in a single year everything that has been done from the Pharaonic times to A.D. 1800. You are learning, not archæology, but art; and, moreover, the extent of your field would confuse and discourage you. Seek rather at first to know well a limited portion—say, our English art from A.D. 1200 to 1500, or from 1500 to 1800, according to your taste; and afterwards, when you have realised the growth of style and the changes which always accompany living growth, you will be the more able and anxious to know the beginnings of things in other countries and earlier times, tracing back as in a pedigree to the Lake-dwellers.

Art and Artists.

And, for the general good, let me say: do not try to be Artists "unless you cannot possibly help it." A young friend was advised not to write poetry unless he could not possibly help it. So with art. Do not take it up because it is genteel, or because it makes you an interesting person among your sisters and your cousins and your aunts, or because you will be able to let your hair grow long, and generally to be rather slovenly in dress. But if, after hard training, you still feel that you are willing to be a fool for Art's sake, then there is nothing for it but to follow your highest inspiration. You have heard of the shepherd-boy of Vespignano, who could not help it, who drew his sheep, his fellows, and everything he saw, who, taken home by the Florentine, continued to draw because he could not help it. If any one of you feel this irresistible inspiration, if it prove superior to every trial of his patience and endurance, it may be given to him to stand beside Giotto, because he could not help it. These cases are few, and do not come once in a century, and anything I can say will neither haste nor hinder; for the rest, do not be an artist unless you cannot possibly help it.

And do not seek to be called "artists." The word is very much abused, not only in that form, but as an adjective in such odd terms as art coal-scuttles, art tea-trays, art door-mats, &c. Do not use it. Call yourself a landscape-painter, a figure-painter, a pattern-designer, if that be your choice, or a craftsman if your work lie in practical grooves; but shun the snobbish habit of dubbing artist those who follow only some one small branch of the great art which is one and indivisible, and reserve that title for the epoch-making men like Giotto, Michel Angelo, Stevens, and men of their mould.

And finally, do not let the prizes you have obtained, or the well-deserved and well-intended gratulations of your friends, lead you prize-winners to suppose you are something more than usual. There are probably in all competitions and examinations some who ran well, and deserved but obtained no prize. Such I congratulate. You have that singleness of reward—the consciousness of desert and knowledge. Believe me: Prizes are good, but Knowledge is better.

THE WELLINGTON MEMORIAL, HYDE PARK CORNER.

THE executive committee met on Saturday, November 27, at Apsley House, to determine the site for Mr. Boehm's new equestrian statue of the Duke of Wellington. There were present the Prince of Wales, chairman; the Duke of Wellington, the Duke of Westminster, Lord John Manners, Lord Northbrook, Lord de Lisle, Sir Richard Wallace, Baron F. Rothschild, Sir James M'Garel Hogg, Sir Frederick Leighton, Mr. H. Primrose (representing Her Majesty's Office of Works), Colonel A. Ellis, Mr. Farquhar, and also the sculptor, Mr. J. E. Boehm, R.A.

The plaster cast on a temporary pedestal had been transferred from the lower enclosure (No. 2) opposite St. George's Hospital to the enclosure (No. 1) opposite Apsley House, and being fixed to a turntable the committee had an opportunity of judging of its appearance from different aspects.

It was finally unanimously decided that the most favourable position will be to place the statue with the Duke facing Apsley House. The enclosure (No. 1) will be altered in shape, and probably made circular or nearly square. The platform ground will be levelled and paved, and the rest of the "island" paved on a hanging level. This decision meets with the entire approval of the present Duke of Wellington's family.

The pedestal will be much more important—higher and broader—than the temporary wooden one now indicates. It will be of red-polished Aberdeen solid granite blocks, with four colossal bronze supporters—one at each corner.

Mr. Boehm's admirable sketch-model represents four private soldiers in uniform of the period of Peninsular and Waterloo campaigns—one of each nationality; a man of the Foot Guards, a Highlander (42nd), an Irishman (27th Inniskillings), and a Royal Welsh Fusilier (23rd). These figures themselves excellently convey the national characteristics of each people.

A few minor alterations in the actual portrait model suggested themselves to the committee, which will be adopted by the artist. The Duke is thought to be represented as rather older than was intended. The details of the uniform and horse trappings are exactly copied from the actual things still in the present Duke's possession.

On the whole both statue and proposed pedestal were approved. Unfortunately it will be a long time before the public can see it erected in its place, as the casting of the bronze and its four supporters will occupy nearly a year.

It is suggested to plant the lower enclosure (No. 2) with trees, and possibly, if funds admit, to place a handsome bronze 5-light candelabrum in the lowest and smallest enclosure (No. 3) —a refuge for the street crossing opposite Grosvenor Crescent.

THE LEEDS FINE ART GALLERY AND MUSEUM.

THERE were eighteen sets of designs sent in for the Fine Art Gallery and Museum, Leeds, which was prescribed to cost 8,000*l*. The following were the competitors:—Mr. C. S. Nelson, Mr. J. P. Kay, Messrs. Perkin & Bulmer, Messrs. Dodgson & Braithwaite, Messrs. Fraser & Sugden, Mr. J. H. Greaves, Mr. W. H. Thorp, Messrs. Chorley & Connon, Mr. George Corson, Mr. J. Hall, Mr. A. Neill, Mr. W. Bakewell, and Mr. B. Wilson, all of Leeds; Mr. C. H. Mileham, London; Mr. J. Johnson, London; Mr. H. A. Cheers, Twickenham; Mr. H. A. Matear, Southport; and Mr. P. Ogden, Manchester. The plans were first reduced to eight, and afterwards to three, viz., those by Messrs. Fraser & Sugden, Mr. George Corson, and Mr. W. H. Thorp. On Friday last it was decided to adopt Mr. Thorp's design, the second prize going to Messrs. Fraser & Sugden.

Mr. Thorp's design is in the Italian Renaissance style, in harmony with the architecture of the adjoining Municipal Offices and Public Library. The leading features of the latter, sill courses and cornices, are carried at the same level, so as to bind, as it were, the two buildings together. The elevation to Centenary Street, he suggests, should be faced with the best Bolton Wood stone; also the return angle fronting to Alexander Street; the remainder of the Alexander Street frontage to be of the best hand-pressed brick. Mr. Thorp, in planning the internal arrangements of the building, has been to a large extent guided by those of the Walker Art Gallery at Liverpool and of some of the more modern courts of the South Kensington Museum. Generally speaking, he has sought to give effect to the wishes of the committee. The entrance to the gallery and museum is that of the Public Library in Centenary Street. Those who visit that institution know that the reading and newsroom is on the right of the entrance. It is proposed that this large apartment shall be devoted to the purposes of a sculpture gallery, and that another reading-room shall be provided in the new building. The sculpture gallery will give access to the museum and picture galleries, as well as to the reading-room, under an arch formed at the end of the apartment. Passing under this, a vestibule 30 feet by 20 feet is entered, and immediately beyond is the situation of the new reading-room, the dimensions of which are 100 feet by 32 feet, the superficial area being about the same as the present reading-room. The new room—divided into three bays, with columns and arcades—will be well lighted from Centenary Street on the one side, and by glass screens (which will receive light from the glass roof of the museum court) on the other. Another entrance to the reading-room is provided at the corner of Alexander Street and Centenary Street. Going back to the vestibule, and turning to the left, will be found the staircase hall—41 feet 6 inches by 36 feet. The principal staircase starts thence in two flights, which meet on the central landing, and proceeding by a wider flight of stairs an upper hall on the first floor is reached. Before noticing the arrangement in that part of the building, it may be well to describe what further use is made of the ground floor. There is an archway 9 feet wide and 15 feet in height

underneath the centre of the staircase, and this gives access to the central museum court. The room is 60 feet by 36 feet, and is surrounded by arcades. On two sides of it are open arches, and on that next to the reading-room are the glass screens before mentioned. The court is two storeys in height, and is provided with an iron and glass roof. Adjoining it is an office for the curator, and another room which may be used as a cloak-room. Connected with this central court are two additional courts, for museum purposes, access to them being through the arches on two sides. One of them is 65 feet by 25 feet, and the other 60 feet by an average of 31 feet, and both are well lighted. There is also a small gallery or anteroom on the ground floor, having an entrance from the staircase hall. This leads to a larger gallery, intended for the permanent reception of pictures, and to another for cabinet pictures. The former is a rectangular apartment, 42 feet by 36 feet 6 inches; it is lighted by a glazed lantern in the roof, and the ceiling is coved. The latter is 24 feet by 21 feet, and is divided into two sections by a central screen, receiving light from the roof.

Ascending the staircase, we find on the first floor an upper hall, 36 feet by 41 feet 6 inches. There are four galleries on this floor, and they are so arranged that the visitor, turning to the left, can make a tour of them and reach the staircase again without inconvenience, passing on the way over a balcony which projects into the central court. One of these galleries is 42 feet by 32 feet, the second is 87 feet by 32 feet, the third 65 feet by 25 feet, and the fourth 60 feet by 24 feet. One will be utilised for a permanent art collection; the other three for loan collections and special exhibitions, space being reserved, however, for a water-colour collection. All these rooms are entirely lighted from the roof, and have coved ceilings. The walls are to be boarded, not plastered. The upper staircase hall is treated with pilasters and detached columns; the sides of it are coffered, and in the centre is a large glass dome for lighting purposes.

The whole of the structure is, according to the plans, fireproof, and fireproof doors running into grooves in the walls separate the different galleries from each other. There is a large hoist for the conveyance of pictures to the upper galleries. Ample lavatory accommodation is provided. In the basement are two large warehouse rooms, with a separate entrance from Alexander Street. These might be let off or retained by the Corporation, as might be deemed expedient.

With respect to the cost of the building, Mr. Thorp says that has been gone into most carefully by him, and he "would guarantee that he would have no difficulty in getting the work carried out according to his drawings and specifications for the sum named in the conditions, viz., 8,000*l.*" At the same time, he remarks, for 10,000*l.* greater satisfaction could have been given in the execution of the work. The total amount is 7,999*l.* 13*s.* 6*d.*, made up of:—Masons' work, 2,997*l.* 12*s.* 10*d.*; principal staircase, &c., 300*l.*; carpenters, joiners, ironfounders, plumbers, glaziers, and slaters, 1,285*l.* 9*s.* 9*d.*; other carpenters' work and ironwork, 862*l.* 19*s.*; fireproof flooring, 1,737*l.* 13*s.* 6*d.*; plastering, 356*l.*; painting, 70*l.*; heating, 200*l.*; gas, 100*l.*; ventilation and hoist, 90*l.* A system of hot-water heating is provided for, and arrangements made for lighting by gas or electricity.

THE ROYAL JUBILEE EXHIBITION, MANCHESTER.

THE following prospectus has been issued by the committee of the Fine Arts Section:—

"In an Exhibition held to commemorate the jubilee year of the Queen's reign, it is thought appropriate to form a collection of the best works by artists of Great Britain and Ireland who have lived any time during the last fifty years. Great strides have been made in art in the United Kingdom in the thirty years that have elapsed since the holding of the Manchester Art Treasures Exhibition, but in none of the numerous exhibitions that have been held has there been any attempt to bring together the best works of art that have been produced in the Victorian era. When it is remembered that the roll of illustrious artists whose works are thus eligible for exhibition includes such names as Turner, Wilkie, Stanfield, Mulready, Leslie, Muller, Landseer, De Wint, Cox, Prout, Hunt, and Copley Fielding amongst painters, and Chantrey, Foley, and Gibson amongst sculptors, it will be readily seen that a splendid collection may be formed, not unworthy of succeeding the memorable collection of 1857. It has been determined therefore to form a loan exhibition of such works, to include paintings in oil and water-colour, drawings, sculptures, engravings, etchings, and woodcuts. Special care has been taken in the construction of the portion of the exhibition building intended to be devoted to fine arts. It will be built of brick, and will be completely isolated from the main building by strong brick walls, with iron sliding fireproof doors. The walls will be boarded inside, thus securing immunity from damp. The most complete arrangements will be made for watching night and day, and the lighting will be so arranged that under no possible circumstances can injury arise to the works exhibited. The galleries will be lighted with incandescent electric lamps. The committee undertakes to collect and to return the works of art that may be lent, and to bear the cost of transit, and will be prepared to cover art exhibits by insurance when required. The Exhibition will be opened early in May 1887, and will remain open about six months. The committee appeals with confidence to the owners of pictures throughout the country to assist, by the generous loan of some of their treasures, in making this a truly representative national exhibition of the art of the past fifty years."

As the committee proposes to form an exhibition of the best pictures, sculptures, &c., made during the last fifty years, all the leading artists who are now living have been asked to name the works which they would prefer to be represented, and these works it will be the object of the committee to obtain on loan from the collectors who possess them. In regard to the pictures by deceased artists, the committee will carefully select specimens from various private collections.

Offers of assistance have been received from Sir Frederick Leighton, president of the Royal Academy; Sir John Gilbert, president of the Old Water-Colour Society; Sir James L nt n, president of the Institute; Sir J. E. Millais, Mr. G. F. Watts, Mr. Alma Tadema, Mr. Briton Rivière, Mr. Burne Jones, and many other well-known artists, and it is gratifying to learn that the efforts of the committee are likely to meet with success.

THE FINANCIAL RESULTS OF EXHIBITIONS.

A CORRESPONDENT of the *Times* supplies the following abstract of the accounts of various exhibitions between 1851 and 1886:—

The principal exhibitions held up to the present time have been—London (1851 and 1862), Paris (1855, 1867, and 1878), Vienna (1873), and Philadelphia (1876). It has not proved easy to get hold of actual balance-sheets of all the foreign exhibitions, but sufficient information is available about all of them to enable a fair comparison to be made, and of our own two full particulars have been published in the reports of the Royal Commissions appointed for each exhibition.

The total receipts for the 1851 Exhibition amounted to 506,243*l.*, of which 186,000*l.* was surplus profits. This total was made up of 423,792*l.* for admissions, 67,896*l.* subscriptions (which many thought ought to have been returned), together with payments for the refreshment contract, &c. As there were 6,039,195 visitors, the amount received at the doors represented about 1*s.* 6*d.* a head. The buildings cost 169,998*l.*, maintenance and police, 24,524*l.*, personal services, 67,309*l.* The prices of admission were 5*s.*, 2*s.* 6*d.*, and 1*s.*; there were also two days at 1*l.* Though there were twenty-seven 5*s.* days and thirty 2*s.* 6*d.* days, nearly four-and-a-half of the six million visitors paid their shilling at the doors.

In 1862 the total receipts were 459,631*l.* This amount was insufficient to meet the outgoings, and, in order to avoid a call on the guarantors, the contractors, Messrs. Kelk & Lucas, reduced their claims by about 65,000*l.*, and Mr. (afterwards Sir John) Kelk made a donation of 11,000*l.* to the funds. In consideration of the abatement the contractors took over the whole of the property of the Commission. The admissions amounted to 408,530*l.*, the refreshment contract to 29,285*l.* The chief items of expenditure were—buildings, 329,001*l.*; roads, 13,358*l.*; salaries, 45,778*l.*; police, 19,435*l.* As there were 6,211,103 visitors, they may be said to have paid much about the same as those in 1851, 1*s.* 6*d.* a head.

Of the three Paris Exhibitions none was a financial success, but as they were all Government undertakings, this was probably not considered a matter of the greatest importance by the projectors. In 1855 the charge for admission was on several occasions lowered to 20 centimes, and there was one actually free day. The result of this was that 5,162,330 visitors only paid 128,099*l.* In 1867 6,211,103 visitors brought in 408,530*l.*, but the expenses were heavier. In 1878 the expenses were enormous, and the deficiency is stated to have been considerable. The same is also understood to have been the case at Vienna in 1873, when there were 6,740,500 visitors with a financial result of 206,477*l.*

The accounts of the Philadelphia Exhibition are complicated by their connection with the purchase of Fairmount Park for the city, and also by the arrangements under which the necessary funds were obtained by the issue of stock. They are, however, set out in full detail in the reports of the Centennial Commission. From these it appears that 8,140,193 visitors entered the Exhibition, and paid 798,675*l.*, or about 2*s.* each. The charge for entrance was 50 cents (a little more than 2*s.*) The actual result of the Exhibition was a financial success, but the funds of the Centennial Commission consisted in part of donations and appropriations, and these would have to be taken out to get at the real commercial outcome of the Exhibition.

If the accounts of the Fisheries and Health Exhibitions be summarised in the same way, we find that the Fisheries had a gross receipt of 162,903*l.*, of which 117,869*l.* was obtained by the admission of 2,703,051 visitors (about 10*d.* each), and 8,702*l.* was subscribed; over 11,000*l.* of the rest is rent, paid or to be paid by the Health and by the Colonies. The Fisheries Buildings cost 44,238*l.*; their electric lighting, 10,397*l.*; salaries and wages, 14,098*l.* (including police); conferences, juries, and jury awards, 11,288*l.*; music, 5,255*l.*; gardens, 3,740*l.* The surplus was 14,752*l.*

The Health Exhibition had a total receipt of 237,048*l.*, of which 178,509*l.* was derived from 4,153,390 visitors (about 10*d.* each). Donations amounted to 11,824*l.* 12,023*l.* was a merely nominal asset, since it represents an amount due from the Inventions for buildings and plant, but remitted. New buildings, including Old London, cost 47,045*l.*; electric lighting, 23,140*l.*; rent, 16,888*l.*; and rates and taxes, 1,573*l.* Salaries and wages, 21,987*l.*; juries and conferences, 7,832*l.*; music, 14,181*l.*; gardens and illuminations, 7,611*l.* The Health surplus was 3,557*l.*

As regards the Inventions, we only know that the total receipts were 208,490*l.*, against an expenditure of 213,927*l.*, leaving a deficiency of 5,437*l.*, which may be extinguished by the adjustment of matters now outstanding with the Colonies.

In comparing the recent and the older exhibitions, it should be borne in mind that the latter were always closed at dusk, and that the heavy charges for artificial illuminations were therefore avoided; also that the cost of the garden illuminations and of the illuminated fountains is additional.

ST. SAVIOUR'S, SOUTHWARK.

ON November 15 the wardens and the vestry clerk had an interview with the Bishop of Rochester to express the wish that the restoration of St. Saviour's, Southwark, should be begun as soon as possible. The following is the Bishop's reply to Mr. N. F. Horne, Warden of the Great Account:—

"Selsdon Park, Croydon, November 16.

"Dear Mr. Horne,—It may be convenient that I should put down in writing the reasons which make me apprehend that to set on foot just now so great and important an undertaking as the restoration of St. Saviour's Church would be not only to court a melancholy failure, but also to postpone to a very distant future what we all hope to see accomplished thoroughly, it may even be soon. The key to the success of our great enterprise, which, if to be done at all, must be so done as to stir and deserve substantial sympathy not only from Southwark and London but from all England, will be found in its opportuneness. I cannot bring myself to think (willing as I should be to be persuaded to what is as near my heart as it can be to yours) that it would be wise to set it on foot now. The commercial distress still continues; agricultural troubles, perhaps, have not touched the bottom. A Church House, which for a year or two to come will tax the resources and energies of all English Churchmen to make it worthy at once of the Church and the Queen, must divert from any local effort like this aid which otherwise might have been given to it. Under the very shadow of the church we love and wish to restore lies Guy's Hospital, languishing from the severe drop in its income through a diminished rent-roll, and endeavouring with an admirable courage and not too much success to raise the large sum of 100,000*l.* People cannot give to all these things at once. Should we have any chance, in the face of these circumstances (for which, indeed, we are not accountable, but of which as men of sense we must take account), of raising a fund which, before we have done with it, will require the best part of 30,000*l.*, for a task which will be helped from outside only on the condition of its being done with completeness? Of course, it is quite possible that I am too prudent, and if a memorial to that effect should reach me from the great firms in South London, without whose counsel and sympathy it would be madness to make a start, and from the principal landowners of Surrey, who are sure to rally round us when suitably and opportunely invited, requesting me to reconsider the matter, I will gladly invite a conference with them and weigh with sincere respect their reasons for demurring to a further delay. In the meantime do not suffer the fabric to be neglected, and do not fear that this postponement need be either final or indefinite. The church must clearly be put into repair at once. As patron I readily offer you 50*l.*, half of which I send you now, and the other half you shall have next year. What I feel even more anxious about—you will feel equally so—is that even common structural repairs should be entrusted to a first-rate architect whose skill and experience will command public respect, and who is not likely to mar a future and beautiful restoration by any clumsy tinkering now. One ground of hope I lightly touched on in our interview; I can only hint at it here. It is still in the future, but it is simply a question of time. Sooner or later the beautiful and opulent county of Surrey must be made a separate diocese, with the ample resources of its gentry and men of business to back South London with its million of souls. Then the bishop of the new see, whoever he may be, will find a quick and ample response to his plea for the restoration of his South London cathedral, and the spiritual appeal, combined with the æsthetic, will be found irresistible.—Your faithful servant, A. W. Roffen."

EXPLORATION IN CYPRUS.

A COMMUNICATION from M. Ohnefalsch Richter, Consulting Archæologist of the Cyprus Museum, appears in the last number of the *Philologische Wochenschrift*. In the course of it he says:—

As so much has been written of late on the hopelessly dead-alive condition of archæological research in this island, and on the wretched condition of the Cyprus Museum, it may not be out of place, in the interest of science and for the benefit of cultivated people in general, to give the views of the new Governor (Sir Henry Bulwer). It is all the more incumbent on me to do this, since my most recent discoveries have overthrown almost all our previous ideas about Cyprus, and since masses of archæological treasure lie buried in the island which are of the utmost importance for the earliest Greek art. I have proved this by excavations carried on during five months and a half. The results are astounding. One need only scratch the ground to come upon the most precious treasures. The new Governor, Sir Henry Bulwer, is desirous of scientific results. He wishes the excavations to be carried on only on the most approved scientific methods. He wishes the excavations to be utilised to the uttermost, so as to obtain some conclusive knowledge about the history, arts, and civilisation of the country, and thus to promote the knowledge of antiquity. "Only if we proceed in this manner," said he, "only if we add to the sum of knowledge, can we claim a right to disturb the cities of the dead. Antiquarian research, archæological excavations, do not exist to fill the purses of greedy speculators. Excavations should not be an affair of money making." Sir Henry Bulwer further expressed himself to the effect that should a scientific institution, a real museum, or a Government—no matter of what country—set on foot antiquarian researches in Cyprus, he would cordially welcome it. Although he should like England and the British Museum to take the lead, his feelings in the main were international. He desired the advance of science, no matter whether it came from London or Paris or Berlin, or any other place. He would do whatever lay in his power to gain for such a scientific undertaking every possible help from the English Government. Like Sir Henry Bulwer, his private secretary, Major J. Chamberlain, is a cultivated man. He knows ancient Greek, and reads German books. I had a further talk with Major Chamberlain about the question of a museum on the spot, and found in him too an unbiassed and generous turn of mind, based on ideas above the common, which, I own, surprised me, for in most of the high English officials of the island—Sir Robert Biddulph first and foremost—I had hitherto only found the ideas of a shopkeeper (*Krämerideen*). Major Chamberlain said to me:—"What a difference there is between going into a great museum and seeing a jumble of objects collected from every country under the sun, and visiting a local museum such as those at Olympia or Pompeii, Trèves or Nismes, where each object points to the history, the period, and the stage of civilisation of the very place where I am standing. Without wishing to depreciate our great museums, I am for local ones, and I think that our Governor-General is of my way of thinking." When I proceeded to conduct Sir Henry Bulwer through my storehouses, crammed with antiquities, he always lingered by preference beside those objects which I could point out as local Cypriot work. He could have as much as he wanted of the objects imported from Greece in the great museums. "The people who lie buried here, the ancient Cypriotes their habits and customs, their civilisation, their art, and their religions—we must make it our main object to study all these from the remains," he would say. "It is quite otherwise with Greek importations. But a vase such as that with the seated figure of the ugly Phœnician-like woman and the birds painted on it interests me more, because it is something new, because it is something which enlightens and instructs me about ancient Cyprus and the ancient Cypriotes." All honour to such a Governor-General! Hurrah for the excavations in Cyprus! When I was at work in 1882 for Mr. C. T. Newton, then Director of the British Museum, I called on Sir Robert Biddulph, who was then Governor-General. He desired to be informed about the results of my excavations, and I proceeded to describe them to him according to their scientific value, beginning with the terra-cotta figures. He interrupted me half angrily, "Not that; but have you found any gold?" I then began to describe the gold ornaments. But again His Excellency

interrupted me still more impatiently, "Not that; but were they heavy?" and he moved his hands in imitation of a pair of scales. The gold ornaments not being heavy, His Excellency speedily lost his interest in the antiquities of Cyprus. The island and its museum, as well as archæological science, will find a powerful friend in the new Governor-General.

ARCHÆOLOGY.

Roman Remains near Pau.—Some Roman remains have recently been discovered at Lescar, near Pau, and the Council-General of the department has voted a subsidy to the Society of Arts and Sciences at Pau to enable it to continue the researches. Private subscriptions have also come in very abundantly, and the work of excavation is going on apace. The ruins in question are situated upon a plateau overlooking the mountain stream known as the Gave de Pau, and they are separated by a ravine from another plateau upon which the site of a Roman camp was discovered. They appear to be the ruins of a regular palace which must have been the residence of the military chief in command of the country. A Roman road passed close to it. The excavations have gone far enough to bring to light a large hemicycle about 65 feet in diameter, paved with mosaic, a pentastyle also paved with mosaic, bath-rooms, and rooms for slaves. These ruins, all of which belong to the same edifice, are supposed to belong to the third century of our era, judging by the only discovery which gives any indication as to date—that of a medal of Gordianus III. The most interesting feature about these excavations is the large number of mosaics discovered. Some trenches sunk in the immediate vicinity of the palace first discovered, and upon the same plateau, have led to the discovery of many important substructures, and the general opinion is that the remains are those of the ancient town of Beneharnum, which was completely destroyed and razed to the ground at the time of the Norman invasion.

CHURCH BUILDING AND RESTORATION.

Blundellsands.—A new Roman Catholic church, dedicated to St. Joseph, has been opened. The style is Early English. Mr. A. E. Purdie, of London, is the architect, and the building operations have been carried out by Mr. Samuel Webster, of Bootle.

East Leake.—St. Mary's Church has been reopened after undergoing works of restoration. The architect was Mr. Weatherby, of London, and the contractor Mr. William Belton, of East Leake. The chancel stalls are of English oak, of a plain but dignified character. The estimate of the total cost of restoration was 1,200*l.*

St. Bartholomew the Great.—On Tuesday this church was reopened in the presence of the Lord Mayor, after restoration under the direction of Mr. Aston Webb. The external encroachment at the east end, which projected nearly 20 feet, is removed, and a new apse has been constructed. These were undertaken at the sole cost of the Rev. F. Parr Phillips, the patron. The church has also been entirely re-roofed, and various other works have been undertaken. During the progress of the work of restoration, much of interest has been brought to light. On taking down the square wall carried by the girder and columns at the east end, the upper portion was found to be built of the tracery of what was no doubt the great window of the fourteenth-century square east end, and enough of this has been found to show its design. The opening out of the entrance to the lady chapel is of considerable interest, and displays features hitherto entirely concealed. The work has been carried out without the removal of a single worked stone from its original position. The works that are still urgently needed are the removal of a forge and parish house on the west transept; also the present vestry in the south transept, and the boys' schoolroom from the triforium; and the building of two shallow transepts to support the arches of the crossing, the uncovering of the nave, and the restoration of the lady chapel.

Southborne-on-Sea.—St. Catherine Church, at Southborne-on-Sea, is the first place of worship erected in this rising suburb of Bournemouth. It has been designed by Mr. A. Burt, architect, of East Dulwich. At present only a part of the church is erected, but when completed will have cost about 10,000*l.*

NEW BUILDINGS.

Beverley.—The Corn Exchange and Public Baths newly erected at Beverley have been opened. The buildings have been erected at a cost of about 2,500*l.*, in a type of architecture prevailing in the latter part of the seventeenth and the beginning of the eighteenth centuries. The works have been carried out by Messrs. Pape Brothers, of Beverley, and Messrs. Bradford & Co., of Manchester, from the designs and under the superintendence of Mr. S. Musgrave, F.R.I.B.A., of Trinity House Lane, Hull.

Fordingbridge.—New workhouse buildings have been opened for the Guardians of Fordingbridge Union. Special care has been bestowed upon the sanitary arrangements throughout, and the drainage is so arranged that almost any length of drain may be inspected at a moment's notice by means of lamps and manholes, placed in suitable positions, with lidded pipes (to allow for a removal of a stoppage without breaking the pipes). Bowes, Scott, and Read's patent automatic flushing tanks are used for flushing purposes. Externally the buildings present a warm and pleasing appearance, being erected with local red bricks, relieved only by moulded cornices, strings, labels, aprons, &c., of the same colour. The style is Queen Anne in character, plainly treated, the good appearance being almost entirely obtained by careful proportion and grouping. The works have been satisfactorily carried out by Mr. John Greenwood, of Mansfield, Notts, from the designs and under the personal superintendence of Mr. Fred. Bath, A.R.I.B.A. and F.S.I., of Crown Chambers, Salisbury. Mr. Edwin Radford acted as clerk of works, and Mr. Robert Orchardson was the contractor's resident agent.

Wigan.—The new Royal Court Theatre, Wigan, erected by Messrs. Worswick & Gee, has been opened. The building, which has been designed by Mr. R. T. Johnson, architect, Wigan, is capable of seating 3,000 persons.

SCHOOL BUILDINGS.

Chelmsford.—The British Schools have been reopened after being rebuilt and extended. The contract for the erection of the new buildings was taken by Messrs. Choat & Saltmarsh, Mr. Charles Pertwee, of Chelmsford, being the architect. The work has been carried out by the contractors in conjunction with Messrs. Parkhurst, Wray, Beckett, and others, at a cost of about 2,000*l.*

GENERAL.

The Annual Dinner of former architectural students of the Ecole des Beaux-Arts will be held on Monday next, under the presidency of M. Questel. The tickets are sixteen francs each.

Mr. Tom Lloyd was on Wednesday elected a member of the Royal Society of Painters in Water-Colours. Sir Frederick Burton, director of the National Gallery, and Mr. E. Burne-Jones, A.R.A., have rejoined the Society, the former as an honorary member.

Mr. Ewan Christian has written to Mr. Clarke Aspinall stating that he hopes, within the next few days, to send in his report upon the three designs for the Liverpool Cathedral. When the report comes to hand the executive committee will be called together.

The Late Thomas Webster, R.A., has bequeathed the portraits of his father and mother, painted by himself, to the National Gallery; his own portrait, painted by himself, to his wife; the remainder of his pictures are directed to be sold, and the proceeds added to his residuary personal estate. After his wife's death 2,000*l.* is to be given to the Cranbrook Grammar School in order to found two exhibitions at Cambridge.

Sir Baldwin Leighton, in delivering the prizes at the Shrewsbury School of Science and Art, spoke of the position of architecture in the country as follows:—"I will not say that there is no room for improvement, for I know something specially of that art, as I have designed and built myself; but I will say this, that the veriest tyro in the profession seems to have more of the right spirit in him now than thirty years ago the leading men possessed."

A Course of Lectures on Photography for architects is now in course of delivery at the York Architectural Association.

The St. Pancras Board of Guardians have decided that their architect, Mr. H. H. Bridgman, should be instructed to prepare and submit to the Board by February 1 next plans and specifications for additional and improved workhouse accommodation, at an expenditure of 50,000*l.*, or such further sum as the Guardians might ultimately decide upon.

The Electric Light is being adopted for the carriages of the Glasgow Underground Railway.

A Conversazione of the London and Middlesex and Surrey Archæological Societies will be held on Wednesday next in the hall of the Merchant Taylors' Company, Threadneedle Street.

The Architect.

THE WEEK.

The Saint Gobain Glassworks have secured the order for 100,000 mètres of glass for the roofs of the Paris International Exhibition of 1889. The quantity used on the Great Exhibition of 1851 in Hyde Park was 900,000 superficial feet.

The new Guildhall School of Music, which Sir Horace Jones designed, was opened on Thursday. Few institutions have had so much success in a few years. It was as late as 1879 that an orchestral society was founded in the City, and permission was given to hold the meetings in the Guildhall. It was afterwards recommended that the Corporation should assume the control of the society. The next step was the establishment of a school with an allowance of 350*l.* a year, the use of a few classrooms in Aldermanbury being likewise given. The school started in September 1880, with 62 pupils, but at the end of December there were 216 pupils and 29 professors. In April the members had increased to 445 and 45 respectively. The Court soon agreed to grant 200*l.* a year for necessitous and deserving students. At the end of 1881 there were 907 pupils and 58 professors, and the next year the number of pupils rose to 1,130. The grant from the Common Council was, in 1882, increased from 350*l.* to 1,600*l.* a year, additional classrooms were provided, and various exhibitions were given. The students continued to increase, and at the beginning of 1885 there were 2,413, with a staff of 85 professors. It was then seen that new premises must be obtained for the school, and it was agreed to take the site on the Embankment at a rent of 1,100*l.* a year, and to expend 20,000*l.* on a building, which sum had to be increased owing to the nature of the foundations and the substitution of Portland for Bath stone. A further sum of 3,000*l.* was afterwards given for furniture and fittings. The new school starts with 2,503 students and 90 professors, including many who have gained positions in London. In the five years since the school was opened the fees paid have exceeded 80,000*l.*

The Metropolitan Board of Works has resolved to widen the class of candidates from whom a candidate for the position of Superintending Architect is to be selected. There is no longer a limitation to age, and the salary is to be 1,500*l.* a year. This time there ought to be no grounds for saying that eligible candidates were not forthcoming. Unless they are withdrawn, the former applications will be again considered along with those which will be received under the new conditions. We have already indicated the currents of thought among the Board in respect of the appointment, and if so much diversity continues it will be difficult to come to a conclusion. Architects who are fully competent applied in response to the invitation, and many more will now compete. Since among them will be several who can insure the respect of the architects and builders in the Metropolis, we trust no more delays will arise from projects of a transformation of the architectural department.

The Institute of France lost its oldest member by the death of M. Natalis de Wailly. He was elected in 1840. At the time of his death he had reached his eighty-second year. M. de Wailly was for long the Conservator of Manuscripts in the Bibliothèque Nationale, and he wrote several essays on subjects connected with palæography. He rendered one important service when he brought out an edition of "The Life of St. Louis," by the Sire de Joinville, the faithful Sénéchal de Champagne, who had been the companion of the King. The book was often talked about, but was read only by a few enthusiastic scholars who found a charm in the antique language. It was, however, well adapted to be a popular book, as it is a picture of life in the thirteenth century, and it has, moreover, the character of being true. Every line, however, offers a difficulty to any Frenchman whose reading is confined to modern works. M. de Wailly took up Joinville's book and removed all the difficulties. He treated the author in the most reverential manner, and his principal alteration is in the transforming the ancient orthography. It was not without reason that the editor was convinced of the fascination of his work for a generation that was acquainted with Dumas. The drama of the Crusaders, as it was pictured by Joinville, is more moving than a romance, and can henceforth be generally enjoyed through the happy thought of M. de Wailly. That, however, was only one of his services in making mediæval literature more familiar to his contemporaries.

The Birmingham Corporation have had the good sense to acknowledge the obligation of the town to Mr. Watts, R.A., for lending his eighty-one pictures for exhibition, and it is admitted that such an attraction largely contributed to the success that attended the New Art Gallery. So far the councillors are right. But is the gratitude to be expressed only in words? Why is not a commission for a painting given to Mr. Watts? If the Corporation cannot do so, there are at least members and ex-members who are able to display some liberality of that kind. As it is the gratitude is suggestive of the Frenchman's definition of the virtue, viz., "une forte et secrète envie de recevoir de plus grands bienfaits."

The resistance to the proposed Edinburgh Municipal Buildings is growing in strength. The meetings in the wards are decidedly unfavourable to the scheme, and if money is subscribed to pay the expenses of an opposition in the Houses of Parliament, the Bill stands a chance of rejection. It is now evident that no more than a part of the Municipal Council is eager to have new buildings, and the proposal appears to be rather premature. The city already owes over half a million, and the buildings would increase the amount by a quarter of a million, which means an additional rate of 3*d.* in the pound. The *Scotsman*, while heartily approving of the idea, and of the site that is selected, believes that the time for beginning new Municipal Buildings will be when the Town Council has, by strict economy, abolished its floating debt, put its everyday work —like the markets—in good order, and comes to the consideration of the question of a noble house for itself unencumbered by responsibility for numberless other schemes. The contest, we suppose, affords excitement in Edinburgh during a dull season, but no one appears to give a thought to the competitors who are working on so shadowy a foundation.

Mr. F. C. Penrose's name is not associated with exploration in Greece, although his discoveries respecting the curvature of lines in temples have gained him an enduring reputation. He has now taken charge of the British School of Archæology in Athens, and it is gratifying to learn that Mr. Penrose will be able to give the students opportunities for experiments in exploration that will be similar to those possessed by the French and Germans. The Temple of Jupiter Olympus was selected for the work, and the Greek Minister of Public Instruction has given the requisite permission to Mr. Penrose. The operations will be watched with interest.

The Society for the Protection of Ancient Buildings has taken up the cause of the parishioners who are protesting against the alterations in the chancel of Bearsted Church, which have received the support of the Ecclesiastical Commissioners. It will be remembered that it is proposed to form an organ chamber, and to gain space some pews and a piscina will be removed. The secretary of the Society says:—"The south wall of the chancel is generally the most interesting wall of a church, for it is there that the piscina and sedilia are in most cases to be found. They are the most important ritual features remaining in our ancient churches, and are of great importance also in determining the date of the foundation. It is hard to imagine a case which would justify the mutilation of the south wall of an ancient chancel, and most certainly the desire for a recess in which to place an organ is not a sufficient justification. The modern fashion for building such places is almost certain to be regretted in times to come. They are about the worst places which could be devised from the organ builders' point of view, and they are always disfigurements of an old church." The case is at present under consideration.

SCOTTISH CASTLES.*

SCOTLAND holds a position in the affections of the world which may be envied by all other countries with the exception of Greece. History and romance have made it in a great measure an ideal region, nature has endowed it with a beauty that corresponds with that ideal, and its sons have wandered so far as to create an interest of a different kind, from China to Peru, in the land from whence they came. In this way Scotland has gained an influence which the critical traveller is compelled to respect. Burns in his mirthful mood might warn his countrymen that Captain Grose, the antiquarian, was going about taking notes which were to be printed; but since that time many things have occurred to make the note-taker's work valueless unless he is disposed to praise everything he sees.

Associations of various kinds have thrown a glamour over the greater part of the Scottish land, and of course the buildings were not excluded. It is difficult to judge of what remains of the ancient architecture with impartial eyes. The humblest cockney who is able to undertake a cheap trip to Edinburgh comes back with the belief that Holyrood is impressive, and that the gallery, with its imaginary portraits of kings, surpasses what is to be seen in the South, although he cannot explain why he should think so. Let an archæologist who is disposed to be critical over little details of English art take a run through Scotland, and he also is sure to return a devotee. Even Mr. Ruskin, who may be said to have all the privileges of a chartered censor, was forced to be qualificative when he spoke of Scottish things. He could not help abusing the New Town of Edinburgh, which is a sort of Pimlico in stone, and he called it a wilderness of square-cut stone which was a grave of the soul, but that condemnation was followed by the declaration that the streets surpassed those of other cities in their manliness and effect. And the tourist, however wrathful he may be against the hotel-keepers of the city, will in the same way bow before the *genius loci*, and exonerate it from all responsibility for excessive charges and insufficient accommodation.

It is probably through fear that the associations on which the interest of Scottish buildings depends to a great extent cannot be imbued in any minds but those of natives, that so many archæologists and architects in Scotland have a dislike to see native architecture described by English pens. One of the best known of the old school of Scottish architects once said to the writer that "no Englishman could understand the plan of a Scottish castle," and although there is exaggeration in the words it suggests what is thought in the North about the peculiarities of the buildings. A sort of training has to be gone through, in an unconscious way, in order to appreciate the castles and churches, and it may only be attainable by those who are fortunate in beginning their architectural studies north of the Tweed. The late Mr. Fergusson might be supposed to have some claim, on family grounds, to be considered competent to judge of buildings in the North. But he is rejected because, as we are told, he did not regard the houses as forming "an important element in the general history of the art."

Englishmen would be very glad to leave the treatment of Scottish architecture to Scotsmen, for when they attempt the task it is owing to the absence of books on the subject by native writers. Accordingly we anticipate that the new volume on "The Castellated and Domestic Architecture of Scotland" will find a welcome in England. The work merits recognition, for even a cursory glance will suggest that it must have taken a very long time to prepare. When it is said that there are nearly five hundred illustrations, consisting of views, plans, sections, and details, it will be evident to the initiated that neither time nor money was spared in the production. The book has, moreover, the advantage of aiming at a definite conclusion. It is not a collection of descriptions of picturesque buildings, more or less related by the accident of position or resemblance, but a book which expounds a theory. The authors say their aim is "To trace the historical sequence of the various phases of architecture which have prevailed in the old castles and houses of Scotland, and to try to define and explain the different styles of building adopted at different periods, from the twelfth century till the revival of Classical architecture in modern times." Only a part of the programme can be realised in the first volume, but what is attempted is so well accomplished, that there can be no doubt of the ultimate success of the authors. The assistance which was received from architects and archæologists suggests that in Scotland the work was considered to be deserving of encouragement.

A subject like Domestic Architecture is very intimately connected with social history, and one cannot be understood without the other. What kind of architectural buildings would be deemed necessary in the Scotland of the twelfth century in order to satisfy the conditions of life at the time? Apparently the tribal spirit was in force, and an immense tract of land was not supposed to be the property of a single individual. The chiefs were powerful, but they were obliged to recognise the rights of the people around them. We know that in the eleventh century, emigrants from the South entered Scotland and were allowed to settle there. They had, however, to recognise the local conditions. Thierry (and on such a subject he deserves to be considered impartial) tells us that the cabins which the emigrant nobles built for dependants were enclosed by a fence or wall, the noble's castle being in the midst, as in England, but while in England the cabins were occupied by serfs, in the North there was no servitude. Now it is remarkable that although there seemed to be so much dissimilarity between the conditions of Scotland and England the earliest Scottish castles are on the model of those which the Normans constructed in England. There were "brochs" of an early date, and they are not suggestive of a provision for the security of any individual chief and his family, but that form of structure seems to have exercised no influence upon the later castles. Messrs. Macgibbon and Ross state that "The rectangular keeps of the Normans have formed the model after which most of our Scotch castles have been constructed." Their work accordingly begins with an investigation of the arrangements of the keeps as they are shown by examples in France and England.

It is no longer possible to determine what kind of castle was erected in the twelfth century in Scotland, but enough remains of those belonging to the following century to suggest their character, which is thus described :—

> The general idea of these thirteenth-century Scottish castles is that of a large fortified enclosure. The plan is usually quadrilateral, but more or less irregular, so as to suit the site. There are, however, some striking exceptions to this rule, as, for instance, the Castle of Rothesay, the plan of which is oval, and Caerlaverock Castle, which is triangular. The curtain walls are about 7 to 9 feet in thickness by 20 to 30 feet high. The angles are frequently provided with round or square towers, and no doubt these and the curtains had parapets with embrasures for defence, and rampart walks all round the walls. But these have now in almost every instance disappeared. The entrance gateway was always wide, and seems to have been generally provided with a portcullis. There is sometimes also a postern door. It is impossible to say what the arrangement of the buildings within the enclosing wall may have been. The angle towers seem to have been used as the dwellings of the garrison, as they are frequently provided with *garde-robes* in the thickness of the wall, but there were probably other buildings within the enclosure with roofs leaning against the curtains. At Rothesay a large chapel still survives, while at Lochindorb a ruinous building is still called the chapel, and it is very probable that other castles contained a similar edifice. The sites selected for this class of castle varied greatly. They are, however, generally built on rather low-lying ground, and trust more to water than to lofty sites for their security. . . . They are, for the most part, rude imitations of the thirteenth-century castles of France, or the Edwardian castles of England; but some of the finer examples, such as Bothwell, Kildrummie, and Dirleton, present a wonderfully close resemblance both in design and workmanship to the more splendid military buildings of the South. These have all the characteristics of the French castles of the thirteenth century.

The authors describe the examples which remain of each period, and as they are careful to give plans their book is far more valuable to the student than those which depend on picturesque views. Most of the castles are seen to be quadrilateral, but Rothesay might be called an oval circle,

* *The Castellated and Domestic Architecture of Scotland from the Twelfth to the Eighteenth Century.* By David Macgibbon and Thomas Ross, Architects. Vol. I. Edinburgh: David Douglas.

and Dunstaffnage, which holds a splendid position near Oban, is irregular in order to correspond with the site. The ground enclosed by the walls of these strongholds was often very large. Bothwell measures 325 feet by 140 feet, and apparently it bore some resemblance to the great Château de Coucy. It, moreover, indicates a change in manners, for there are halls and residences around the enceinte which owe their origin to the desire to have more state and, it may be, more privacy at times. Caerlaverock, although included among the buildings of the first period, has work of no less than six periods, and part dates from the seventeenth century, when Renaissance details were in favour.

The second period is that between 1300 and 1400. It was not a castle-building century. From 1306 until 1329 there were the wars between BRUCE and EDWARD. It was part of the tactics of the Scottish king to wear out his enemies by avoiding pitched battles and leading them into places where they could be cut off in detail. Castles would be of little use under the circumstances, and the only one that is associated with BRUCE'S name is Tarbert, which from its position was useful against the Highlanders, who might attack him in his rear. For sixty years after the death of BRUCE the country was a prey to faction, and the son and successor of the hero became a traitor. There were constant invasions by England, which received the assistance of several of the most powerful of the Scottish nobles. It was not until 1424, when JAMES I. returned from his English prison, that there was an approach towards a cessation of the anarchy, amidst which, however, the country contrived to preserve its independence. Under such circumstances architecture was not likely to flourish: all that was required in a castle "was a stronghold sufficient to accommodate the owner's family and personal retainers, and to protect them from sudden attack." Square towers or keeps of plain form were therefore generally adopted, but in subsequent periods various buildings were constructed about them. The upper part of a keep was necessarily of much importance, and the platforms and bartizans led the way to the elaborate cornices and corbelling seen in later works of the North. One remarkable example of the second period is Crichton Castle, which Sir WALTER SCOTT introduced into "Marmion." His description will suggest the growth of buildings of the class:—

> The oldest part of the building is a narrow keep or tower such as formed the mansion of a lesser Scottish baron; but so many additions have been made to it that there is now a large courtyard surrounded by buildings of various ages. The eastern front of the court is raised above a portico and decorated with entablatures bearing anchors. All the stones of the front are cut into diamond facets, the angular projections of which have an uncommonly rich appearance.

The third period of the Castellated and Domestic Architecture of Scotland ranges between 1400 and 1542, and is of great importance. The keep was sometimes preserved, but it was made longer in extent, and assumed a kind of independence. The remaining buildings were grouped around a courtyard. When it is found that about fourteen hundred castles were erected on the courtyard plan, and that among them were such castles as those of Edinburgh, Stirling, Linlithgow, Tantallon, Rosslyn, Doune, and Dunnottar, it will not be thought surprising that more than one-half the volume is occupied with the period. The authors divide the buildings into (1) simple keeps, (2) keeps with one or two wings, (3) keeps enlarged in various ways by additions.

Newark's "stately tower," on which the Last Minstrel gazed with wistful eye, belongs to the first class. It must always be memorable, for, from its introduction in the first page of SCOTT'S "Lay," it was the means of creating an interest in Scottish architecture. The castle measures 65 feet by 40 feet, the walls are 10 feet thick, and it had four storeys with wooden floors, besides a vaulted basement. Branksome Tower, which holds so important a place in the "Lay," was commenced in 1571, and therefore is of a later period.

There are greater works of architecture than the Scottish castles of this third period, but we doubt if many are more impressive. The effect made by the castles of Edinburgh and Stirling, when they are first seen, can never be effaced; but the simplest keep that rises abruptly in a flat country or in an island of a lake has something about it which keeps a hold on the memory. This is the more remarkable since so little in the exterior of any of the buildings was introduced for the sake of effect. Everything had its use. There is, however, much in all the buildings which is worth attention simply for its intrinsic merit, although hitherto less is known about that kind of work than it merits. The great advantage of the book by Messrs. MACGIBBON and ROSS is that it is written in the first place for architects, and in consequence they are not afraid to treat of details. It will be prized beyond more expensive books on the subject, and deserves to be known wherever Scotsmen are to be found.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE third ordinary meeting of the Institute was held on Monday evening, Mr. E. I'Anson, president, in the chair.

A paper, written by Signor G. Boni, hon. corr. member, in English, on "The Golden House," Venice, was read by Mr. George Aitchison, A.R.A. The paper was illustrated with original drawings, one of which was prepared by Signor Boni expressly for the occasion. The following is an abstract of the paper:—

The Ca' d'Oro, Venice, and its External Colour.

Two years ago, Signor Boni said, he had taken advantage of the scaffolding erected to carry out repairs to examine the front façade of the Ca' d'Oro. His examination of the front convinced him that the battlements were original, and that a cornice originally existed along the whole front. This cornice consisted of a rope moulding supported on a trefoiled arcade springing from corbels; each arch curving outwards so as to form a series of niches on plan, and at the bottom of each arch was a rosette. Some of the corbels and remains of arches still exist on the front, while on the return in the alley there is one perfect arch and one half-arch, but the rosettes have perished. The whole treatment shows that the front was coeval with the piazzetta front of the Ducal Palace, in spite of older work being built into the front of the Ca' d'Oro.

Signor B. Cecchetti, the Keeper of the State Records, had found the memoranda and contracts made between John Bon (the architect of the Porta della Carta of the Ducal Palace) and Marino Contarini (the procurator and owner of the Ca' d'Oro) for building it, beginning from the year 1424. The sum of 160 golden ducats was to be paid to J. Bon for a year of his own work, of his sons, and of his two assistants, Zane and Rosso. The work was undertaken by the owner, who paid the masons. Extracts from the specification of April 20, 1430, relating to the cornice and battlements, were given in the original Venetian dialect, and some of the technical words were explained. The contract with J. Bon was for 210 golden ducats. The Venetian ducat, between 1425 and 1443, is stated to have equalled 12·012 frs. John Bon is called in these documents, as well as in the contract for the Porta della Carta, "Stonecutter."

The specification minutely describes the manner of construction, the quality and size of the materials, and the quantity of work to be done, and was accompanied by drawings (now lost). When the stonework was done a new contract was entered into for the painting in oil and gilding of certain parts of the work, dated September 1531. In it J. Bon is called "Master John of France, painter of St. Apollinaris." The specification states the colours to be used, the number of coats, the parts to be gilt, and that the ultramarine was to be fine, and of the value of 18 ducats a pound. J. Bon was to have 60 golden ducats for this work; by a receipt of June 30, 1432, Contarini appears to have paid for the gold leaf. The parts to be gilt were as follows:—The balls of the battlements, the necking under the fleur-de-lys, the rosettes under the arches, the foliage of the two large capitals, the two lions and the fields of the shields between their paws, and the edges of the mouldings of the tablets over the caps on which they stand, the ducats on the rope moulding, twenty rope mouldings round the circular panels of porphyry, &c., and the balls in the centres of these. The shield on the second floor, the dentil band round the panel, and the foliage within it. The ground of the large caps was to be ultramarine, and so were the bands on the shield the lions hold; the underside of the tablets on which the lions stand was to be of ultramarine with gold stars, the bands on the shield of the second floor were to have two coats of ultramarine. The cornice, the arcade under it with the cusps, were to be painted in white lead and oil, the battlements to be marbled and to have a black line inside the edges if it looked well. The triangular space between the cusps were to be touched with black. All the red marble of the front and the red marble dentil bands were to be rubbed with coloured oil and varnish, so that they look red. All the

roses and vines of the front were to be painted in white lead and oil, and the backgrounds painted with black oil paint, so that they look well. All the background of the foliage of the ground-floor cornice, with its return on the flanks, to be tarred with black oil colour, and the four sills in the alley. The red marble of the Ducal Palace still shows traces of having once been painted red. Signor Boni then referred to ultramarine, and alluded to a Greek inscription of the expense of building the Erechtheum, found at the Propylea at Athens in 1836, a part of which stated that two gold leaves had been bought of Adonis at Mileto to gild the eyes of the column, and Signor Boni finished by saying:—"The Athenian inscription and the Venetian document are the best inscribed records we possess to prove that gold, the richest and most beautiful among temporary means for supplying a new building with colour, was used during the best periods both of Grecian and of Mediæval art."

Mr. J. D. CRACE, in response to the President's invitation, rose, but said he had not come prepared to speak. It was interesting to note the application of colour to the Ca' d'Oro as confirmatory of the origin of the name, and also in connection with the effect intended to be produced by it. The parts gilded were selected with particularly good judgment, and the result must have been most successful. Points of gold led up to and introduced sunshine into the leading parts of the building. The black lines seem to have been introduced as frames for the plain surfaces, where there were no deep shadows, as in the loggie part; they served the purpose of cutting up the shadowless surface, and were useful in maintaining the balance of the composition. Mr. Crace, in conclusion, proposed a vote of thanks to Signor Boni for his paper, and to Mr. Aitchison for reading it.

Mr. JOHN SLATER seconded the proposal. He remarked that few had had the opportunity of noticing the colour decoration of the Ca' d'Oro, and so it would be impossible to discuss that point. When in Venice four years ago he had not satisfied himself why the building was called the Ca' d'Oro. As to the mere architecture of the building, that could not fail to strike the observer. It was one of the most remarkable buildings in Venice. Among other matters, Mr. Slater inferred from the rope moulding that a street must have run on both sides of the building, and in conclusion spoke of the zeal with which Continental scientists investigated any subject they took up.

Mr. T. BLASHILL said that the Ca' d'Oro was like many other buildings in Italy, in not being a completed design, and the existing wing of the Ca' d'Oro suggested a wing which ought to be on the left side to form a complete composition.

Mr. JOHN HEBB, in the course of his remarks, expressed the hope that no unsatisfactory restorations like those at St. Mark's would be attempted at the Ca' d'Oro.

The vote of thanks to Signor Boni and Mr. Aitchison was put by the President, and carried by acclamation.

Mr. AITCHISON acknowledged the compliment, and concluded his remarks by reiterating what M. Paul Sédille had said—that if we wanted colour in our buildings here it must be got by using imperishable substances, such as granites, porphyries, terra-cotta, and glazed mosaic, which alone could stand our climate.

THE MANCHESTER ART MUSEUM.

AN experiment was lately made in Ancoats, Manchester, to open an inexpensive museum that might serve for some other purpose than the gratification of sightseers, and which might be made instructive for humble folks by the aid of honorary teachers. Mr. T. C. Horsfall, the treasurer and one of the founders, has given the following account of the working of the museum, which may be of use to those who wish to establish similar museums elsewhere:—Its rooms contain copies of those drawings on stones which are amongst the earliest records of prehistoric art in Europe; copies of Egyptian paintings, of pictures in Rome and Pompeii before the traditions of Greek painting were broken, of pictures showing the influence of the Byzantine school; a large collection of copies of pictures showing the development of painting in Italy from the time of Giotto to that of Paul Veronese; copies also of pictures of sacred subjects by German and Flemish painters, and a group of copies of similar pictures by modern painters; landscapes, including a considerable group of representations of beautiful places near Manchester, which it is hoped will induce some Manchester people to go to see the places; part of a fine set of plates of Turner's "Liber Studiorum," with etchings and fac-similes of etchings for the plates, and the Rev. Stopford Brooke's admirable notes on the plates; a group of pictures of war subjects; a group of pictures of sea subjects; a group of pictures of incidents in history and great fiction; pictures of the toils, pleasures, and sufferings of human life; pictures and copies of pictures of fine imaginative art; copies of Turner drawings by Mr. Ward, two of them finished by Mr. Ruskin, and nearly all provided with notes by Mr. Ruskin; a large series of photographs showing the development of architecture and sculpture in Egypt, Greece, and Italy; Hoelzel's fine series of geographical pictures, showing twenty-eight remarkable scenes in different parts of the world, from the Arctic zone to the Cape of Good Hope; Langl's pictures of architecture in Egypt, Assyria, Persia, India, Greece, Rome, and Mediæval Europe; Roberts's pictures of the Holy Land; a large collection of engraved and etched portraits of famous personages; pictures of common kinds of English trees as seen in summer and winter; of their large branches, twigs and leaves; of common wild and garden flowers, common English birds, humming-birds and wild animals, and of the beautiful use of plant and animal form in decorative work; a room full of pictures likely to interest children and their mothers; pictures of beautiful textile fabrics, vases, metal work, &c.; printed explanations of wood engraving, line engraving, etching, lithography, &c.; the tools, plates, &c., used in these processes, and pictures showing the gradual development of the processes; a small collection of Greek vases, and copies of Greek bronzes and coins; collections of Indian pottery and glass, of cheap European pottery, good in shape and colour, of beautiful textile fabrics, of wood carvings; a collection of Egyptian and Greek antiquities lent by Mr. Flinders Petrie, and one of Japanese swordguards lent by Mr. Ernest Hart; casts of Greek and Assyrian sculpture, including many slabs of the Parthenon frieze, with carefully compiled notes on each. One room is fitted up as a model artisan's dwelling—living room and bedroom; another is reserved for classes. In it we have begun to hold a free wood-carving class on two evenings each week and a free drawing class on one evening. An adjoining room, which holds about seventy people, is used as a lecture-room. In it Mr. Sowerbutts has kindly given two lectures on physical geography, and Mr. J. E. Phythian has lectured twice on the history of architecture and has several times read Andersen's and Grimm's fairy tales to crowded audiences of children. Mr. Gustav Behrens has given us a grand piano, which is placed in the largest room, and this has enabled the Rev. S. Farrington and some of his friends to give the first of what we hope to be a continuous series of entertainments (music instrumental and vocal, recitations, and short lectures), to be given twice a week.

Though nearly all our pictures are provided with very legible explanations, we find, as we expected to find, that few workpeople pay attention to any but those which clearly tell stories. The inhabitants of English towns know so little of beautiful country things, beautiful scenery and beautiful art, and of the history of other peoples, that they cannot be expected to look with interest at pictures representing such things. On the other hand, we find, as we knew we should, that all our pictures are made interesting to workpeople by any one who, feeling the interest of the pictures, talks about them in simple language. More explainers of pictures is one of our wants—persons who will make the pictures starting points of talk about art, history, physical geography, architecture, botany, or any other subject. There is room in the museum for twenty or thirty persons to work in this way at one time. Nothing is easier or pleasanter than such work. One says a few words to a child about the picture it is looking at, and half a dozen people at once collect to be talked to. We also want the help of persons who play and sing, read and write well, of those who will give short addresses on any wholesomely interesting subject. We should be glad to find volunteer teachers of wood-carving, drawing, metal work, or any other art, to give classes on the three nights each week on which the classroom is now unused.

All this work in which we seek fellow-workers is amongst the best work doing of our day. The evils which are ruining the bodies and minds of so large a part of the people of our towns cannot be checked except by the provision of better modes of spending leisure, for which interest in the beauty of nature and art is a pre-requisite, and interest in such beauty is equally necessary as a foundation of that skill in design which every one now sees that English workpeople ought to possess. Those persons who work at Ancoats Hall may, I think, feel sure that any successful humanising work they do there will not only influence the neighbourhood of Ancoats Hall, but will soon affect the management of other museums.

The Museum is closed to the public all day on Tuesdays, being reserved on Tuesday evenings for conversaziones of societies of workpeople. On other workdays it is open from two o'clock till dusk and from seven till half-past nine, and on Sundays from two till half-past five.

A Section of Applied Art has been formed by the Society of Arts. Six meetings will be held during the session, at which papers on the application of art to industry will be read. Among the members of the committee are Messrs. T. Armstrong, W. Crane, L. F. Day, Donaldson, Edis, Herkomer, Poynter, Sparkes, and Phené Spiers.

THE EDINBURGH MUNICIPAL BUILDINGS COMPETITION.

THE following correspondence is worth the attention of competitors for the Edinburgh buildings :—

The Right Honourable the Lord Provost of Edinburgh, &c. &c.

10 Abercromby Place, Edinburgh :
December 1, 1886.

My dear Lord Provost,—Municipal Buildings.—With reference to the discussion in the Town Council yesterday, it appears to me that the difference between us is one not of principle, but of fact. I understand your lordship's view to be that, in point of fact, a majority of the ratepayers desire the proposed Bill to be promoted and passed in the ensuing session of Parliament. I, on the other hand, feel assured that an overwhelming majority of the ratepayers condemn what they regard as the indiscriminate haste with which an ill-digested and half-considered scheme is being forced before Parliament. For my part, I shall be quite content to abide by the judgment of the ratepayers, as that may be ascertained in any open and reasonable manner, and I cannot doubt that your lordship will be equally willing to be guided by the public voice in the matter.

I would, therefore, suggest that your lordship should call a meeting of ratepayers, to be held in the music hall or other suitable place on an early day, so that the question between us may be fully discussed and finally determined. There will probably be separate meetings held in some of the wards, but these would in no way affect my proposal.

I may add that every day brings to me new and decided indications of the widespread, if not universal, disapproval by the public of the recent votes of the Town Council. I am satisfied that, if the majority should blindly persist in pressing forward the proposed Bill, they will not only place themselves in direct conflict with the ratepayers, but will also involve themselves and the city in consequences which they do not at present foresee.

Personally I regret that my public duty should have brought me into the position of opposing any scheme which has the sanction of your lordship's approval. But I am satisfied that the public interests demand that the scheme, if pressed forward at present, should be persistently and strenuously opposed at every step.

As the whole question is one of great public importance, I propose to send a copy of this letter to the press to-morrow, along with any answer which I may receive from your lordship.

I am, &c,
J. SMITH CLARK.

City Chambers, Edinburgh :
December 2, 1886.

My dear Sir,—I am favoured with your letter of 1st inst. regarding the proposed municipal buildings.

To your request that I should call a public meeting to discuss the question I cannot accede at the present stage. To do so would be to admit that the majority of the Town Council have not the confidence of their constituents, which, as Lord Provost, I have no right to assume ; and it would, besides, be of little use, as discussion in a public meeting could be satisfactory to no one.

The position at present is that the competing plans will be received by the end of January, and immediately after that date an assessor will be appointed to advise with the Town Council as to the selection of the best plans.

We will then be in a position to ascertain, as nearly as possible, the cost of the buildings, and such modifications as may be deemed necessary can then be made.

The whole matter of plans and cost will then be submitted to the ratepayers in such manner as may be thought best to secure public attention, and to elicit an expression of public opinion, and ample time will be given before the sitting of the Parliamentary Committee to discuss the question.

There is not the least desire on my part, or on the part of any member of the Council, to force the matter on an unwilling public, and I cannot agree with your assumption that a majority of the ratepayers are opposed to the action of the Town Council.

You have repeatedly spoken of the measure as an "ill-digested and half-considered scheme," but you have never condescended to state in what way it is so.

In the case of the Glasgow municipal buildings an Act was obtained and a site purchased two years before plans were advertised for, and after that the first plans were set aside and others obtained upon a greatly increased estimate. We have thought it safer that the cost should be ascertained *after* plans are received, but *before* the Bill goes into committee, and I think that is the wiser course.

I still believe that the public is with us in the desire to have suitable municipal buildings, and it is certain that several of the minority who voted with you at last Council meeting admit the necessity for new buildings and approve of the present site.—I remain, &c., THOMAS CLARK, Lord Provost.

10 Abercromby Place, Edinburgh :
December 2, 1886.

My dear Lord Provost,—I have yours, for which I am much obliged. In requesting your lordship to call a public meeting, I do not ask that you should assume that the Town Council had not the confidence of their constituents. What I desired was to apply a plain and palpable test to the question of fact which is in dispute between us, viz., whether the ratepayers approve or do not approve of our pressing forward the proposed municipal buildings scheme at the present time. It will be for the public to judge between us, and to deal with the position which I understand your lordship to take up, viz., that while you contend that the public is with you, you will take no step to give the public an opportunity of expressing its opinion.

I have repeatedly explained why I characterised this scheme as an ill-digested and half-considered one. We know nothing, even approximately, of the probable cost or extent of the buildings to be demolished, or of those to be erected. In short, we are in ignorance of every material fact, except that there are to be municipal buildings somewhere on or about the present site. I believe that this will be the first occasion on which a Corporation or individual has gone to Parliament in such a state of ignorance as to the scheme to be promoted. The case of Glasgow, as explained by your lordship, would appear to me to be an example rather to be avoided than to be followed, and, so far as I can gather, you are adopting its worst features. They had, apparently, only to change their plans and increase their estimates once. I fear we will not be so fortunate.—I am, &c., J. SMITH CLARK.

TESSERÆ.

Sketching from Nature.

J. EAGLES.

SKETCHES that take more than a couple of hours will generally be found untrue somewhere ; and it is far better to give the true impress and character of nature, both with regard to colour and effect, than to labour at detail too long, to the sacrifice of that which is of greater moment. Besides, one great charm of sketches is in their suggestive character ; they are not finished pictures, and not the worse on that account. We know it is the practice of many artists to go again and again to the same spot, and work day after day for a given time at one picture—in fact, to finish the piece, as they would say, from nature. This may be very well for some painters, and suit the character of their works ; but on the whole we think it a bad practice, for the following reasons. In the first place, unless a mere view be intended, the artist loses sight of the principle of art, that it is not imitation ; and that whatever his subject may be, after having taken the impress of it from nature, he has to add to it his own mind, which he will scarcely do when all his powers are tasked to the toil of an exact imitation. In the next place, such changes take place in most scenes, by the variations of light and shade, that beyond a few hours the work can hardly be said to be one of the same nature. And as to coming day after day to the same spot, few days are so alike as to make that practice safe for truth's sake. And what is of more importance still, it may be asked if the artist's mind's eye is in the same condition, may not new impressions be made, and the piece become converted in parts —a mass of incongruous alterations, a fatiguing labour in vain ? Even in painting pictures, we believe those works are the best where the whole subject most resembles a sketch, as put in at once upon the canvas in the course of a day, care being taken in all the subsequent work not to disturb this one character, for the mind works rapidly. After that first work comes technical knowledge and display, certainly of great value when it does not obliterate the mind's work. On every account, then, we think that sketching from nature should be a peculiar kind of painting, having a distinct beauty of its own, and its chief characteristic should be its suggestiveness. Herein lies its great charm ; we recognise nature, and see in it a glimpse of art ; and this is what nature does to the poet's sight, offering much and suggesting more. Art grows not out of the perfect but the imperfect. An exact, too accurate imitation, shows imitation to be the object ; it is for the outward sense, not for the creative mind. If this be so, there is a point of labour which the sketch should not reach ; if it do, it becomes a picture, a thing of art, in which the great principle of art, the working of the inventive mind, is wanting.

English and Italian Towers.

E. A. FREEMAN.

The likeness between our early towers and the Italian campaniles has often been remarked ; in fact, it is more than

likeness. The two things are absolutely the same. It is, of course, less striking in the grander and richer Italian towers; but take some of the smaller and ruder. There are towers both in Verona and in Venice which no one would feel to be out of place in company with Coleswegen's towers at Lincoln. In fact, with such examples as the church of the Apostles and the little church by the great Scala tombs at Verona, it can hardly be said that the English examples are ruder than the Italian. Yet these towers differ in nothing but their rudeness from the mighty campaniles of Murano and Torcello, and from the noblest of its class on this side of the Adriatic, the tower of St. Zeno at Verona. The tall, slender, unbuttressed tower, with its mid-wall shafts in the belfry stage, with its ornaments, if it has any, confined to flat pilasters and arcades, is the tower common to all Western Europe up to the eleventh century. We find it in our own island; we find it all over Germany from Schaffhausen to Bremen; we find it in all the valleys of the Pyrenees and in the heart of the Burgundian Alps. But Italy is its birthplace, and it is in Italy alone that we can study its origin and meaning. What at once distinguishes the Italian campaniles and the towers which follow their model, is their height and absence of buttresses. This last feature, indeed, they share with Romanesque buildings of all kinds: our own Norman in its purity has no true buttress; it never gets beyond flat pilasters. But in the towers of later date the buttresses become features of such special importance that an unbuttressed tower strikes us more than any other unbuttressed portion of a building. The height, again, is a characteristic of bell-towers as bell-towers; the low massive Norman tower always shows to most advantage as a central lantern; it is the descendant, not of the campanile, but of the cupola. The flat pilasters and arcades, which are the common ornaments of Romanesque buildings, assume a special prominence in the case of these tall towers, whose apparent height and squareness they seem to increase by dividing them by a series of vertical strips. These strips in a ruder form were long ago noticed as a characteristic of the so-called "Anglo-Saxon" style in England; but they are characteristic of it only as being one variety of this common primitive style. The Italian and the English towers differ, not as members of two different classes, but only as highly-finished examples of one class differ from ruder examples of the same. The same truth comes out also if we look a little more into detail. The long-and-short work at the angles of English towers, the great slabs of stone used in the construction of early doorways in England, and still more in Ireland, all are, as we soon learn at Verona, imitations of Roman masonry. So, again, such capitals, if we can so call them, as we see in the tower arch of St. Benet's at Cambridge are clearly copied from work like that in the arch-way of the palace called Theodoric's at Ravenna. The mid-wall shafts of the windows are well-nigh universal in the Italian towers, and a little further study of the details of the Italian Romanesque easily explain their history.

The True Use of Gothic Examples.

SIR G. G. SCOTT.

The revival of Pointed architecture in no degree necessarily involves, and cannot be in the least promoted by, the mere copying of ancient examples. The great object to be aimed at by the student is so perfectly to familiarise himself with the character of the ancient works of art, by taking every opportunity of visiting, sketching, and contemplating them, and so to imbue his own mind with its beauties and principles, as to be able naturally to design in it as the spontaneous and vernacular expression of his own architectural thoughts. The student of a foreign tongue will naturally at first mix up merely servile transcripts with his own broken attempts at composition, but when he has once mastered the language, he adopts it as his own, and can think in it, and express his thoughts in it, with fluency and ease. It is just so with the student of Gothic architecture; it is, it is true, his native language, but he has been long estranged from it, and perhaps taught to connect all his ideas of art with an exotic style, so that in studying that which is, in truth, his birthright, he is at first constrained to express his thoughts in it by a mixture of smattering and servility; but when his mind has once become familiarised with its principles, he feels that it is in every sense his own, and he then finds it easier to design than to copy—easier to clothe his ideas in correct expressions than in smattering and broken language.

Top and Bottom Flanges of Wrought-Iron Beams.

EDWIN CLARK.

It is obvious that if twelve tons per square inch were the ultimate tensile strength of wrought-iron, such beams should have the same quantity of material in both their upper and lower flanges. This is, however, not the case; the ultimate tensile strength is considerably greater—viz., nearly twenty tons—while the ultimate compressive strength is sixteen. The top and bottom flanges should thus be in he proportion of sixteen to twenty, or four to five, *i.e.*, the bottom flange should be four-fifths of the top flange for both to fail simultaneously, which is just the reverse of cast iron, where the lower flange is required to be six times greater than the upper on similar grounds. With wrought-iron work, where rivetted plates are used, the bottom alone is weakened by the rivets passing through the plates, the top remaining uninjured as regards compression, and on this account (neglecting the rivets in the calculation) little difference is practically made in the area of the top and bottom flanges of such girders.

Theorising in Art.

C. R. COCKERELL, R.A.

Philosophical discussions upon the sublime and beautiful will always be valuable as one of the means of instruction; but the subject is so subtle that it is not to be circumscribed by language, however logical. It is, after all, to genius we must look for the exact adjustment of those qualities on which the beautiful depend. The artist may lay down incontrovertibly his principles of art, but their adoption in particular proportions may not always succeed. To the practical student only belong the scruples and the grains of proportion, and it is in labour only combined with genius that the philosopher's stone is to be found by the artist. The speculative part of the fine arts, without the assistance of manual operation, can never attain perfection. Each department of art is of sufficient importance to occupy the whole attention of one man, but it is essential in an art where so many details are involved that the student should occasionally be awakened to an enlarged view of the subject, and it is for this purpose that I have in former lectures taken extended views of the history of our art, and directed your attention to the magnitude of its extent; for to know what has been done is to know what can be done. Charles V. said well that a man who possessed many languages became, in fact, multiplied into many individuals, and enjoyed in an increased degree the privilege of existence. And the same remark might be applied to the architectural historian, whose experience teaches him the peculiarities of different nations, and points out to him the propriety or otherwise of peculiar applications to particular circumstances.

Siena Cathedral.

M. VALERY,

The cathedral of Siena, one of the oldest, most splendid, and most characteristic in Italy, appears of divers epochs and architects, but its ensemble must go back to the thirteenth century. The present church, finished in 1331, was only to have formed one of the side naves of the grand edifice which had been projected, but was abandoned on account of the fatal plague of 1348. Among the numerous ornaments of the airy front of 1339, the statues of the prophets and the two angels prostrate before the name of Jesus are by Jacobo della Quercia. The busts of animals over the capitals allude to the cities allied with the republic: the griffin, Perugia; the horse, Arezzo, &c. The three busts over the door represent three Sienese saints. The religious and political reminiscences of the country are thus associated on the front of the temple. The steeple, an old tower of the Bisdomini, was covered with marble, and embellished from the designs of the brothers Agostino and Angelo, of Siena, sculptors of the beginning of the fourteenth century, disciples of the Pisan school, and the former was employed in the works of the cathedral from the age of fifteen years. One of the bells, in the form of a barrel, is dated 1148. The interior of the basilica, encrusted with black and white marble, with its bold and lofty roof of azure studded with golden stars, and its hexagonal cupola, is singularly religious and venerable in its aspect. The two majestic columns of the doorway, sculptured in 1483, support an elegant gallery with four basso-relievos representing *The Visitation*, a *Sposalizio*, *The Removal of the Virgin's Body*, *The Assumption*—excellent works but hardly visible. The painted glass of the circular window, executed in 1549 by the clever Sienese artist Pastorino di Giovanni Micheli, from the designs of Peirino del Vaga, is of extreme richness. Among the numerous series of popes on the frieze, the bust of Pope Zacharias is an ancient head of Pope Joan, thus metamorphosed in 1600 by the Grand Duke, at the request of Clement VIII. and the archbishop, Cardinal Tarugi. Mabillon endeavoured to find this bust of Pope Joan, but was unsuccessful. Montfaucon is wrong in saying that it is changed into the prophet Zacharias. The pavement, now unique, comparable to the most precious mosaics of Greece and Rome, but of Italian invention and Sienese execution, a vast *niello* in marble in the best style of composition, ought to be seen from above. It must be considered an error on the part of the Sienese artists to have placed figures in chiaro-oscuro on the ground, which cannot be trod upon without injury, and the pavement is consequently obliged to be covered. The sumptuous chapel *del voto* was erected by Pope Alexander VII. The superb carvings in wood of the choir stalls, desk, and seats of the hebdomadary belong to different periods between 1387 and 1569.

Timber for External Work.

T. W. SILLOWAY.

When a piece of framing is to be permanently exposed to the weather, it should be treated with one of the preservative solutions, and then thoroughly painted and sanded. Wood in a proper condition when felled, afterwards thoroughly seasoned, well saturated with diluted corrosive sublimate, and finally kept properly painted and sanded, is as durable as it ever can be. One caution it would be well to remember, namely, to refrain from applying paint or any preparation to wood before it is thoroughly seasoned; for should the outside be coated so as effectually to prevent impenetration from without, evaporation will also be prevented from within; therefore, all moisture that may be in the wood will be retained, and rot the piece. Another suggestion is to use timbers as small as the nature of the work will permit. It is a mistake to suppose that large timbers will continue good longer than small ones. The light spokes of a wheel will remain sound and strong for years after the tongue of the cart to which they belonged has entirely decayed. If a timber is sufficiently strong when first used (the requisite allowance being made for permanent strain), all has been done that prudence would dictate, since no increase of the dimensions of the piece will insure its longer duration. And, finally, it should be scrupulously remembered that timber will not certainly remain sound because a large portion, or even most of it, is in proper condition and well cared for. Only so much as is actually protected will retain its qualities, and any part so exposed as to injure the whole stick will as surely injure or destroy the unprotected part. Therefore the ends of timbers which are built into walls, also all surfaces in contact—as where the side or edge of one stick rests upon another, tenons, in mortises, &c.—should be supplied with air, kept dry, and in every way properly protected.

Struts and Ties in Carpentry.

SIR J. ROBISON.

It depends entirely on the position of the pieces in respect of their points of ultimate support, and of the direction of the external force which produces the strains, whether any particular piece is in a state of extension or of compression. The knowledge of this circumstance may greatly influence us in the choice of the construction. In many cases we may substitute slender iron rods for massive beams, when the piece is to act the part of a tie. But we must not invert this disposition; for when a piece of timber acts as a strut, and is in a state of compression, it is next to certain that it is not equally compressible on its opposite sides through the whole length of the piece, and that the compressing force on the abutting joint is not acting in the most equable manner all over the joint. A very trifling inequality in either of these circumstances (especially in the first) will compress the beam more on one side than on the other. This cannot be without the beam's bending and becoming concave on that side on which it is most compressed. When this happens the frame is in danger of being crushed and soon going to ruin. It is, therefore, indispensably necessary to make use of beams in all cases where struts are required of considerable length, rather than of metal rods of slender dimensions, unless in situations where we can effectually prevent their bending, as in trussing a girder internally, where a cast-iron strut may be firmly cased in it, so as not to bend in the smallest degree. In cases where the pressures are enormous, as in the very oblique struts of a centre or arch frame, we must be particularly cautious to do nothing that can facilitate the compression of either side. No mortices should be cut near to one side; no lateral pressures, even the slightest, should be allowed to touch it. We have seen a pillar of fir 12 inches long and 1 inch in section, when loaded with three tons, snap in an instant when pressed on one side by sixteen pounds; while another bore four and a half tons without hurt, because it was enclosed (loosely) in a stout pipe of iron.

Celtic Illuminators.

SIR M. D. WYATT.

Among the earliest "societies for the propagation of the gospel in foreign parts" were the bands who carried the cross to the regions of the North, and with it took those singular types of ornament which were slowly adopted by the Scandinavian artists during the tenth and eleventh centuries. The monks of Iona, under the great Irish saint and scribe, Columba or Columbkill, and their Anglo-Saxon disciples at Lindisfarne, under his friend St. Aidan, together with the Irish monks at Glastonbury, spread Celtic ornament in England, from which it had to a great extent retired with the expulsion of the ancient British. St. Boniface, the principal awakener of Germany to Christianity, carried with him his singularly ornamented book of Gospels, which is still preserved as a relic at Fulda. Similar evidence of the transmission of the art prevalent during the early centuries of the church in Ireland to other lands, by means of the missionaries who left her shores, is to be found in the books of St. Kilian, the apostle of Franconia, still preserved at Wurtzburg; in those of St. Gall, now in the public library of St. Gall, in the Canton of Switzerland which still bears his name; and in the very important series connected with the monastic institution founded by St. Columbanus, at Bobbio, in Italy, of which last Muratori has given an interesting catalogue. Many of these saints were themselves scribes, and their autograph copies of the Holy Gospels are still in existence, with the name of the writers in some cases, identifying the volumes and absolutely fixing their date. Thus we have the Gospels of St. Columba, the Leabhar Dhimma, or Gospels of St. Dhimma Mac Nathi, and the Mec Regol Gospels in the Bodleian Library. All of these are anterior to the ninth century, and are distinguished by an elaborate style of ornament, unlike any other European type. In delicacy of handling and minuteness of faultless execution the whole range of paleography offers nothing comparable to the early Irish and British manuscripts. When in Dublin some years ago I had the opportunity of studying very carefully the most marvellous of all, "The Book of Kells," some of the ornaments of which I attempted to copy, but broke down in despair. Of this very book Mr. Westwood examined the pages, as I did, for hours together without ever detecting a false line or an irregular interlacement. In one space of about a quarter of an inch superficial he counted, with a magnifying glass, no less than one hundred and fifty-eight interlacements of a slender ribbon pattern, formed of white lines, edged by black ones, upon a black ground. No wonder that tradition should allege that these unerring lines should have been traced by angels. The careful student of Carlovingian design cannot fail to trace in much that was done by the great Emperor of the Franks the influence of the Celtic sages who were nearest to his person.

The Teaching of Mathematics.

H. CONYBEARE.

There is no valid reason why applied mathematics should not be more generally substituted in our schools for pure mathematics, and why every example put before scholars should not be a practical instance of the application of mathematics to questions of business or construction. Such a mode of teaching would give a much greater interest to these studies—it would familiarise students with the use of mathematics, and teach them to regard the science of number as a facile tool of almost universal applicability to the everyday purposes of civil and military life. In the earliest works on algebra extant—by Brahmaguphta, who lived in the seventh century of our era, and Bhascara who flourished in the twelfth—there is a constant endeavour to give the examples an amusing character, sometimes carried to the excess of lowering science to the level of a lady's plaything. Take a few examples at random from Bhascara:—"Ten times the square root of a flock of geese, seeing the clouds collect, flew to the nearest lake; one-eighth of the whole flew upon the edge of the water amongst a multitude of water-lilies; and three couples were observed playing on the water. Tell me, my young girl with beautiful locks, what were the whole number of the geese?" Again, "Beautiful and dear Salivati, whose eyes are like the fawn's, tell me what is the number resulting from 135 taken into 12? If thou be skilled in multiplication, by whole or by parts, whether by subdivision of form or separation of digits, tell me, auspicious woman, what is the quotient of the product divided by the same multiplier?" Colonel Lloyd, one of the special commissioners of the Great Exhibition, in his report to Lord Granville, observes that "In France, so great are the facilities afforded by the Government educational establishments—such as the Conservatoire des Arts et Métiers and the Ecole des Arts et Manufactures—that the acquirement of high scientific knowledge in connection with interesting demonstrations and manipulations of all descriptions becomes to the youth of France so fascinating, that at an early age they often pass an examination showing such high qualifications in both science and the arts, that their services are sought for by all the manufacturing countries in Europe."

Stresses in Webs of Girders.

R. H. BOW.

It is too much the custom to represent a load at the centre of a girder as equivalent to twice that load spread uniformly over the span. It is so only as regards the longitudinal stresses at the mid-span, in so far as these are not affected by the stresses induced in the web. But in all other directions the effects of these loadings differ very materially: and therefore the one cannot be correctly substituted as a test in place of the other. When a test-load is placed on the mid-span, the whole length of the web is nearly equally subjected to certain oblique compressions and tensions occupied in transferring from the mid-span to each pier half of the central load. By a correct test-loading, or one of double the former amount, spread uniformly over the girder, the stresses in the web are very different, the part at the mid-span is nearly free from stress; but the parts near the supports are stressed to double the degree caused by the former load.

NOTES AND COMMENTS.

THE Cambridge Syndicate have grown alarmed about the danger of fire in the University buildings. A report has just been issued in which it is proposed to introduce fireproof doors and shutters for the openings between the rooms. The aid that was available by the presence of an architect as Slade Professor has been turned to account, and it is likely Professor MIDDLETON's recommendations will be carried out without any alteration.

THE sunken orchestra which was introduced by WAGNER, in order that there might be no temptation offered to the spectators to divert attention from the stage, is now adopted in some theatres. The arrangement has one great advantage, for if there are few instrumentalists the audience is no wiser. Sir GEORGE GROVE recommends that the invisible orchestra should also be adopted in concert halls where oratorios and cantatas are sung. He says that if the plan adopted by WAGNER for the theatre were brought into the concert-room—the orchestra and conductor sunk just out of sight of the audience, though in view of the singers, and the chorus and principals given more room and freedom and more proximity—there would be a better recognition of situation implied in the words, and fine music would gain in effect, because the story would be made more intelligible, and a great deal which has nothing to do with the words be removed out of sight. The rationality of an oratorio is not evident, and that form of composition has flourished nowhere so well as in England. Elsewhere it is supposed that the stage is the proper place for the display of dramatic music. It would be interesting to have the experiment tried of erecting such a concert-hall as Sir GEORGE GROVE suggests, but what would the instrumentalists say to the proposed position? In theatres they are not of much account, but the case is different in a concert-room.

AN interesting paper on cadastral surveys was read lately at the Institut of Geneva by M. MESSERLEY, a geometrician. It appears that a survey of the kind was executed many centuries ago in France. In 1359 CHARLES V. ordered a revision of one which existed, and in 1491 CHARLES VIII. made arrangements for a general survey of his kingdom. All these surveys were intended to aid in the assessment of taxes. The survey of Savoy, which was ordered by VICTOR AMADEUS in the eighteenth century, was also intended to define the limits of estates, and it is worth recording that ROUSSEAU helped in the work. The first cadastral survey of the Canton of Geneva was made in 1475, when a special war tax had to be levied, but a survey of the city was not made until 1732. Prussia, which is such a model of organisation, has not overlooked cadastral surveying, and it may be noted that the direction is in charge of the great master of tactics, Marshal MOLTKE. When the Ordnance Survey is complete, this country need not be afraid of a comparison of plans with any on the Continent.

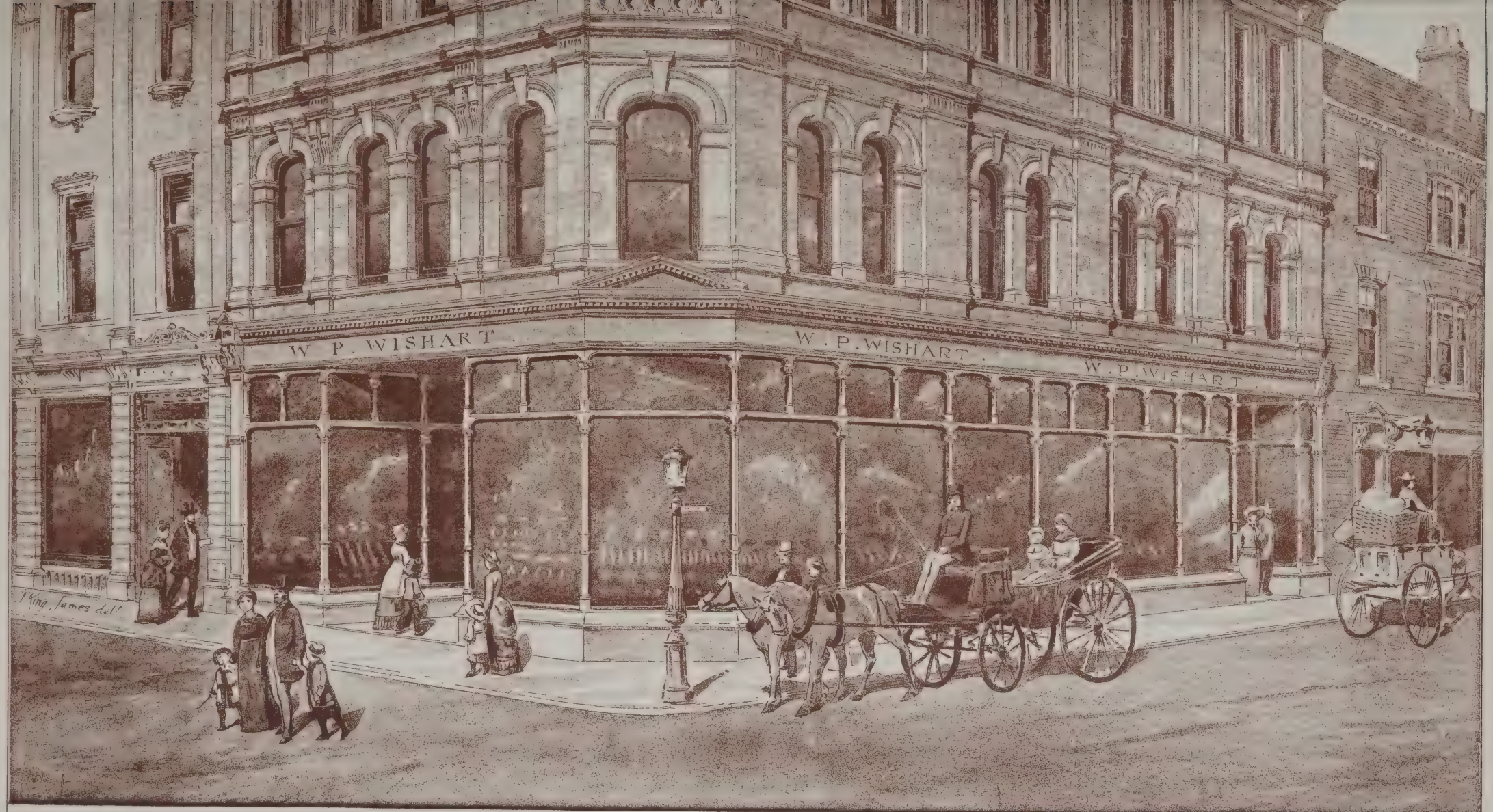
WE described lately the conditions of the competition for the decoration of the Mairie of Pantin, one of the suburbs of Paris. The sum of 36,000 francs is to be expended. No less than seventy painters sent in sketches. It was arranged that the competitors could select three artists to serve as jurors along with the official representatives, and the choice fell on MM. PUVIS DE CHAVANNES, CABANEL, and OLIVER MERSON. Pantin is not a place with a history, and therefore one class of illustration must be foregone. Neither can it be said to have any special industry to form a subject for a realistic work. Destiny is evidently inimical to the place. According to the etymologists, the name ought to be Pentin, suggestive of a *pente* or incline, but the village has always stupidly persisted in standing on a level plain, and will not be correct in its orthography. With a slope in one of its streets it would be possible to depict the suburb as if it were precipitous in approach and picturesque. It will not even afford ground for a decent landscape. The subjects had, of necessity, to be typical or allegorical, and many of the works were more suggestive of Arcadia than of Paris. There were various representations of an ideal Fête de la République, and of the different ages of man. In one, MERCURY was seen presenting the Pantin workman and family to the Genius of the Republic; in another, Fame was introducing the Spirit of Commerce to the Pantinites; the Age of Gold reappeared on canvas, and *Vita rustica*, which is the same thing. Seeing the shortcomings or the neglect of the annalist, one competitor took it for granted that the fair of Pantin, which takes place on the second Sunday in August, must be of ancient date, and he therefore imagined what it was like in the time of PHILIP AUGUSTUS, or A.D. 1215. Several of the artists seized the erection of the mairie as a theme, and represented the inhabitants as directing the construction of the building. The sketch which seemed to gain most approval was one in which Pantin was made the scene of a struggle to keep BLUCHER out of Paris in 1814. It was by M. SCHOMMER, and he has been selected, along with M. HENRI LEVY and LAFON, to prepare the panels for the second competition.

THE directors of the Yorkshire Penny Bank were able to institute a competition for a new building in Halifax among the following architects, viz. :—Messrs. KELLY & BIRCHALL, PERKIN & BULMER, SMITH & TWEEDALE, and Mr. W. H. SHARP and Mr. KAYE of Leeds; Messrs. MILNES & FRANCE, of Bradford, and Messrs. BUCKLEY & Son, of Halifax. It was arranged that the author of the first design should receive the commission, and that the remaining competitors should each receive fifteen guineas. This was a piece of fair dealing that is worth the imitation of bodies with more sounding names. The design by Messrs. PERKIN & BULMER was unanimously chosen at the meeting on Friday. The building is to be Gothic in style, and the walls will be of wrought stone. At the rear will be a wool warehouse. The cost will be about 7,000*l.*

L'Art is paying a tribute to the season by the publication of two Christmas numbers, the first of which has just appeared. The principal etching is after one of the lamented ULYSSE BUTIN's studies of sailors, and this *mousse*, or cabin boy, is surprising in its approach to the painter's style. There is also a plate of HOLBEIN's design for JEAN SEYMOUR's cup, and a reproduction of an etching by PAUL HUET. The text is full of engravings, and among the articles may be signalised those on American museums, French woodwork, LIGIER RICHIER, a sixteenth-century sculptor; and the Musée Correr at Venice.

IN July last the Swiss Consul in London announced to the Foreign Secretary that a Conference on International Copyright was to be held in Berne on Sept. 6. After the usual quantity of correspondence had passed the Conference did meet, and there were representatives present from Germany, Belgium, Spain, United States, France, Great Britain, Haiti, Italy, Japan, Liberia, Switzerland, and Tunis. How the authors and artists of Haiti, Liberia, and Tunis are to become gainers by an amendment of copyright regulations is not apparent, but diplomacy is always unfathomable. A draft has been prepared which shows the lines on which an International Union for the Protection of Copyright is proposed to be based. Authors and artists of any country belonging to the Union are to have the same rights in another of the countries as belongs to a native. Among the artistic property protected are works of design, painting, sculpture, and engraving; lithographs, illustrations, geographical charts; plans, sketches, and plastic works relative to geography, topography, architecture, or science in general; in fact, every production whatsoever in the literary, scientific, or artistic domain which can be published by any mode of impression or reproduction. It is proposed to establish an "Office of the International Union for the Protection of Literary and Artistic Works." This office, of which the expenses will be borne by the administrations of all the countries of the Union, is placed under the high authority of the superior administration of the Swiss Confederation, and works under its direction. The functions of this office are to be determined by common accord between the countries of the Union. The expenses are not to exceed 60,000 frs. a year. Subsequently it was agreed to consider photographs as works of art, and to give them legal protection.

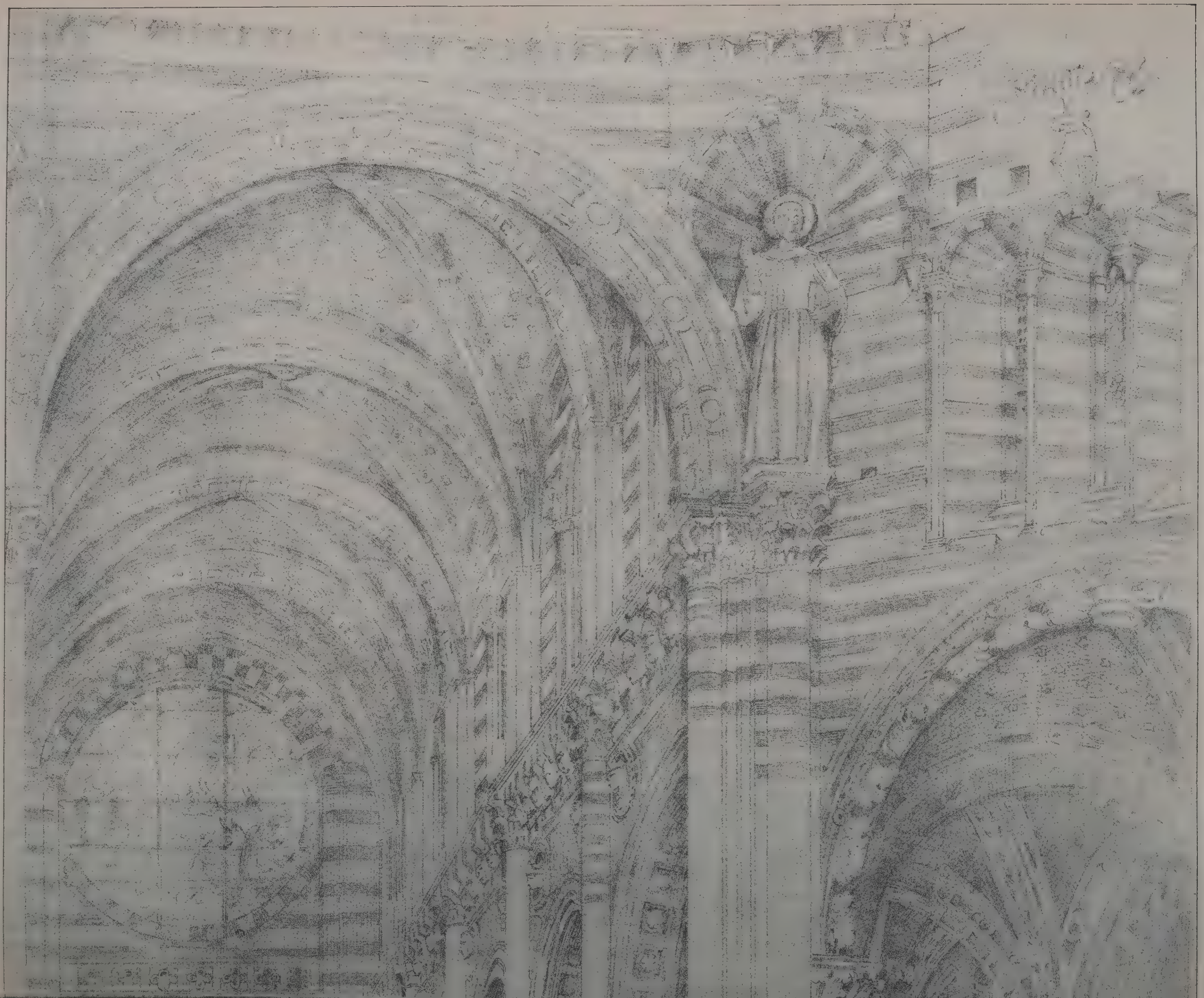

WISHART'S

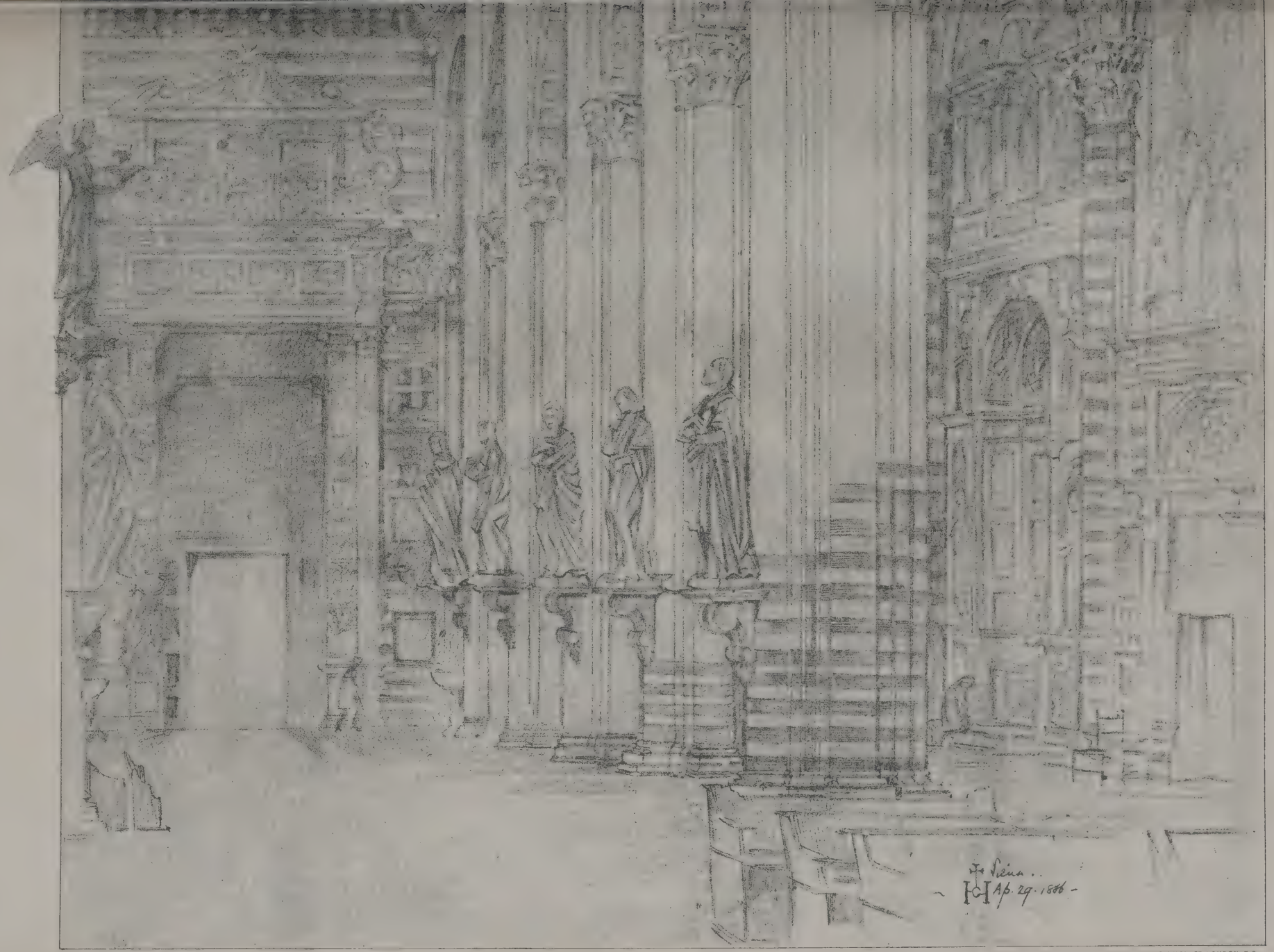


BRIGHTON : NEW · PREMISES · IN · NORTH · STREET · FOR · Mr · W · P · WISHART ·

Charles E. Clayton.
Ernest Black.
Charles. S. Wells.
ARCHITECTS.

INK-PHOTO SPRAGUE & Co 22, MARTINS LANE CANNON ST LONDON E.C.

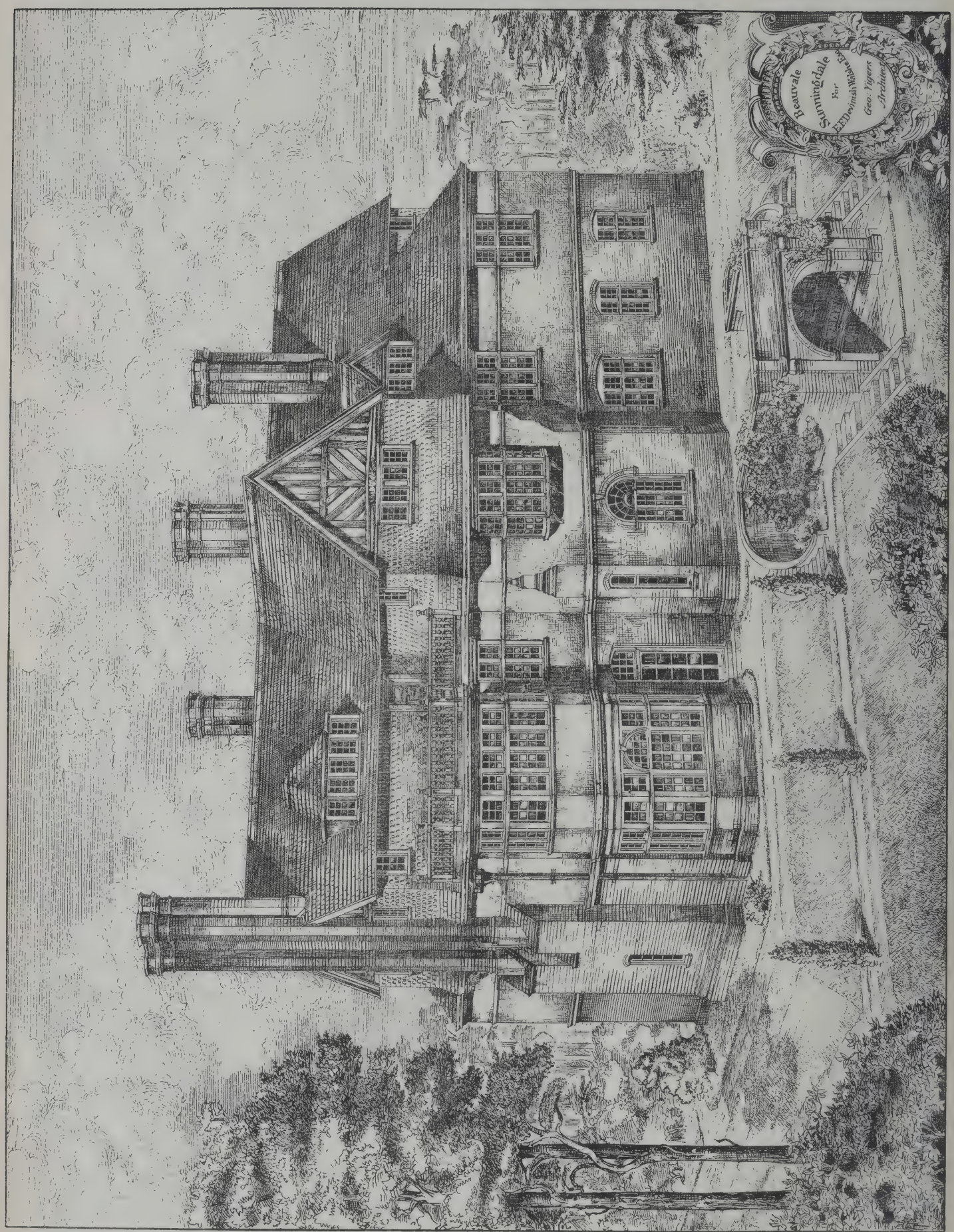




G C HORSLEY DEL.

INK PHOTO SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON E.C.

THE CATHEDRAL, SIENA.


Beaurale
Sunningdale
For
E.F. Devinish Weaver Esq.
Geo. Vigers
Architect



St. John's House for Children, Brighton.

CHARLES E. CLAYTON & ERNEST BLACK, Architects.

The Architect, Dec.r 10th 1886.

ILLUSTRATIONS.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 41. INTERIOR, CATHEDRAL, SIENA.

NEW PREMISES, NORTH STREET, BRIGHTON.

THESE premises, which have been recently opened by Mr. W. P. WISHART, of Brighton, occupy a prominent corner position in the leading business thoroughfare of the town. The old shops which they replace were built in the days when Brighton was a royal residence, and were of irregular shape, although not of picturesque appearance, but by an arrangement with the Town Council the new buildings were so set back from the old frontage as to give a uniform line and a greatly improved footway for the public. The contractor for the whole of the works was Mr Councillor BOTTING, and the architects, Messrs. C. E. CLAYTON and E. BLACK, of Brighton, and Mr. C. S. WELLS of London.

BEAUVALE, SUNNINGDALE.

THIS illustration is taken from a drawing that was exhibited this year in the Royal Academy. Mr. GEORGE VIGERS is the architect of the building.

ST. JOHN'S HOME FOR CHILDREN.

FOR some time past an excellent but unobtrusive work has been carried on in two inconveniently small houses at the east end of Brighton, where convalescent children of the poorer classes have been received and well cared for, until the sunny air of London-super-Mare has restored them to health. The new building illustrated is now being erected on an elevated site above Brighton College and on the edge of the Downs, but as the lady superintendent and organiser of this useful charity will not run into debt, only about half the building shown will be completed at present, unless the necessary funds for the whole are subscribed. The building is being erected by Mr. JAMES BARNES from the plans of Messrs. C. E. CLAYTON and ERNEST BLACK, of Brighton.

THE ARCHITECTURAL ASSOCIATION.

THE fourth ordinary meeting of the Association was held on Friday evening, Mr. J. A. Gotch, president, in the chair.

Donations to the library were announced, and votes of thanks awarded to the donors.

The following gentlemen were elected members :—Messrs. C. Bywater, C. J. Willett, E. Fagg, T. McLaren, A. H. Clark, Vincent Craig, H. Goodman, R. O'B. North, G. E. Nield, E. Marshall, C. W. Harvey, A. Turnbull, C. E. Audoire, S. French, A. Collins, J. M. Elton, J. D. Scott, H. S. Tiffin, C. A. Tijou, H. S. C. Cory, R. D. Wary, J. Borrowman, W. G. Morrison, C. H. Freeman, F. R. Taylor, and H. D. Lloyd.

Prizes.

Mr. H. D. APPLETON, hon. secretary, announced additional prizes offered for competition in the present session. A prize of 10*l.* by Mr. T. Blashill for the study of Italian architecture; 5*l.* by Mr. Arthur Cates for the student passing the R.I.B.A. examination; and three guineas by Mr. Ernest Turner, to be given in the elementary classes, the conditions of which were being arranged by the committees, and would be posted in due course to the members.

Mr. T. PRIDGIN TEALE, M.A., read a paper on

Fireplaces.

Mr. Teale said he gladly had taken this opportunity afforded him of advancing a work that had been taken up to persuade the nation to abandon the wasteful, soot-producing, inefficient, and ill-principled methods of burning coal for domestic purposes almost universally in vogue. He proceeded then to consider the principles of construction of fireplaces, and laid down for discussion the following :—

Rules of Construction.

1. As little iron as possible.

2. The back and sides of the fireplace should be of brick or firebrick.

3. The firebrick back should lean over the fire, not lean away, at an angle not greater than 70 degrees.

4. The bottom of the fire, or grid, should be deep from before backwards, probably not less than 9 inches for a small room, nor more than 11 inches for a large room.

5. The sides, or covings, should be vertical, but inclined to one another, as the sides of one equilateral triangle.

6. The slits in the grating or grid should be narrow, not less than $\frac{1}{4}$ inch nor more than $\frac{3}{8}$ inch in width.

7. The front bars should be vertical, that ashes may not lodge and look untidy; narrow, perhaps $\frac{1}{4}$ inch in thickness, so as not to obstruct heat; and near together, perhaps $\frac{3}{4}$ inch apart, so as to prevent coal and cinder from falling on the hearth.

8. There should be a rim 1 inch or $1\frac{1}{2}$ inch in depth round the lower insertion of the vertical bars.

9. The chamber under the fire should be closed by a shield or "economiser."

10. Whenever a fireplace is constructed on these principles, it must be borne in mind that a greater body of heat is accumulated about the hearth than in an ordinary fireplace. If there be the least doubt whether wooden beams possibly run under the hearthstone, then an ash-pan should be added, with a double bottom, the space between the two plates being filled with artificial asbestos, $1\frac{1}{2}$ or 2 inches in thickness.

11. See that no woodwork comes within 10 or 12 inches of the back of the fire.

The advantages resulting from the adoption of this model fireplace were then detailed. The saving of coal was probably never less than one-sixth, rarely less than one-fourth, not unfrequently one-third, and some persons declared that in individual grates the saving had been one-half; to be within the mark, a possible saving to the country of one-fourth, which meant coals gratis for three months in the year. Next in saving of labour. Every ton of coal saved meant 112 coal-pans fewer to be carried by the servant. If the model fireplace were adopted, no cinders fell on the hearth. No sweeping up of the hearth was needed from morning till night; there was very little ironwork and no bright steel to be polished; and no constant attention lest the fire should go out. As to saving of dust, he had the strongest testimony as to the reduction of dust in rooms and in kitchens following the adoption of the "economiser." The reduction occurred in many ways. The dust that fell on the hearth was boxed in by the "economiser," and so could not fly about the room. There was no poking of the bottom of the fire to remove dead cinders and dust, which choke the fire and make it burn dead, as the fire remained red at the bottom and the combustion of cinders went on even when they were in contact with the bars of the grating, which were kept hot by the "economiser." The periodical sweeping of the hearth and the clearing away of cinders and ash from beneath the fire was done away with, and the ashes needed clearing away from their chamber no oftener than once or twice a week. The saving of noise in the sick-room was also considered. Another advantage described was increase of warmth as distinguished from increase of heat—heat as a mechanical force being one thing, and heat as conveying comfortable physiological warmth to the human body being another. Several instances had been told to him of rooms which various fireplaces had failed to warm having become perfectly warm and comfortable in every way after the adoption of this system. The remarkable fact might often be observed that on entering the doorway of a room you could at once feel the warmth from the fire, and at the same time you might sit close to such a fire without being scorched.

As to little need of attention, a fire might as a rule be left four or five hours, sometimes six or seven from mending, and still when mended would quickly burn up. This resulted from the fact that besides the small body of coal on a grid, still red hot, there was a large body of heat stored up in the floor and walls of the chamber under the fire. What a boon this quality was would be realised by the occupants of offices and lodgings, who knew to their cost the misery of returning to their room on a cold day to find the fire out, or newly mended with a mass of coal that had quenched the remnant of heat in the fire, and did not blaze up for half an hour or more. Another advantage: the fireplace was warm the following morning. The heat stored in the firebrick was slowly given off after the fire went out during the early hours in the morning and prevented chilling of the room, whilst the heat that still remained secured rapid burning up of the fire when lighted, if indeed there were not some burning embers still left from the fire of the night before. There was strong reason to believe that the reduction of soot and smoke by these fireplaces, was very great, but he had not yet brought this point within the range of precise measurement. He would ask anyone interested in the point to take every opportunity of watching the smoke issuing from the chimney of one of these fireplaces, and compare it with the smoke from ordinary fireplaces. Lastly, there was an advantage which might be claimed from the architect's point of view. In advocating the reduction of iron to a minimum, and the substitution of brick at the side, back, and face of the fireplace, he was recovering for the architect one of the most important

elements in house-building for artistic and constructional design, which had of late been too much under the sway of the worker in iron, to the great loss of the community.

An informal discussion attended the reading of the paper, the discussion being taken clause by clause, the speakers being the President, Messrs. Cole A. Adams, M. B. Adams, Hilton Nash, Leonard Stokes, Brodie, Notley, and G. A. Pryce Cuxon.

On the motion of Mr. M. B. Adams, seconded by Mr. Notley, a vote of thanks was passed to Mr. Teale for his paper.

THE LATE J. M. BARCLAY, R.S.A.

MANY will hear with regret of the death of this well-known and much respected member of the Royal Scottish Academy, which took place, says the *Scotsman*, on the 1st inst., at his residence, 11 Forres Street, Edinburgh. Mr. Barclay attended the general meeting of the Academy on the 10th ult., and took an active part in the important business then transacted. He was struck down next day with an inflammatory internal complaint, from which at first no serious result was anticipated. The disease was successfully combated, but from the state of prostration in which it left him he was unable to rally. He was seventy-five years of age. The early art career of Mr. Barclay, like that of not a few men who have attained to some position in this profession, is not without its romantic side. Born in the fair city of Perth when the century was young, he early displayed a taste for drawing, to gratify which became an absorbing part of his daily life. At the Perth Academy, where he was educated, there was a master who went by the familiar name of Dicky Junner, who gave lessons in the art. In his room was a work of his own, the portrait of a Highlander, which was regarded by his youthful pupils as a perfect masterpiece. It was nothing to them that the carpet had been measured off with a ruler, and showed the lines; it was the standard to which they appealed, and young Barclay often stood admiringly before it, wondering if he would ever paint such a portrait. It is a somewhat remarkable incident that many years afterwards the identical portrait found its way to Mr. Barclay's studio in Edinburgh—the then owner being desirous that something might be done to give it a more life-like appearance. Thomas Duncan, A.R.A., had attended the same school, and "Dicky" claimed them both as distinguished pupils. Barclay was on intimate terms of friendship all his life with Duncan, and used to tell a good story of the distinguished painter, who is best remembered by his Jacobean paintings. Awaking early in the morning, he was amazed to see one of his large pictures—it was *Prince Charlie entering Edinburgh* or the *Charles Edward protected by Flora Macdonald after Culloden*—hung at the head of Duncan's bed, while he himself was earnestly studying it. Duncan felt there was something wrong with it, but could not make up his mind what it was; he had been unable to sleep all night, and had had in the picture the first thing to try to get it put straight. Mr. Barclay's father, having little knowledge of the higher walks of art, thought he was doing his duty by his boy, and humouring his bent at the same time by placing him in a civil engineer's office. There he remained for some time, learning, at all events, in a systematic way the elements of precise draughtsmanship, which came not amiss in after life. Barclay's first love, however, was not displaced by engineering. In order to practise painting he was wont at this period to get up at four in the morning, and work at his easel until it was time to go to the office for the day. He painted his sister's portrait in these early hours; but the sitter, not having the same enthusiasm, often fell asleep. This interesting portrait is still in the possession of a relation of the family. By-and-by Barclay came to Edinburgh to become a student of Sir William Allan in the Trustees' Academy, his student's career being not unmarked by the hardships which beset a youth from the country whose purse is not too well lined. One of Barclay's first commissions in Edinburgh came to him in a curious way. His landlady was proud of her artist lodger, and liked to exhibit him and his pictures. One day, when financial affairs were low, a gentleman was brought in to see his pictures. He offered the young artist 5*l.* and a new easel if he would paint his portrait. The offer was gladly accepted, and the portrait then painted is now in the possession of, and greatly prized by, the Dean of Guild of the city. After he became a full-fledged artist Mr. Barclay returned to Perth, and there practised his profession with great success for a considerable number of years. He painted the portraits of nearly every magnate in the county, and works of his are to be found in nearly every house of any note in this district. The first portrait which really brought him into public notice was that of the late Duke of Athole—a work now in the possession of the Duchess Dowager. It was exhibited at the Royal Scottish Academy, and it also appeared on the walls of the Royal Academy and the Salon. To it he in great measure owed his election as an Associate of the Royal Scottish Academy in 1863. Shortly after this he removed to Edinburgh, where his hands were kept pretty fully occupied in the production of presentation portraits and more private commissions. Among other excellent full-size portraits which he painted were those of Judge Townsend, Lord Kellie, the Rev. Dr. Paul, the present Duke of Athole (1877), and Lieutenant-Colonel Burnley Campbell, with his horse. These and many others were exhibited at the Royal Scottish Academy exhibitions, for he believed in the Academy, and thought it ought to get the best his brush could produce. In his younger days he made sketches for ideal pictures, but had little time to prosecute this branch of his art. His historical pictures, *The Gowrie Conspiracy* and *An Incident in the Life of Bruce*, however, will be remembered; and he contributed from time to time small domestic genre pictures which rarely missed in interest. Mr. Barclay was elected an Academician in 1871, being then nearly sixty years of age; and, on the death of Mr. Perigal, he was elected to the office of treasurer. He was an intimate friend of the late Kenneth Macleay; but, indeed, in the Academy his geniality and kindly disposition secured him the esteem of all with whom he came in contact. In the Life School—of which he was a visitor, with but one break of a year, from 1874 till his death—he was a great favourite with the students; and at the meeting of the Academy the tribute paid to his memory by the President was felt to be well deserved. Though in his later years he was greatly bent by rheumatism and other causes, he was in his youth a fine handsome fellow, 5 feet 11 inches in height, delighting in athletic exercises. He had a great taste for music, and was an excellent singer—his songs being ever in great repute at the symposiums of the Academy, at his own table, or at the table of his friends. As a portrait painter, Mr. Barclay made for himself an excellent reputation; as a man, he leaves behind him many sunny memories, which his friends will long cherish. He is survived by a widow and two daughters.

THE STORY OF A STATUE.

VISITORS to the Louvre of late may have noticed a remarkable little marble statue labelled *A Young Athenian Girl*. The story of its discovery and acquisition, just disclosed by the *Temps*, forms a curious page in the history of antiquities, and suggests that public like private collectors are not always willing to respect local laws. A peasant of Patissia, while digging in the fields, suddenly came across an old statue. Knowing that the Greek law forbids the exportation of ancient objects of art found in the country, and that foreign amateurs are always ready to pay a high price for them, he at once took it home and hid it under a heap of faggots. He then went to the French ambassador, who was well known for his love of such relics, and offered it to him for 12,000 frs. The ambassador repaired secretly to the peasant's dwelling to examine it, and found it was a bonâ fide gem of the fourth century. He telegraphed the discovery to the French Minister of Fine Arts, who authorised him to conclude the bargain. But there was a serious difficulty to overcome, and that was to get it out of the country without being detected by the Customs authorities. After some reflection, the ambassador instructed the peasant how to set to work. He was to hide the statue in a cartload of vegetables, drive down to a creek on the seashore, where he would find a boat from the French sloop stationed at the Piræus waiting to receive him. The job was performed successfully. The statue, in the midst of the vegetables, was shipped on the boat, and the 12,000 frs. were handed to the peasant by the captain as he left the shore. On the arrival of the statue in Paris it was placed in the Louvre, not far from the famous *Venus of Milo*, while its discoverer, the Greek peasant, is now leading the life of a small gentleman farmer on the proceeds.

VALUE OF SCOTTISH PAINTINGS.

ON Saturday last a collection of paintings formed by the late Mr. Robert Horn, at one time Dean of the Faculty of Advocates, was sold in Edinburgh. Among the highest prices were the following, viz.:—

"Wearing Ship," by Sam Bough, R.S.A., water-colour, 10½ by 11, 26*l.* 5*s.*

"The Fishmarket at Rome," engraved in the "Landscape Annual" for 1830, page 267, by Sam Prout, 8½ by 13, 68*l.* 5*s.*

"On the Gareloch," by John Milne Donald (1858), 16½ by 12, 24*l.* 3*s.*

"Dysart—Ravensheugh Castle," by Sam Bough, R.S.A. (1856), 11½ by 8, 56*l.* 14*s.*

"Edinburgh from Canonmills," from the Collection of Stewart of Duncarn, by Miss Ann G. Nasmyth, 15½ by 11½, 26*l.* 5*s.*

"The Gleaner," by Robert Herdman, R.S.A. (1862), water-colour, 5 by 7, 54*l.* 12*s.*
"Berwick-on-Tweed," by Sam Bough, R.S.A., water-colour, 13½ by 9, 27*l.* 6*s.*
"Jingo-Ring," by Hugh Cameron, R.S.A. (1861), 11½ by 8, 115*l.* 10*s.*
"A Mayfield," by Sam Bough, R.S.A. (1859), 17½ by 11½, 57*l.* 15*s.*
"Pifferaro," by Robert Herdman, R.S.A. (1855), water-colour, 10½ by 14½, 20*l.* 9*s.* 6*d.*
"Cadzow Forest: Oak Trees breaking into Leaf," by Sam Bough, R.S.A. (1858), 23½ by 15½, 105*l.*
"The Fruit Seller," by Robert Herdman, R.S.A. (1855), water-colour, 14½ by 10½, 21*l.*
"Perch Fishing, County West Meath," by Erskine Nicol, A.R.A., 14 by 8, 78*l.* 15*s.*
"The Spring in the Wood," by Peter Graham, A.R.A., 25½ by 30, 58*l.* 16*s.*
"Naworth Castle," by Sam Bough, R.S.A. (1857), 17½ by 11½, 94*l.* 10*s.*
"On the Kelvin (autumn)," by John Milne Donald, 46 by 29½, 173*l.* 5*s.*
"The Italian Cradle," by Robert Herdman, R.S.A., water-colour, 15 by 10½, 28*l.* 7*s.*
"Herring Boats Going to Sea after a Storm," by Sam Bough, R.S.A., 35¾ by 23½, 84*l.*
"St. Dunstan and the Devil," by Sir W. Fettes Douglas, P.R.S.A., 29 by 24, 44*l.* 2*s.*
Portrait of Henry Mackenzie, Esq., "The Man of Feeling," by Sir Henry Raeburn, 24½ by 29½, 115*l.* 10*s.*
"Wild Cattle, Cadzow Forest," by Sam Bough, R.S.A. (1858), 35½ by 23½, 94*l.* 10*s.*
"Children at Play in a Churchyard," by W. M'Taggart, R.S.A., 10 by 8, 63*l.*
"Giovanella," by Robert Herdman, R.S.A. (1856), 27½ by 35½, 105*l.*
"Lahercost Abbey," by Alex. Fraser, R.S.A. (the cattle by Sam Bough, R.S.A.), 13½ by 6, 42*l.*
"Furness Abbey, Lancashire," by Sam Bough, R.S.A. (1856), 42 by 25½, 199*l.* 10*s.*
"Fishing Boats Running into Dysart," by Sam Bough, R.S.A. (1854), 35½ by 23½, 267*l.* 15*s.*
"A Castle near Kilmarnock," by Horatio M'Culloch, R.S.A., 15½ by 9, 28*l.* 7*s.*
"Lucy, the Woodman's Daughter," by Robert Herdman, R.S.A. (1867), 24½ by 29½, 147*l.*
"Landscape, North Wales," by Alex. Fraser, R.S.A., 18 by 9½, 58*l.* 16*s.*
"Fécamp Harbour, Coast of Normandy," by John Wilson, sen., 41 by 29, 29*l.* 8*s.*
"Canal Lock and Old Mill," by Alex. Fraser, R.S.A., 39½ by 21½, 109*l.* 10*s.*
"Sheep Shearing," by Sir George Harvey, P.R.S.A., 47½ by 29½, 126*l.*
"The Silver Cord Loosed" (the original of the well-known engraving), by Sir Noel Paton, R.S.A., 36½ by 27½, 168*l.*
"Inchcolme Priory," by Sam Bough, R.S.A. (1857), 35½ by 25½, 105*l.*
"A Harvest Rig in the East Neuk," by Hugh Cameron, R.S.A. (1862), 35 by 23½, 78*l.* 15*s.*
"A Salmon Weir on the Lledwyr," by Alex. Fraser, R.S.A. (1857), 23½ by 17½, 43*l.* 1*s.*
"Beside the Fountain, Italy," by Robert Herdman, R.S.A. (1856), 15½ by 24½, 78*l.* 15*s.*
"Scene on Hampstead Heath; London in the Distance," by Patrick Nasmyth (1818), 13½ by 9½, 115*l.* 10*s.* Besides the signature on the picture, there is on the back of the panel, in the artist's handwriting, "P. Nasmyth, one of his best bits, March 17, 1818."
"Bunyan with his Blind Daughter selling laces at the door of Bedford Gaol," by Sir George Harvey, P.R.S.A. (1857), 47 by 41, 157*l.* 10*s.*
"Moor Scene—Island of Mull," by Sam Bough, R.S.A., water-colour, 8 by 5, 21*l.*
"David's Evening Hymn," by Robert Herdman, R.S.A. (1858), 23½ by 29½, 210*l.*
"The Way to the Village—The Turf-boat, County West Meath," by Erskine Nicol, R.A., 50 by 33, 136*l.* 10*s.*
"Landscape—Evening," by Horatio M'Culloch, R.S.A., 15½ by 9, 45*l.* 3*s.*

The following four lots, by Sir George Harvey, P.R.S.A. (1858–59), illustrative of "Auld Lang Syne," are engraved by the Royal Association for Promotion of the Fine Arts:—
"We Twa hae Ran about the Braes," 29½ by 23, 57*l.* 15*s.*
"We Twa hae Paidl't in the Burn," 29½ by 23, 50*l.* 8*s.*
"But Seas between us Braid hae Rolled," 29½ by 23, 52*l.* 10*s.*
"We'll Tak' a Cup o' Kindness yet," 29½ by 23, 36*l.* 15*s.*

"Road Scene near Hamilton," by Alex. Fraser, R.S.A., 35½ by 25½, 110*l.* 5*s.*
"Dr. Guthrie Fishing in Lochlee," by Sir George Harvey, P.R.S.A. (1856), 47½ by 29½, 54*l.* 12*s.*
"The Trossachs" (water-colour), by Sam Bough, 14 by 12, 26*l.* 5*s.*
"Portrait of Thomas Carlyle" (the original), by Robert Herdman, R.S.A., 22½ by 26½, 78*l.* 15*s.*
"Portrait of Thomas Carlyle," by Robert Herdman, R.S.A.; in crayon, drawn from life, Chelsea, April 22, 1875, the study for the preceding portrait, 9½ by 14, 29*l.* 8*s.*
"Portrait of Sir Theodore Martin," by Robert Herdman, R.S.A., 24½ by 28½, 21*l.*
"The Falls of Kilmorack," by Rev. John Thomson, 53 by 33, 52*l.* 10*s.*
"Peeling Bark, Cadzow Forest" (water-colour), by Sam Bough, R.S.A., 14 by 10½, 21*l.*
"Ardargie Linn, near Perth," by J. H. Cranstoun, of Perth, 49½ by 39½, 24*l.* 3*s.*
"The Moor of Ferragon, Perthshire," by Sir George Harvey, P.R.S.A., 53½ by 29½, 65*l.* 2*s.*
"Crossing the Ford" (water-colour), by Sam Bough, R.S.A., 20½ by 13½, 27*l.* 6*s.*
"In Glenfalloch" (water-colour), by Alex. Fraser, R.S.A., 14½ by 10½, 21*l.* 10*s.* 6*d.*
"Coast Scene, Aberdour" (water-colour), by Sam Bough, R.S.A., 10 by 7, 21*l.*
"Logan Braes," by A. H. Burr, 39 by 32, 126*l.*

ROYAL HIBERNIAN ACADEMY.

THE annual report of the Council of the Academy for the year 1885–86 states that the Exhibition, which opened on Monday, March 1, and closed on Saturday, June 12, remained open fifteen weeks, during seven weeks of which it was open by gaslight at a reduced charge of 1*d.* It contained 609 works, against 572 in that of the preceding year, showing an increase of 37 works, and the Exhibition was considered much above the average in point of interest and merit. The season tickets numbered 510. The day admissions at 1*s.*, 4,947, and the evening admissions at 1*d.*, 16,467, and the Sunday admissions, for the six Sundays it was opened in the afternoon at 2*d.*, 768. The purchases amounted to 1,147*l.* 17*s.*, including those made by the Art Union prizeholders.

The following is an analysis of the attendance and receipts:—510 season tickets at 3*s.*, 76*l.* 10*s.*; 4,947 day admissions at 1*s.*, 247*l.* 7*s.*; 16,467 evening admissions at 1*d.*, 68*l.* 12*s.* 3*d.*; 2,391 catalogues at 6*d.*, 59*l.* 15*s.* 6*d.*; 2,844 catalogues (evening) at 3*d.*, 35*l.* 11*s.*; 768 Sunday admissions at 2*d.*, 6*l.* 8*s.*; 189 Sunday catalogues at 3*d.*, 2*l.* 7*s.* 3*d.*; commissions on sales, 59*l.* 14*s.* 6*d.*; total, 556*l.* 5*s.* 6*d.*

At the Council meeting of July 22, 1878, it was decided to offer annually an Albert prize of 20*l.* for the best picture, figure or landscape, painted by any Irish artist or student being under thirty years of age, who is, or has been, a student of the schools of the Academy. The pictures in competition were exhibited in the annual Exhibition of 1886. The prize was awarded to Mr. S. C. Cairnes.

The annual visit of the inspector from the Department of Science and Art, Mr. F. B. Barwell, took place on July 26, who, in conjunction with Mr. B. Colles Watkins, R.H.A., and the keeper, Mr. Vincent Duffy, R.H.A., made the following awards:—

Drawing from the Living Model—Silver medal, J. P. Moran; Bronze medal, Oliver Sheppard.

Drawing from the Antique—Bronze medal, J. C. Radcliffe: prize of 4*l.* best drawing from life, J. O'Reilly; prize of 2*l.* second best drawing from life, J. P. Moran; prize of 2*l.* best drawing from antique, J. O'Reilly; prize of 1*l.* second best drawing from antique, J. C. Radcliffe; prize of 3*l.* best study in painting class, A. Casciani; prize of 2*l.* second best study in painting class, C. E. Lodge.

EDINBURGH ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of this Association was held on the 2nd inst. A paper was read by Mr. J. W. Small, F.S.A. Scot., on "Old Scottish Woodwork." He reviewed woodwork in general from the earliest time, noting in passing the oldest in existence, being those examples of ancient Egyptian chairs, &c., preserved in the British Museum. Possibly the oldest representatives in Scotland of chairs are those depicted on the Celtic Dunfallandy Stone at Pitlochry. The War of Independence and Hertford's invasion of 1544 was one of the causes of the scarcity of woodwork anterior to these dates, although we can still point to the stalls, &c., at Old Aberdeen, Dunblane stalls, Foulis choir screen, old press at St. Andrews as having escaped the destruction of these bad times. A common error was pointed out of ascribing all old Scottish woodwork to foreign importation or workmen. He considered that was a mistake, and that the old woodwork was of native con-

ception and native construction. Having described a variety of existing pulpits, lords' lofts, and other ecclesiastical woodwork, the existing domestic work such as panelling of rooms, doors, shutters, boards, cabinets, presses, tables, chairs, chests, beds, and other miscellaneous articles, pointing out the characteristic Scotch features in their carvings and mouldings, he advocated the sketching of all old woodwork, and the sketch-book of the Association as the proper vehicle for such work. He described the invaluable use the study of old examples was to the modern designer, the variety and freshness of old examples, the barrenness and uniformity of modern design in consequence of the commercial view taken by the manufacturers, and their ideas of being able to grind designs out of their draughtsmen at high-pressure speed. He deprecated the sending of workmen to exhibitions at the public expense, and said the designers of the articles to be manufactured were the proper parties to be sent for such a purpose.

UNIVERSITY COLLEGE, LIVERPOOL.

A MEETING of the Council of University College was held on Tuesday at the Municipal Offices, Mr. W. Rathbone, M.P., in the chair. After reading the minutes of the last Council and senate meetings, the following letter from Sir A. B. Walker to the Earl of Derby, president of the college, was read :—

Gateacre Grange, near Liverpool :
December 4, 1886.

To the Right Honourable the Earl of Derby, K.G., President of the University College, Liverpool.

Dear Lord Derby,—It has come to my knowledge that there is urgent need for a building with efficient equipment for the engineering school of your college. I feel the importance of Liverpool having facilities second to none in the kingdom for the proper training and technical education of persons intending to enter the engineering profession. I am also very desirous of doing anything I can to promote the interests of the artisans of Liverpool and the neighbourhood, and I understand that one of the features of the engineering department is to give an opportunity for working mechanics to avail themselves of such technical instruction in the evening as the building in question will give facilities for. Such a building would also become the natural centre of the technical schools which are necessary to complete our educational system.

I shall esteem it a privilege to be permitted to defray the cost of such a building with the necessary machinery and appliances, to the extent of 15,000*l.* This sum Professor Hele Shaw informs me is ample to make the institution one of the most efficient in the kingdom.

I propose to ask the acceptance of this building as my gift to Liverpool to commemorate the jubilee of Her Majesty the Queen.—I am, dear Lord Derby, yours faithfully,

(Signed) Andrew Barclay Walker.

A sub-committee was also named to correspond with Sir A. B. Walker and others, with the view to the immediate formation of a building committee.

In answer to an application from Professor Conway, a grant of 100*l.* was made from the accumulated funds of the Roscoe Chair of Art for the purchase of additional Raphael reproductions, and for minor purposes connected with the department.

The Council passed a cordial vote of thanks to Mr. Malcolm Guthrie for his timely and generous gift of an iron building, which will provide a lecturers' room and two extra classrooms, and meet the very pressing want at present felt for increased accommodation.

THE PLEASURE OF CAST TAKING.

A SCULPTOR in St. Louis having arranged to take a cast of the head of Colonel Gilmore, that gentleman has given the following account of the operation :—"I went to the studio at the hour fixed, and was to be met there by a well-known sculptor, who had courteously undertaken to do the modelling himself. By some unfortunate mischance he failed to put in an appearance. Two apprentices were vigorously stirring the liquid plaster of Paris, or whatever villanous compound is used for the purpose. After about half an hour's waiting it was decided to proceed in the great man's absence, and I was invited to disrobe. A much-bespattered white sheet was wrapped around my neck and shoulders tightly, and my face and hair were liberally greased to prevent the plaster sticking to the flesh. Pieces of paper were stuffed into my mouth, nose, and ears, and I was told to shut my eyes. No sooner had I done so than my persecutors commenced pouring the liquid on my head. One poured while the other pressed the rapidly hardening compound so as to fill every recess and get a cast of every feature. They poured a great deal too much on, and soon my head was encased in a mask as hard as iron. The heat was insufferable. I could not move my head, for the awful weight threatened to dislocate my neck if I did ; my eyes seemed being pressed into my brain, and the paper circlets not proving adequate for their purpose, I began to feel the first symptoms of suffocation. I could not call out, and believed myself to be dying. But my troubles had barely commenced. The apprentices had not fixed the centreboard or slit properly, and when they mercifully decided to release me they found the cast would not come in half as it usually does. In a successful operation the two halves are joined together after removal, and a perfect reproduction of the face and head easily produced ; but in my case both dividing-board and grease had been overlooked, and the only course left was to smash the mask off. Mallet and chisel were used, producing an effect like concussion of the brain. Finally my face was freed, and I was able to breathe, and make a few remarks to the boys on their carelessness. Then it transpired that they had omitted to grease behind my ears, and the plaster adhered to the skin like glue. To remove the former, the latter had to be torn away, and when at last I got away I was a mass of blood and sores. After two weeks' medical attention I got about right, but the memory is still fresh."

EDINBURGH MUNICIPAL BUILDINGS BILL.

THE Bill to provide for the erection of Municipal Buildings in the city of Edinburgh, and other purposes, has been printed and circulated among the members of the Council. In the preamble it is stated that the present Municipal Buildings, which were erected in or about the year 1758, are now, and have long been, wholly insufficient, incommodious, and otherwise unsuitable for the conduct and requirements of the municipal and public business of the city. It is expedient, and would be of public advantage, that suitable Municipal Buildings in which to conduct and carry on the business of the said city should be erected and maintained by the magistrates and Council; and that the new Municipal Buildings should be erected on and adjacent to the site of the existing Municipal Buildings.

It is expedient that the magistrates and Council should be authorised to levy rates and assessments, and to borrow money, for the purposes of this Act. And whereas it may happen that the margin of assessment as limited by the Act of 1879, available for and applicable to the purposes of this Act, may not be sufficient for those purposes, it is expedient to amend the Act of 1879 with respect to assessments.

The magistrates and Council may, in the exercise of the powers, and in the execution of the purposes of this Act or any of them, stop up or interfere with, temporarily, all streets, thoroughfares, courts, passages, drains, water mains, gas mains and pipes, and telegraph and telephone wires and apparatus, they always providing a proper temporary substitute. The magistrates and Council may sell, lease, feu, or convey, in consideration of a price paid down, or of a yearly rent, feu duty, ground annual, or other annual payment, such portions of the lands and heritages which may be acquired by them for the purposes of this Act, but may not be required therefor; and may also sell such parts of any buildings which may be erected on any portions of the lands, on such terms and for such considerations as the magistrates and Council think fit.

Power is also asked whereby the magistrates and Council may let or lease from time to time, for such period and for such rent as they think fit, any part or portion of the Municipal Buildings or offices or other buildings to be erected under the authority of this Act, which for the time may not be required for municipal purposes, and the rents which may be obtained for such parts or portions so let shall be received by the magistrates and Council and applied towards the reduction of the annual assessments leviable or applicable by them respectively in virtue of and for the purposes of this Act.

It is further desired that the magistrates and Council may, during the erection of the Municipal Buildings and offices, and until the same are complete and ready for occupation, rent, hire, or lease such other premises as they may consider necessary for the proper conduct of the municipal business of the city and for holding the meetings of the Town Council, and for the accommodation of such of the municipal and other trusts as are accommodated within the existing Municipal Buildings, and may pay for such temporary premises such rents or other consideration as the magistrates and Council may think proper, and may fix the proportions of such rent or rents to be borne and paid by the several trusts accommodated in such temporary premises.

It is asked that the Act of 1879 be amended as follows :—"Section 66 shall be read and have effect as if the maximum rate of assessment, limited by the proviso thereof to two shillings in the pound of yearly rent in so far as regards the items specified under the first three heads of the said section, were as regards the said first three heads two shillings

and sixpence in the pound of yearly rent : Provided always that the Act of 1879, as so amended, shall, so far as applicable, extend to the Act of 1882, and to the Act of 1885, and to any other Act which may be passed in the present Session of Parliament, and to this Act."

THE MUNICIPAL ART GALLERY, LEEDS.

THE following letter from Professors Bodington and Miall of the Yorkshire College, appears in the *Leeds Mercury* :—

We have taken advantage of the opportunity now afforded to the inhabitants of Leeds of studying the plans of the new Municipal Art Gallery and Museum. It is desirable that all who take an interest in this new experiment should speak their minds without reserve, and therefore, although we are aware that our opinion on such a point can carry no special weight, we venture to congratulate the Town Council upon the result of the competition. The prize designs seem to us to embody a skilful treatment of a difficult site, and the new rooms will be spacious, well-lighted, and convenient. The sculpture gallery only (the present reading-room of the Free Library) is unsatisfactory, but we will not enter into the details of the proposed arrangement. We believe that the new buildings will be, on the whole, suitable to the purpose for which they are designed.

Shall we ask ourselves once more what that purpose is? Leaving the museum out of the question for the moment, we suppose that all will agree that the municipal art gallery is to be called into existence in order to make beautiful objects accessible to everybody. Some of us hope that by cultivating the sense of beauty it may be possible to increase our power of industrial production. Perhaps it may be of some use to suggest that the acquisition of beautiful objects is a slow and difficult matter. We must not expect great things all at once, for there are many competitors for every choice work of art, and the purchasing power of the Corporation will probably be limited. There is no harm in this if no unreasonable expectations are excited. But impatience may defeat the main purpose of the collection. We may be tempted to lower our standard of excellence in order to give an appearance of rapid progress.

It is instructive to call to mind how much has been done by small collections, even by single pictures. Some of our townsmen will know of the enthusiasm often created by one great picture in a little Italian town. How every one in the place prizes it ; how the waiters at the inn point it out as the one thing which no traveller should omit. We ought some day to have in Leeds two or three pictures worth travelling some distance to see, and even two or three would be enough to make their influence felt.

But an art gallery should not contain pictures only. We know what a powerful effect the little collection of old Venetian glass at Murano has had upon the revival of that beautiful industry, and how the important lace manufacture of modern Venice is to a great extent built upon a set of laces once belonging to an old Pope, and given to the cause of art manufacture by the Queen of Italy. Leeds is beginning to take an interest in certain industries which, like pottery, have points of contact with art, and it may be useful to point out that all such new developments can be powerfully stimulated by a very few things of high merit placed where all can see them as often as they please. If, on the other hand, we are led astray by the unwise ambition of making large collections, our standard of excellence will fall, and we shall know beforehand that no one will be the better for what we set before them.

The art exhibitions held some years ago in the Athenæum Buildings show us what happens when the managers have large rooms, and are afraid to leave blanks. Good works were occasionally hung ; but they were vulgarised by the exhibition side by side with them of productions of the lowest possible merit. It is of some importance, if we hope to benefit by the generosity of individuals who possess valuable works, to remember that they will not and ought not to consent to such treatment of fine things.

The Municipal Art Gallery of Birmingham furnishes an excellent instance of collections which are managed with a scrupulous regard to the best interests of art. The purchases made by the trustees of the Public Picture Gallery Fund have been few, but the pictures bought have been characteristic examples of first-rate contemporary work. An equally high standard has been maintained in regard to the acceptance of donations. The result of this policy is that Birmingham already possesses an art gallery of which its citizens are justly proud.

We believe that the Town Council will shortly be called upon to decide what it will accept. No doubt there will be those who will urge that second-rate pictures are better than nothing, that the walls must be covered, that offence will be taken if gifts are slighted. If the Council yield to such arguments, we shall soon know that our art gallery has fallen into wrong hands. We hope that the public will insist upon a high degree of excellence in any picture which is accepted by the town, and will cheerfully endure for a time bare walls illuminated here and there by an example of first-rate work.

Our chief anxiety is not about the loan collections, but the permanent gallery. We may gain experience by the collection for temporary exhibition of works of small importance. Even the loan collections, however, should be subjected to some degree of careful selection. The municipal exhibitions of which we have recent experience cannot be considered altogether successful if judged by truer tests than the number of the pictures shown or the number of the visitors.

A wealthy town like Leeds will not depend entirely upon the gifts of individuals, though it will naturally hope to benefit by that generosity which has enriched so many public collections. The judicious expenditure, not in very small sums, of an annual appropriation seems to us essential to the creation of such an art gallery as will have an educational power.

Our main object in addressing these remarks to our fellow-townsmen is to induce some of them to inquire what has been done in other towns and other countries to educate the industrial artist. The results of a good deal of enlightened experiment are accessible to us, and we ought to profit thereby.

DISTRIBUTION IN DESIGN.

THE second of his course of lectures in the Yorkshire College on Design was delivered by Mr. Lewis F. Day on Wednesday, the subject being "Distribution in Ornamental Design." He reminded his audience that in his previous lecture he laid down the lines upon which repeated pattern work can be constructed, to show the comparatively simple plan on which the manifold forms of surface ornament are built up, and the very limited range of lines on which patterns can be built. On this occasion he had to discuss the lines on which ornament, not necessarily repeated, could be distributed. The first thing one had to do in designing was to determine the lines on which the design shall be distributed. The more clearly the designer realised to himself the lines on which it was open to him to proceed the better, and if it could be shown, as he thought it could, that those were comparatively few and simple, so much the easier would it be for him to make up his mind promptly which of them he would adopt. The shape of the actual space to be filled would oftentimes determine for him more or less the distribution of his design. That was to say, it might very likely render certain schemes altogether unavailable, and perhaps even limit his choice to a single plan; but at the very first he was limited, in the nature of things, to certain methods of procedure. Taking the simple parallelogram (which might stand for panel, page, floor, ceiling, window, door, façade, carpet, curtain, shawl, &c.), the lecturer proceeded to show the possibilities with regard to the distribution of ornament over its surface, and then to explain how the same principles applied no matter what the shape to be fitted. Given a panel to be filled, the designer might start from the centre or from the edge—that was to say, he might occupy the field or centre, and work outwards to the margin, or he might begin with a border, and work inwards. The border once defined, the space within remained to be treated. But a border might be of such interest that nothing further was needed. Especially might this be so if the material in use were in itself of some interest. It was distinctly not desirable to mar the surface of beautiful wood or rich varied marble with added ornament. Generally in woodwork it resolved itself into a question of whether the panels or the mouldings bordering them should be enriched. If the idea of a border were to be adopted, the simplest thing to be done was to keep it of one uniform width on all sides. And it made all the difference whether it was simple or elaborate in character. A very deep, rich border had such an entirely different effect from a moderately simple one that it looked something like a different treatment altogether. Borders should be so schemed as to give panels of proportions suitable to the filling proposed for them. The use of border within border as a deliberate means for ornament was common enough. Border might even be added to border until the whole of the field was occupied. Equality of width was by no means essential to a border. Nor need the border necessarily be continued all round the space. Something like a new departure occurred when the border invaded the field or centre of the panel, as it very often did in French Renaissance work—sometimes to such an extent that little or no further decoration of the field was necessary. The Japanese were in the habit of allowing the filling pattern, whatever it might be, to break over the margin or border just as the impulse prompted. This was a proceeding which might or might not result in confusion, according to the relative strength of the border and the pattern that cut across it. One appreciated this kind of freak as a relief from the monotony of formal disposition, but it was not a thing to indulge in very freely. It needed always to be justified by some excuse other than the artist's impatience of order. As to the construction of the border, it might be continuous or broken, and broken at all manner of

intervals and in all manner of ways. It might flow or grow; it might be symmetrical or absolutely free; the outer or the inner edge might be accentuated, or both or neither; it might spread outwards from a well-defined central feature, or inwards from the margin, diffusing itself and giving a less definite central shape. If the space to be decorated were very considerable in extent, it was often necessary to cut it up into sections otherwise than by merely marking off a border. A wall, for example, was divided into cornice, frieze, wall space, dado, and so on. Or it might be divided vertically into panels of equal or unequal width. The use of the border was not, of course, confined to the outer edge of the main space to be filled. Each sub-section of the design might be provided with its own border. A design was in harmony, not when it was strictly according to Greek or Gothic precedent, but when the parts all fitted. Suppose, for instance, the lines led up to some prominent feature, that feature should be of sufficient interest to justify the attention called to it. Any feature, such as a tablet, medallion, label, cartouche, shield, and so on, introduced into a composition, should bear relation not only to its surroundings, but to what it was to enclose. In conclusion, the lecturer showed that the principles upon which all manner of shapes may (and indeed must) be filled in are much the same.

CHURCH BUILDING AND RESTORATION.

Wolferton.—The church of St. Peter, which parish forms a part of the Norfolk estate of the Prince of Wales, was reopened on Sunday evening, after having been closed for about twelve months for repairs, which have been carried out at the sole expense of His Royal Highness. Portions of the building indicate the existence of a church of considerable size and importance as far back as the early part of the thirteenth century. In the latter half of the following century the church assumed its present form, when the tower was built, and the plan probably enlarged by the extension of the aisles and chancel. The south porch is of the same date, the clerestory and the roof of the latest Gothic period. A great fire appears to have taken place in the church four hundred years ago, and since the Reformation much damage has been done in the church and much valuable work destroyed or improperly removed. Among other things which have thus disappeared are the old pulpit and the font cover, which is said to have been a pyramidal one of an elaborate character. The wood screens and those surrounding the chapel at the end of the north aisle are of late date, but those enclosing the south chapel belong to the middle of the fourteenth century, and are unique in richness and beauty of design and masterly execution. It is evident that these screens were never made for the position they now occupy, and that they must have been brought here from some building of great importance and magnificence. The remains of the chancel stalls were in existence before the restoration, but much altered and mutilated. All remains of the old nave seats had disappeared, and the levels of the floors had been altered more than once, and almost hopelessly confused. The walls were thickly coated with whitewash, and all traces of the old decoration hidden from view where it had not been previously obliterated. The pews were deal boxes of the meanest character, and were arranged with no regard to order or architectural effect. Various works had from time to time been undertaken by the late rector, including the rebuilding of the vestry on the walls and foundations of the old sacristy, the restoring of the east windows and the rearranging of the chancel. The present restoration has been carried out consistently with the requirements of the services of the Church. The magnificent roof of the nave has now been restored to its original proportions and construction. New roofs have replaced the mean modern ones on the aisles and chancel; an organ chamber has been added on the north side of the chancel, and a new organ, built by Messrs. Henry Willis & Son, placed therein. The whole of the stonework inside and outside has been carefully repaired. The floors have been restored as far as possible to the original levels, the font placed in its old position and properly raised; oak benches have been placed in the nave, and all the screens have been repaired with the greatest care. The ancient wood gallery with its groined soffit springing from the screen has been restored with admirable effect, and the steps to it have been opened out and repaired. A handsome stone pulpit, the special gift of the Prince of Wales, has been placed in the nave. During the works of repair and cleaning some very interesting remains of mural decoration were discovered over the chancel arch. An angel with outspread wings stands on each side, holding a banner, on which emblems of the Passion are represented, while angels flying downwards are represented as blowing a blast on trumpets. The only colours used are red, yellow, and black, on the white plaster. The whole of this painting has been preserved by very carefully removing the coats of whitewash with which it was covered. The work of restoration and repair has been carried out under the direction of the architect, Mr. A. W. Blomfield, M.A.

GENERAL.

Mr. W. H. Houldsworth has lent *The Rescue of the Heretic* painted in 1857 by Sir John Millais, to the Kilmarnock Exhibition. The subject is the rescue of a girl from a cell of the Inquisition by her lover, who has assumed the robe of a monk.

Mr. J. W. Tonks prepared the designs for the mayoral chain, mace, and seal which are about to be presented to the new borough of Wednesbury.

Mr. T. Hawksley, C.E., is to be asked to report on the scheme for laying a second water main through the valley of Strathmore, a distance of seven and a half miles, at a cost of 45,000*l.*, in order to increase the water-supply of Dundee.

Mr. J. A. Reeve designed the memorial screen which has been placed in Waltham Abbey Church by the admirers of the late Rev. J. Frances.

Mr. Charles W. Deschamps, who served in a similar capacity at the last Paris International Exhibition, has been appointed Fine Art Superintendent of the British section of the forthcoming Jubilee Exhibition at Adelaide.

Messrs. Cawston & Graham, of London, have obtained the first prize (100*l.*) in the competition for the Carlisle Market. The cost of their designs is 19,200*l.* The second prize (50*l.*) was awarded to Mr. G. D. Oliver, of Carlisle. There were 35 competitors.

Lord G. Hamilton on Tuesday delivered the prizes to the students of the Chiswick School of Art in Bedford Park, and delivered an address to a large assembly.

An Exhibition of the works of James McArdell, the mezzotinto engraver, is open at the Burlington Fine Arts Club in Savile Row.

The Leamington School of Art is to be reopened, with Mr. Donald W. Robertson for master. It will be carried on independently of the Free Library committee.

An Architectural Room now forms part of the Walker Art Gallery, Liverpool. It was opened on Monday. It contains many casts of French work from the Palace of the Trocadéro, the Union Centrale des Arts Décoratifs, and the Palace of the Louvre. Afterwards copies will be added of the photographs of historical monuments prepared at the instance of the Minister of Fine Arts in France.

Architectural Books were sold by auction in Edinburgh on Saturday. The following were the principal:—Britton's "Architectural Antiquities of Great Britain," 8*l.*; Britton's "Cathedral Antiquities of England," 10*l.*; Billings's "Baronial and Ecclesiastical Antiquities of Scotland," 11*l.* 11*s.*; Nash's "Mansions of England in the Middle Ages," 14*l.* 3*s.* 6*d.*

Mr. F. W. Albury, of Reading, has obtained first place in the competition for the Slough Public Hall and Leopold Institute, on the report of Mr. T. R. Richards, the assessor.

The Annual Election of members of the Glasgow Art Club was held last week, when Messrs. J. J. Burnet, James Sellars, R. Macaulay Stevenson, David Thomas, I.A., John Henderson, John O. Campbell, J. Denovan Adam, A.R.S.A., John Macniven, and E. A. Hornel were admitted.

A Public Company is being formed in Wakefield for the erection of a public hall to accommodate 2,100 people, at a cost of 5,500*l.* Messrs. Simpson & Richardson, of Wakefield, have prepared designs.

The Society of Civil Engineers (Ireland) has awarded a gold medal to Mr. W. Greenhill for a paper on "Creosoting Timber." Silver medals were awarded to Messrs. H. V. White, F. K. Wilson, John Moylan, and W. R. Maguire.

The Purchasers of Staple Inn announce that while they cannot bind themselves to preserve the property in its existing condition, they have at present no intention whatever of altering the garden or the elevation of any of the buildings.

The Girvan and Portpatrick Junction Railway was sold on Friday, in Edinburgh. The price given for the whole undertaking, exclusive of plant and rolling stock, was 155,000*l.* The directors are bound not to disclose the name of the purchaser.

The Blind Asylum, in Castle Street, Glasgow, lately erected in the Scottish baronial style from the designs of Mr. William Landless, was in part destroyed by fire on Friday last. The rebuilding will cost over 8,000*l.*

The Peterborough Cathedral Restoration Committee have issued a special appeal to the public in general for aid to complete the necessary works of the sacred edifice, their funds being exhausted. A sum of 24,000*l.* has been contributed and expended, and 47,000*l.* will still be required.

The Old Burgh Cross of Lochmaben is to be restored and re-erected in the High Street near the statue of Bruce. It is recorded that at the time Elshieshiels Castle was built some of the building materials were left unused, and, Lochmaben being without a cross, the Town Council, as the price of these materials for building the cross, made over to the laird of Elshieshiels, his heirs and successors, the mill and mill lands of Lochmaben, part of the burgh property. The property forms part of Elshieshiels estate to this day.

The Architect.

THE WEEK.

THE principal event of the week, at least for architects, is the appearance of Mr. CHRISTIAN'S report on the Liverpool Cathedral designs. It is a model of what a document of that kind ought to be. Sufficient information is given to aid a committee on technical subjects, and the reasons for the author's preference are frankly explained. Mr. CHRISTIAN evidently admits that there are grounds for the objection to the site, although, as a good Churchman, he must desire to see the building so placed that it may symbolise the triumph of ecclesiasticism. It would no doubt be satisfactory if the new cathedral became an everyday refuge to the merchants of Liverpool; but is there not an exercise of imagination when the "bright example" of St. Paul's is cited? If the sightseers were eliminated from an afternoon service, there would be very few worshippers left to represent 'Change or the neighbouring warehouses. It is, however, useless to again go over the objections to placing a lofty building alongside St. George's Hall; the promoters of the project will have no other site. Mr. CHRISTIAN considers that Mr. EMERSON'S designs should take first place, and so much originality merited such a recognition. It is, however, admitted that Mr. BROOKS'S plan is very fine, and credit is given for the triforium gallery, and other features. The design is rightly described as powerful, and in many respects as very beautiful. The praise of Messrs. BODLEY & GARNER'S design is rather qualified, but justice is done to the central lantern. The report justifies the anticipation. It was generally supposed that Mr. EMERSON would have first place. It would, we suppose, be more satisfactory to the winner if the prize had been gained in a less restricted competition.

WE publish this week an illustration of the historic Château de Langeais, and, by a curious coincidence, the whole week has been occupied in Paris with the sale of the contents, which were of only secondary interest to the building. The collection might belong to a museum. Among the marbles are a bas-relief attributed to DONATELLO and a bust by LEMOINE. There are examples of sculpture in wood of the sixteenth and seventeenth centuries; furniture of the seventeenth and eighteenth centuries; bronzes, arms, and pottery of all schools, including those of China and Japan; with tapestries, embroideries, and paintings. The auction season begins earlier in Paris than in London, and the sale of the collection of the Château de Langeais is as yet its most memorable event.

THE paper which was read by Mr. W. H. SETH-SMITH at the meeting of the Society of Architects on Tuesday was a plea for federation. He maintained that if a Registration Act were obtained, it would not override the chartered privileges now enjoyed by the British and Irish Institutes, or, in fact, the powers of any other architectural body to test in whatever manner or degree it might desire, the qualification of candidates for its own membership; the provisions of the Act would relate solely to the qualification for practice. The principal object of those who desired that such an Act of Parliament should be passed was the creation for the use of the public of a competent body of architects. The second great object was the production and annual publication, likewise for the use of the public, of a register, giving name and address and qualification of all persons duly qualified to practise in architecture, and to enable the public to distinguish qualified from unqualified men. A third object was to establish an exclusive right to the use of distinctive professional titles. A fourth was to confirm the legal rights of architects to recover fees, and a fifth to exempt architects from serving in any public offices, parish offices, on juries, or in the Militia. Mr. SETH-SMITH proposed that the authority to administer the Act should be entrusted to a body consisting of representatives from the Royal Institute of British Architects, the Royal Academy, the Royal Institute of Architects of Ireland, the Institution of Civil Engineers, the Institute of Civil Engineers of Ireland, the Society of Architects, the Society of Engineers, the Surveyors' Institute, the Architectural Association, and one representative from the Scotch Architectural Societies, the Universities, and such other colleges and learned societies as it may be found desirable to represent; and six persons to be nominated by HER MAJESTY, with the advice of her Privy Council—four for England and Wales, one for Scotland, and one for Ireland, with power to add to their number. At least one-half of the members of Council to be architects. Members of Council to be paid fees for attendance and travelling expenses. He believed that as soon as the Act came into force the compulsory education of the entire profession would commence. The proposed Act should provide means for fining persons who acted as architects without being qualified; it should also provide that unregistered persons should not be entitled to hold Government, municipal, parochial, or other public appointments, and that they should not be able to recover fees.

MR. F. R. FARROW, the assistant librarian, announces that documents have been discovered among the archives of the Architectural Association which show that on September 1, 1842, the society was instituted as the "Association of Architectural Draughtsmen." Afterwards, in 1847, it was reconstructed under its present title.

ART is not without its mysteries, and one is to be found in the galleries of Messrs. WINCH, in Bond Street. It takes the form of a version of the *Sistine Madonna*. The history of the picture cannot be traced, and the owners have very wisely refrained from inventing one; they leave the picture to speak for itself. It bears a close resemblance to the picture which is now in Dresden, but there are variations in detail which are not to be explained. The *Sistine Madonna* was subjected to the operations of the restorer, and if it were said that the Bond Street picture was a copy of the picture in a former time, there would be grounds for the assertion. It is evident, however, that the copy was made by no servile hand. There is not as wide a departure as is to be found in RUBENS'S copy from DA VINCI, but one of the good qualities of the work is that it suggests the painter's individuality. Apparently he was a more virile artist than RAPHAEL. But there is much in it which seems to be the work of the great master. It is rare to find so important a picture without a name, and Messrs. WINCH deserve much credit for so honest a mode of exhibition. We may add that the picture can be seen without the visitor being pestered with applications to subscribe to a reproduction.

AN effort is being made to secure the remaining part of the Archbishop's Palace at Croydon, in order to preserve it from degradation by converting it into a public library and museum. On Saturday a meeting of the friends of the project was held on the premises, when Mr. LOFTUS BROCK read a paper on the architecture and the historical associations of the structure. Mr. BROCK showed that the chapel, which is of Tudor date, stands on the site and foundations of an earlier building. The great hall is of considerably older date, and contains the armorial bearings of Archbishop STAFFORD, who erected it, on its walls, and the corbels which support the timber of its fine open roof. The entrance to this hall, at its north-eastern angle, is more than half a century older. Queen ELIZABETH must often have sat as a Royal guest in the hall, and so probably did JAMES I. of Scotland, who spent some years as a prisoner there in the time of Archbishop COURTENAY, and Queen MARY once at least held her Council there with Cardinal POLE at her side. Queen ELIZABETH'S bedchamber still remains substantially the same as three centuries ago, though its panelling and its ornamental ceiling have disappeared. The long gallery, which runs along the entire southern side, the exterior walls of which were cased in red brick by Archbishop WAKE, is of special interest as being the place in which Queen ELIZABETH is said in history to have bestowed the Great Seal of the Lord Chancellor on the handsome Sir CHRISTOPHER HATTON in 1587, just three centuries ago; and it is very little altered since that day, though partitioned off in order to make modern bedrooms.

ENGLAND'S CHRONICLE IN STONE.*

IT is said to be one of the misfortunes of the United States that the country can show so few things which are old, but the deficiency has increased the number of students of English and European remains. If the Americans possessed buildings of a remote age, like those of France or England, they would probably care as little about antiquity as the majority of Englishmen and Frenchmen. In France it was found necessary to create a public department to keep historic buildings from destruction or from a metamorphosis that was almost as fatal. In England a protection of the kind is no less needed. The Americans happily have no temptation to become destructive, and it is only natural that they should prize what the past has left to us in England. Moreover, as they are not called upon to inquire into the necessity for altering or removing what is ancient, it is not surprising if they regard an alteration of an old church or house by a modern builder as if it were profanity towards a relic.

"England's Chronicle in Stone" is a book by one of the numerous Americans to whom English buildings are endeared as part of a great heritage. Mr. HUNNEWELL, the author, tells us he has made no less than a dozen tours through the country, and his book is made up from the remarks entered at the time in his note-books. He has also possessed himself of over ten thousand plates, and out of them he has made a selection, which are reproduced in his book. They are diverse in character, ranging from INIGO JONES'S sketch of Stonehenge to the map compiled for the Society for the Diffusion of Useful Knowledge. The volume is consequently a pleasant record of travel in England, which can be read with interest by residents as well as by tourists. The friendly spirit in which the book is written may be judged from the following passage:—

> Anglomania may affect persons, but there is not much danger that it will too much affect the American people. It is another matter to see and to read the chronicle in stone which England shows us, and some of our pleasantest days can be those spent in drives or walks on her hedge-lined roads, in strolls on charming footpaths or under the ivy-grown walls of her castles and gray cathedral towers—days the writer feels he lives again while his pen moves over these pages; and a mild, hazy sunshine seems to light the way, as he often has found it brightening the exquisite old island.
>
> If the world is losing charms of the past, and we cannot but feel a regret at the loss, it is in the main much improved. Causes which have estranged great families of the English-speaking races gradually have less, or no, influence. Plain sense, sound political economy, and devotion to progress and freedom among all of them, prompt to good work for the present and future. What they have to do together to make the world better has been already done well, but their work is as yet little more than begun.
>
> We have no regard for persons who take our ancestors from their true relations of time, place and thought, and try to show that they were bad or ignoble, but who feel that fairly judged they were in their own day, with all which belonged to it, never surpassed by the founders of any nation on earth, and can in the same spirit read the story of the people on the old island. Like our own people, led through trials and triumphs to marvellous success in the end, meeting reverses but never actually conquered, comparing well with any other in their successive ages, they now, like us, have an ancestry they can be glad of and proud of, to be treated with justice and held in due honour.
>
> The stone chronicle of England cannot be read well by eyes other than those which look with sympathy on the men of the past and the work of their hands. To such eyes the gray text will show the great story it holds, garlanded with the bright daisies, green hawthorn or ivy, and red-berried holly, which the old painters loved and drew on the leaves of their books, but which, in the monumental record of England, spread around the stone letters a beauty given by no mortal hand.

When an author begins in such a strain there is no likelihood that he will be captious. Mr. HUNNEWELL is a writer who takes a pleasure in rambling through England, and, unlike his countryman HAWTHORNE, he tries to look at the best side of whatever is presented to him. He begins by a description of the island, which might have been inspired by EMERSON'S chapter. The first record in his chronicle is, of course, Stonehenge, and which he calls "the wreck of a once vast Westminster Abbey of the ancient Britons, that imagination only can reanimate." But he does not attempt to suggest how the great stones were brought to Salisbury Plain—a problem which EMERSON appeared to think offered no difficulties since as big were moved about in Boston. About Roman Britain Mr. HUNNEWELL writes at length, and he cannot understand why so little is done towards the exploration of the remains. Saxon England has not bequeathed much to gratify the eyes of American tourists. Mr. HUNNEWELL refers to only one work, the Earl's Barton Church, but he consoles himself for the absence of architecture with thinking how it was in the Saxon period "an English people had been gathered and established in its home, and that the deep foundations of their character and power had been laid." The architecture of the Normans on the contrary has contrived to survive, and Mr. HUNNEWELL is not sparing in his admiration of it. He grows enthusiastic over Windsor Castle, and the Albert Memorial Chapel he considers to be the most sumptuous and beautiful in England. It is, however, rather startling to find it said that "the mirror-like mosaic pavement is fit for the table-cover of a drawing-room!"

It is the fashion of late to trace the influence in works of every kind of what is called national character, and which in England is supposed to be of a very composite kind. Mr. HUNNEWELL follows in the wake of many travellers. Even in the architecture of the cathedrals he sees evidence of the spirit which at one time made the English penal code be worthy of the Anthropophagi. "The brutality," he says, "that far too much marked English character a hundred years or more ago, revealed in so-called discipline at sea, in public institutions, in the treatment of miners, and of children in factories, with all the exasperating and disgusting detail, is revealed in different but as striking ways by the excrescences inflicted on cathedrals, and such outrages as those inflicted on the Chapter-house at Durham or the ancient glass at Salisbury." These words will not be generally endorsed, but they will at least be satisfactory to the members of the Society for the Preservation of Ancient Buildings. It might be supposed that as America is able to be moral without any imposing cathedrals, a traveller from that country would apply an utilitarian test to the English buildings, and say that their day was gone. The development of machinery has not, however, banished the susceptibility to what is poetic and imaginative from the American mind, if we are to take Mr. HUNNEWELL as a representative of the country. His reasons for attaching importance to the English cathedrals are the following:—

> No mere dull antiquarianism leads us through these edifices, but warm sympathy with men whose genius and devotion, shown in many periods, have left works wrought by their hearts and souls as well as hands, and so expressive of their character that we can through these hold intercourse with the builders. One who does not feel a sympathy with them, with what they felt, and what they tried to do, will lose much of the pleasure to be gained in these churches; one who disbelieves, or only cares to gaze coldly, will find that the town outside is pleasanter. As features of the human face are few yet endless in variety, so are those of cathedrals. One can never see all their diversity and expression. Every moulding, corbel, cusp, and capital is full of meaning of some sort, and still more are the sculptured altars, telling of immortal life, and the carved tombs and lettered stones around them, telling how mortality blends with it when the glories that the splendid shrine pre-figures will no longer be unseen. Around these venerable cathedrals the history, character, and sense of beauty of the people with the power and grace of the deep faith of England appear in forms that are visible, making all they embody real to us, and the land fairer and more lovable and precious. The hearts of the builders have been English, and they have built each throb in with the stones wrought to make shrines that have long kept, and, we may hope, will save for all time, the unique record of the steadfast piety and wise endurance that have made the small, wild island become the throne of the world-wide empire, telling its people of this every day, and that the nation's strength and glory will endure while they, like what they signify, remain secure.

It is easy from such a prelude to imagine how the English cathedrals are described by Mr. HUNNEWELL. In writing of the Salisbury restorations, he says that England at one time "had grown stupid, cold, and wicked; she overworked her children, bought slaves, and tried to tax

* *England's Chronicle in Stone. Personal Observations of Cathedrals, Churches, Abbeys, Monasteries, Castles, and Palaces.* By J. F. Hunnewell. London: John Murray.

America. Then judgments came upon her, and among them was a man named JAMES WYATT." The unhappy architect will henceforth never be allowed the mercy of oblivion. But Mr. HUNNEWELL has a very different opinion about our modern restorations. Indeed, when describing Exeter Cathedral, he says that "ancient and modern ecclesiastical art are worthy of each other." St. Paul's, he thinks, would be the better for "a thorough washing." He admits the impressiveness of the building, and, like THACKERAY, he believes there are few scenes in this world to equal a celebration in it when the charity children are present. EMERSON singled out York Cathedral as the one which is most impressive, and Mr. HUNNEWELL also appears to be of the same opinion.

After describing the cathedrals Mr. HUNNEWELL next takes up the monastic remains. Distance is more effectual than time in softening prejudices, and, like other Americans, he does not glory in the dissolution of monasteries under HENRY VIII. Indeed, no one who considered the difference between the art that preceded the Reformation and the art that followed the experiment could well do so. "Read the catalogues of some of these collections," says Mr. HUNNEWELL, and apparently he is of Puritan descent, "read the testimony of JOHN BALE himself, find what these gathered treasures were, hear the apologists of barbarism, and then feel a righteous indignation at one of the most disgraceful passages in English history." And he quotes BALE, who had a hand in the work, and who said :—"I judge this to be true, and utter it with heaviness, that neither the Britons under the Romans and Saxons, nor yet the English people under the Danes and Normans, had ever such damage of their learned monuments as we have seen in our time." The buildings selected for description are Glastonbury, Fountains, Bolton, Kirkstall, Whitby, Selby, Lindisfarne, Tynemouth, Hexham, Furness, Tintern, Netley, and Malmesbury. Mr. HUNNEWELL is also compelled to make a more restricted selection when dealing with the parish churches. As he says, "only a very large book, wholly devoted to the subject—one hardly yet written—could contain adequate and classified accounts of all these churches." They are prized by him not only for their architectural interest, but for their historic associations.

The secular buildings begin with the castles. The restoration at Cardiff occupies a page, but there is no illustration of this most interesting work and no mention of its architect. It is said, however, that the castle now has a completeness, picturesqueness, and grandeur almost unique in Wales, and suggestive of the great French restorations of Mediæval civil edifices. The University buildings and public schools follow the castles, and then come descriptions of some of the larger mansions; finally we have the town-halls and civic buildings. In speaking of the Birmingham Town Hall there is one obvious misprint. It is said to have been erected from a design by HARRIS. The building was designed by the late Mr. JOSEPH HANSOM, and an unfortunate commission it was for him. He and his partner were compelled by the committee to become sureties for the contractors, and, in consequence, lost all they possessed. The building cost over 30,000*l.*, while the contract price was 17,000*l.* When difficulties arose, another architect wormed himself into the confidence of the committee, and tried to get the credit for the work by posing as architect for a short time. Hawks may not pounce on hawks, but architects will pounce on architects whenever misfortune gives the opportunity.

Mr. HUNNEWELL concludes with an earnest appeal to Englishmen, urging them to the preservation of the structures which have survived the vicissitudes of centuries. One paragraph may be given :—

> First of all is the importance of the preservation of these works. They are priceless to England, and precious to the people spread about the world and speaking her language. Changes throughout the country are growing more positive and evident. The real or supposed needs of increasing trade and population crowd upon the rural districts and transform the towns, so that the temptation to injure or destroy the old landmarks is constant. But once lost to the country, no power can ever replace them. Hedges and daisies, fine turf and old trees are not fresh again where the cinders and smoke of the mill or the colliery have taken their places; and even far more improbable would be the regaining of any part, however humble, of the long stone chronicle of the English people. They, of all ranks, have made it, have paid for it also with their best thoughts, their treasure, their heart throbs, and even their blood. No reproduction can ever give for ages to come a hint of that record when once it is lost; and, if this thought needs help, surely wise men are apt to take care of what they have earned and still hold, and a great cost is not got back by destroying the property. It may seem as if one who lives far away need not urge that a people spend means and labour to save their old stones; but England with all she is has grown to exist not for herself alone. If care and expense be her lot with her treasures, she holds the old homestead, and with a fair fortune. Hers is the roof tree, the hearth-stone, the hall with the portraits; and from the wide world the cousins, sometimes much removed it may be, do turn as only a touch of kindred can make them, glad and perhaps a bit proud that the old line has still the old place. They would be sorry to see it ill-kept; they like to see it so fine, as it is.

This is an entreaty which is worth the attention of many among us. It certainly is gratifying to know that people who are far apart and engrossed with material pursuits have a yearning to preserve the objects on which their ancestors may have looked. It is, however, only another instance of that combination in the English race of qualities apparently opposite which is such a puzzle to strangers. Mr. HUNNEWELL'S book, although written in Charlestown, is an expression of sentiments that are thoroughly English, while as a message of goodwill from beyond the Atlantic it is especially welcome at this season.

MR. CHRISTIAN'S REPORT ON THE DESIGNS FOR THE LIVERPOOL CATHEDRAL.

THE report on the three designs for the Liverpool Cathedral by Mr. Ewan Christian has appeared, and is as follows :—

My Lord and Gentlemen,—Having now, in accordance with your instructions, completed the examination of the designs submitted by architects in competition for the proposed cathedral, I beg to present for your consideration my report thereon.

I regret very much the delay that has occurred in its preparation, but it was quite unavoidable by reason of the effects following a severe attack of illness early in the year, from which I did not fully recover until after an entire and prolonged rest in Switzerland.

Since my return I have lost no opportunity of proceeding with the work, and now propose to put before you the results of my examination.

I may say generally that the competitors have in all essential matters complied with the requirements of the instructions issued to them for guidance in preparing their designs, and have done, indeed, more than could be expected of them in preparing the beautiful drawings submitted for your consideration.

Before entering on the principal subject of my report, and describing so far as I am able the respective merits of the designs, I think it may be useful to say a few words on the question of site. I cannot but be aware, as must, indeed, be inevitably expected, that strong and different opinions are held upon this point. There are those, I believe, who think that a striking position is all-important, and there are others who think that a cathedral should stand in a large open space, and that whether near or far away from the great centre of population is a matter of only secondary consideration.

The men of former ages rarely acted upon such views. Excepting St. Peter's at Rome—the reasons for the comparative isolation of which are obvious enough—and the cathedral at Pisa—a great monument for which with its adjacent buildings open space was a necessity—almost all cathedrals in large cities with which I am acquainted are to be found in the midst of the people they were intended to serve; the crowding round of houses and other buildings was little regarded, but the cathedral was a necessity of the daily life, and a central position was therefore of paramount importance.

That the cathedral church of a great commercial city should stand in the very heart and centre of that city is, to my mind, an axiom of the most evident truth and very highest importance; that it should be a central gathering-place for all classes, high and low, rich and poor; a place of prayer, open at all hours for those whose homes deny them the privilege of silent meditation; where the busy merchant can divert his mind for a while from the pursuit of material wealth to welcome the higher thoughts of life when passing to his place of business; where the voice of prayer and praise may be heard amid the busy din of traffic, and strong truths be spoken to those who need to hear them; that these privileges should be always nigh

at hand and be capable of being made a portion of the daily life of a great city, is to my mind of far greater importance than that it should be considered as a mere architectural monument, a thing of beauty for educated people to admire and for the rich to worship in.

That a cathedral may be so used St. Paul's, in London, is now a bright example; that it might become dead and comparatively useless is, alas! too true; but a building like a city set on a hill cannot be hid, and in the bright light that would blaze upon it in the centre of multitudes, there would be less risk of failure than when lost to view in more quiet portions of the town.

That the site is one of difficulty cannot be denied; that it is capable of considerable improvement, if the municipality think fit to deal with the adjoining properties in a large and liberal spirit, cannot, I think, be doubted, and if a high level roadway from Dale Street were at any time to be effected, an opportunity would be afforded of combining with a cathedral so placed all the best buildings of the city, and of making an approach such as very few cities could surpass. That all this is possible is in my opinion certain; whether it is probable is not for me to conjecture or determine.

As regards the effect of placing so large a building in close proximity to St. George's Hall, I would say that although as regards the principal front and ends St. George's Hall is a noble example of design in Greek architecture, yet unfortunately it partakes of one of the vices of the age, in that while wealth is exhibited where it can be prominently seen, poverty is shown where it is supposed to be out of view.

A cathedral which should in all its parts be a representative of truth, would in this respect be a valuable corrective, and a standing protest against bad principles.

Irrespective of these views I may say that both Mr. Emerson and Mr. Brooks highly value the site in an artistic sense, and Messrs. Bodley & Garner alone would desire, for the sake of more space, to build elsewhere.

I will now proceed to describe in detail the respective characteristics of the designs under consideration, and will afterwards give you, as concisely as I can, a general summary, for your guidance in arriving at a decision.

I will take the designs seriatim, and describe them under the names of their respective authors.

Mr. Emerson.

As regards the treatment of the site, Mr. Emerson shows three designs, respectively marked A No. 1, B No. 2, and C No. 3.

The first shows the cathedral buildings according to the small scale plan, laid down on the site as it exists, without alteration of road boundaries or change of levels.

The plan B No. 2, which I take to be legitimate as a suggestion, shows a somewhat ambitious scheme for combining with the erection of the cathedral a much-needed municipal improvement, in the formation of a high-level road from Dale Street, past the cathedral, and the important buildings to the northward of the site, and leading onwards to St. George's Hall and the London and North-Western Railway Station.

In this plan the cathedral is shown as elongated by one bay of the nave, placing it that much nearer to St. George's Hall, and at the western end by projecting a large flight of steps into the Old Haymarket, occupying the space at present but little used, at the side of the main roadway of traffic. By this plan the level of William Brown Street would be lifted, and fine space given in front of the public buildings, but the descent to the main arteries of communication on the lower level would have to be diverted, as to the possibilities of which I am unable to judge.

The plan C No. 3 shows a new roadway cut through the triangular space to the westward of the site, and the boundary outlines of proposed new buildings to occupy the space at present covered by others of inferior character; but this plan proposes no alteration of existing levels, and would not meet the requirements of the case in a satisfactory manner. The central axis of the cathedral is shown in this case slightly changed to suit the line of the suggested new street.

In each of these plans the accesses to the cathedral have been carefully studied, and whether for the high level or the present lines of roadway are quite practicable.

As regards the cathedral structure, the great fall of the site from east to west almost necessarily entails a considerable depth of foundation walling. Mr. Emerson takes advantage of this for the construction of a crypt under the whole area of the church, utilising a portion of it for cathedral offices, consistory court, and choir-boys' vestry or school, and other parts for necessary provisions in respect of heating, stores, &c. At the western end also, where the depth is greatest, he shows a lower crypt, in which might be deposited the remains removed from the existing burial-ground. As he proposes that all such remains shall be sealed down under solid masonry, the windows shown on the plan would neither be needed nor desirable, and there would practically be only one crypt, the floor of which

Mr. Emerson.

would be a little above the lowest ground level. The value of such a crypt would be considerable, and Mr. Emerson's treatment of it is good. It must be noted, however, that, excepting the western portion under the naves and aisles, the greater part would be dependent on artificial light.

The floor plan of the church, structurally considered, is finely designed, the larger supports of the dome are so disposed as to present the least possible obstruction in respect of sight and sound to a considerable congregation of worshippers, and Mr. Emerson is very confident as to the acoustic value of a church thus planned.

As regards cathedral services, the weak point of the plan is the smallness of the choir.

Mr. Emerson shows two arrangements for the fittings, o founded on foreign, the other on ordinary English usage, which is more likely to be acceptable. But in neither is the space sufficient for the accommodation of the clergy and such choral services as are now ordinarily expected in the cathedral church of an important city. This want of space could be met by the advancement of the choir enclosure under the dome, as has been more than once suggested for St. Paul's in London, and to which, properly treated, I see no objection.

The stalls and benches shown upon the plan will accommodate eighty men and boys, including clergy.

Mr. Brooks provides for 118, and Messrs. Bodley & Garner 106 adults.

In other respects the arrangements appear to provide for every needful requirement.

The accesses are good and sufficient, and the several approaches are well designed.

The cloistral avenues from St. John's Lane on the south side might be made valuable for memorial purposes, in addition to that of dry and comfortable approach, and in fine weather the western open porch would be a feature of considerable value, both as regards beauty and convenience.

The accommodation afforded in respect of vestries, and their usual adjuncts, is sufficient and convenient.

The unimpeded area of the floor of the nave, transepts, and under the dome would be about sufficient for a congregation of 3,550 adults; but other space is also available in galleries for occasional services.

As regards architectural features, what I have said later on on the subject of preliminary studies should be borne in mind in criticising the design, both as regards the exterior and interior. While there is much in Mr. Emerson's treatment of details that is elegant and beautiful, there are also some things which one would fain see altered or altogether omitted; but of course much latitude must be allowed for differences of opinion in matters of taste.

As regards the exterior, taking the respective portions seriatim, I would observe on the western façade that the general idea of breadth attained by placing the western towers outside the general lines is unquestionably good; and the idea of the open porch, adapted from Peterborough, is also good, but fails in effect, by reason of the want of mass and flatness of the arches, as compared with the richer mouldings of its prototype. The simple dignity of the general front is marred by the unnecessary projection of the staircase turret on the western face of the south-western tower, which also overrides the boundary; and it is, I think, by no means certain that the steps shown in the larger perspective drawing, and which under the present circumstances of the site could not be had, would not be better omitted.

There are, nevertheless, in this composition the elements of a fine design, especially if the details of it were modelled rather on the best English than on foreign examples.

Taking next the north and south flanks, the centre portions suffer from want of boldness in the treatment of the roofs; the semicircular vaultings at what may be called the four corners of the great central feature seem almost to demand domical coverings, but are treated with flats, and the transept roofs might be higher with advantage. The porches also would seem to demand more protection where practicable.

The eastern end of the building is less satisfactory than any other, by reason chiefly of the management of the roofs, which seem to have but little relation to the curves of the apses, which add so much beauty to the plane.

All these points are, I think, capable of improvement.

As regards the great central feature of the dome, the outline is good, but the small gablets shown would mar the beauty of its form, and as there is no real need for them, might be altogether omitted, or changed for something of less projection. The great buttresses round the drum are constructive necessities; but there is no reason why their termination should be ungraceful, and they are capable of being made things of beauty The same might be said of most of the solid terminations of buttresses and pinnacles, which further study would doubtless considerably improve.

Mr. Emerson proposes to cover the dome with ribbed terra-cotta tiles of stone colour, as to the pleasing effects of which I

Mr. Emerson.

have grave doubts. The great dome at Florence is covered, I believe, with dark-coloured tiles, but what would be the effect of stone colour, tempered by weather, smoke, and dirt, is more than I can venture to predict.

As regards the interior, I think the general lines are good, but there is much in the detail that requires further study; and I cannot but think that ancient English forms and practices are more suitable for an English cathedral than those which give the detail in which Mr. Emerson so largely indulges. I do not think the beauty of his design is increased, but very much to the contrary, by clothing the pillars of the choir with elaborate sculptures, which confuse the outlines, and detract from the simple dignity of the pillars; it is a practice almost unknown in England, and so far as noble work is concerned, in my judgment more honoured in the breach than in the observance. The main structural lines of a church should be clear and unbroken, except by such minor banding lines as would not disturb the general harmony. Any amount of sculptured enrichment is admissible and interesting in subsidiary features, details of furniture, &c., but all main lines of structure should be clearly and strongly marked. Similar remarks would apply to some of the ornamental features over the intersecting arches in the dome, which do not improve the general effect. Notwithstanding these remarks on ornamentation, as I think out of place, there is remarkable beauty of design exhibited in several details, to which such objections do not in any sense apply.

Mr. Emerson is very confident as to the acoustic qualities of the building he has designed, and in his report very fully describes his views. On a subject on which so little has really been conclusively decided I cannot presume to be positive, but can see no reason why, with proper appliances and management, it should not be possible for a preacher to make himself audible to most of those who could be assembled within the area available for such purposes.

As regards construction, Mr. Emerson says:—

The walls would be faced with stone externally and internally, and hearted with cement concrete. A fine hard sandstone, with a good proportion of silica in its composition, would stand the atmosphere of Liverpool best.

As regards covering, Mr. Emerson proposes fireproof roofs; and indeed he says that—

No timber is used from foundation to finial. The outer covering would be formed of a plain concrete barrel vault, strengthened with brick arches over each pier. These barrel vaults might be covered externally with either lead or copper, or thin terra-cotta tiles, fitting into grooves formed in the upper face of the vaults.

This, he says, is a simple—

adaptation of the Roman method of forming stone roofs.

To these proposals, properly carried into execution, I see no objection.

As regards dome and floors, the pendentives and drum, and thick lower parts of the dome, to about one-third of the height, would be constructed of masonry and concrete. Above this it would be of purposely-made bricks of light specific gravity, and of such a form that the dome should be erected without any centering. Those used for the outer surface of the dome would be grooved, so as to fix the light terra-cotta tiles with which I propose to cover the dome. These tiles would be of a good stone-colour, and with a roll moulding on the surface, and might be of two shades to form a simple pattern. The proportion, construction, curves, weight, and thickness of this dome have been carefully arranged and determined, and the accurate calculations of weights, thrusts, and strains have been made in conjunction with one of the most eminent dynamic authorities in England. Access is arranged to all parts of the building, viz., windows, roofs, galleries, domes, and spires, for surveying purposes and repairs, &c. The floors of the church generally would be of stone, and with marble pattern under the dome; but wood blocks might be used for the flooring if desired.

As regards probable cost, I have had Mr. Emerson's figures carefully tested, and am of opinion that the buildings designed by him could be erected and completed within the required limits of expenditure.

(*To be continued.*)

THE LEEDS FINE ART GALLERY.

A MEETING of the Leeds Town Council was held on Friday last week when Mr. Harding moved the adoption of the report of the committee appointed to deal with matters relating to the provision of a fine art gallery and museum for the borough. The document set forth in detail what had been done with respect to the selection of plans. The result of the competition was that the first premium of 50*l.* was awarded to Mr. W. H. Thorp, and the second of 25*l.* to Messrs. Fraser & Sugden. The report proceeded:—"The committee will now proceed to confer with Mr. Thorp in detail upon his plans, with a view to perfecting all the arrangements, and introducing such minor changes as may appear desirable. It is thought that in the basement, in addition to the space necessary for receiving and packing pictures, rooms may be provided, at small additional cost, which may be very useful to the Electric Lighting or the Lamp Committees. It is not anticipated that any changes will be introduced into the selected design which will increase the cost by more than a few hundred pounds. As soon as Mr. Thorp's plans have been finally revised the committee propose to advertise for tenders, and to proceed with the erection of the building. The premium of 50*l.* will be merged in the architect's commission." Mr. Harding reminded the Council that it decided to set apart 800*l.* a year from the penny library rate, and said that the building proposed to be erected would absorb for interest on capital and sinking fund about half that amount, and that the remainder would be available for maintenance. He trusted the committee would have credit for trying to keep within the expenditure which the Corporation determined upon for the building, viz., 8,000*l.* As chairman of the committee he felt much indebted to two of his colleagues, Messrs. Ambler and Tweedale, for the professional experience they had placed at the service of the committee in connection with the project. When a few alterations had been made in the plans, and the project had been carried out in accordance therewith, he believed they would have a building well suited for the purposes, and one which would call forth the public spirit of the town and generous gifts to the Institution which would be appropriate to the jubilee year of Her Majesty's reign they were about to celebrate.

Alderman Spark thought the committee was entitled to praise, because it had encountered some very severe criticism. They were told by professional gentlemen that it was impossible to do the work for 8,000*l.*, but the result showed that professional men were not always the best guides in such a matter. The President of the Leeds and Yorkshire Architectural Society declared the sum "absurdly ridiculous," and complaint was made of the "curt disregard of skilled testimony," although there were two architects on the committee. It was added that the scheme would "land the committee in a position from which they could only withdraw with ridicule to themselves and injustice to others." Those remarks must be regretted now that the result was seen, especially as some members of the Society sent in plans within the limit of expense.

Alderman Emsley ventured to prophesy that the whole expense would be 12,000*l.*, as the 8,000*l.* did not include architect's commission and furnishing.

Alderman Baker said that if the Free Library Department paid its way it would not have a brass farthing left. Although this was so, it was stated that 800*l.* per year was to be taken out of the penny library rate. They were beginning a work the end of which they could not foresee.

Mr. Harding replied, and assured the Council that there was not the slightest danger of their drifting into large expenditure. The furniture would not involve a great outlay. The chief item would be in connection with cases for objects of art. That would no doubt develop gradually, and the committee would have to spend according to the amount of money placed at their disposal annually.

The report was then adopted with only one dissentient.

TESSERÆ.

The Treatment of Caryatides.

H. B. GARLING.

IT is obvious that, in a great measure, the same rules will regulate the treatment of caryatides which govern the application of sculpture generally to architecture, viz., a general sobriety of treatment; the avoiding all strained and unnatural positions of the limbs; no flutter or discomposure of the drapery; the figure balancing itself most accurately, and appearing in every position in the most perfect equilibrium; the outline of the limbs being clearly developed through the folds of the drapery; and lastly, the absence of the idea of forced and laborious exertion on the one hand, and of positive inaction on the other, that the figure appear easily and naturally to support its superincumbent members, and that they be so treated that the same outline and position do not recur too often. If engaged with the wall, as is frequently the case, a greater freedom of treatment may undoubtedly be adopted, since the outline of the figure will not vary much in different points from which it can be seen.

Italian Gothic Wall Decoration.

J. B. WARING.

The general characteristics of Italian Gothic, or Giottesque style of mural decoration are—a dado, or base, panelled with imitations of various marbles, contained within borders painted in imitation of the glass mosaic work usually known as Opus

Grecanicum, having at times central designs of intricate geometrical and leaf ornament. About six feet from the floor is a cornice with small brackets or consoles, all radiating in perspective to a central point of sight; above this the wall is divided into large compartments, containing historical or religious figure-subjects, the figures being strongly outlined, and the colours flat and distinct, with but a slight use of chiaro-oscuro; these compartments are also enclosed in painted mosaic borders, and beneath each there is a description of the subject illustrated, written in peculiar Gothic letters of a very good style. The vaulting of the roof springs immediately from above these pictures, the only actual projection being one large central rib, ornamented with winding foliage and mosaic borders, and painted mouldings to carry it more agreeably on to the flat surface of the vaulted compartments, which are almost always painted of a deep blue, studded with gold stars, and in the centre of each of which are painted figures, usually holding written scrolls descriptive of their meaning. Sometimes the names are written on the clouds beneath, from which they frequently appear to rise. The intersection of the rib is marked by a gold boss, carved and gilt, but not of great size, having a ring in the centre, from which a lamp was suspended. The ornament is generally a mixture of mosaic-work, Roman reminiscences, especially in the painted mouldings, and transcripts from nature: the two first, however, being predominant. The colours are well arranged, and the ornamental accessories—such as dresses, buildings, thrones, armours, &c.—are of great variety and beauty, and very carefully executed. Such are the general characteristics of most of the mural decoration in vogue up to the close of the fifteenth century, as seen in the works of Orgagna at Pisa and Volterra; of the Lorenzetti and Bartoli at Siena, and in the several Italian schools of Italy. And although the works of Paolo Uccello, Masaccio, Ghirlandaio, and Signorelli present many points of divergence, the principal feature being the greater importance attached to the historical subjects and a very superior style of execution, yet it is not until the time of Perugino that we find a completely different system adopted; and to him appears to be certainly due the introduction of a style in every way superior, which was extended and improved by his contemporaries and pupils, amongst whom Pinturicchio and Raphael are most prominent.

James Wyatt, R.A.

JAMES ELMES.

The first symptom of a regular-bred, genuine architect in the reign of George III. was James Wyatt. Being the son of an eminent and opulent builder in the city of London, who was much concerned in Government and other large building contracts, he received the elements of a sound scientific education necessary either for the builder or the architect. After being thus far qualified in his father's establishment, he refined and purified his taste by investigating the finest ancient and modern structures, and in visiting the best schools of architecture in France and Italy. Foreign travel in those days was absolutely necessary for one who aspired to the eminent profession of an architect; for, with the exception of Sir William Chambers's little Goshen in Scotland Yard, there was no school or master of the art, properly so called, in England. Wyatt surprised the admirers of architecture by his designs and drawings that he brought from Italy, and the extensive knowledge he possessed of the arts in general. His polished manners and numerous polite accomplishments gave facility to the development of his ideas, and secured him a host of patrons and friends among the great. He became the principal architect of the day; was consulted by all the leading peers and commoners of the two kingdoms who were about to build, enlarge, or improve their mansions; corporations sent to him for designs for town-halls and assembly-rooms, bishops for new palaces, deans and chapters for repairs of their cathedrals, and players for designs for theatres. In fact, Sir Christopher Wren had scarcely more employers or more buildings in hand at one time than had James Wyatt in the zenith of his employment. At the death of Sir William Chambers, Wyatt succeeded to his chair in the office of Surveyor-General of the Board of Works, and was admitted to that easy familiarity and confidential intercourse with his royal master, George III., surpassing even that of his predecessor, whom the King always regarded with somewhat of the respect due to a tutor. Indeed, the intercourse which is necessary between a sovereign and his chief architect was as complete between George III. and James Wyatt as was possible between two such persons—the King never desiring to be treated by any one whom he condescended to consult otherwise than as an English gentleman, and Wyatt was too well bred to be either servile or pert: indeed, the familiarity that existed between Charles II. and Sir Christopher Wren much resembled it, except that in this case the King was occasionally too much of a roisterer, and loved to indulge in a few jokes upon his little architect's want of sesquipedalian stature; that between George IV. and John Nash was as professionally perfect, except that here the King was too well bred to notice, in his walks with his little architect in the crowded saloons of Carlton House, the difference of their stature. The before-mentioned qualifications possessed by James Wyatt, till then unknown in one man since the days of Jones and Wren, had, previously to the accession of George III., led to the employment of Italian architects, but now reverted through the influence of that sovereign into English channels. Possessed of genius, taste, and feeling, Wyatt revived a correct style, and introduced one still purer than any of his predecessors, remote, it is true, from all the transcendent purity of the genuine Greek school, but nearer approaching to it than the best Italian known. The ancient architecture of England, the neglected and almost forgotten Gothic, came, by desire of his sovereign, under Wyatt's investigation. Here was a new field opened to him; but he had seen many of the finest Gothic cathedrals of France and Northern Italy in his travels, and the style was therefore not so new to him as to Wren. Nor did he so thoroughly despise it as Wren: yet he never comprehended it in all its exquisite niceties. The restoration of Windsor Castle and the repairs necessary to be done to the venerable cathedral of its diocese, Salisbury, led both the monarch and his architect to close Vitruvius, Palladio, Serlio, and all books treating on the "five orders of architecture," for a time, and to open Dugdale and other musty writers on the cathedrals and castellated buildings of England. The additions to Windsor Castle show that Wyatt thought that if he could not amend he would not alter the original styles of the buildings, and he completed these labours with great credit to himself and to the entire satisfaction of his royal and munificent patron.

Royal Patronage of Art in France.

PROFESSOR DONALDSON.

How fortunate has France been for three centuries in having princes who felt that the fine arts can contribute essentially to the refinement, the happiness, and prosperity of a nation! This spirit has endowed Fontainebleau, Paris, and Versailles with the masterly productions of the greatest minds in Italy and France. The lower orders have their enjoyments in common with the princes, the nobles, and gentry of the land; and they grow up imbued with the love of that art, which is so mixed up with their holiday enjoyments, that it becomes a necessity, as it were, from their being used to it from their earliest years; and they are thus unconsciously educated by the contemplation of the finest works. How far are we in this respect behind our neighbours! The gardens of the Tuileries have no parallel with our royal residence of Buckingham Palace; and Fontainebleau puts to shame the courts and terraces, gardens and walks of Windsor Castle, which contain hardly a single statue, group or fountain, or other art accessories of any consequence, and appear cold and meagre and poverty stricken from the want of such accompaniments. So niggardly and deficient in art feeling have those authorities been who have hitherto had to provide for the palaces of our sovereigns and the places of public resort for the people. Often was Francis I. thwarted by his ministers in his munificent desire to promote the fine arts, but he was not to be turned away from an object which he knew would gratify his people and ennoble his country. And well has this noble spirit been rewarded for his early enlightened cultivation of the fine arts, for his example has been followed by the continued munificence of succeeding monarchs and ministers, which has produced that superiority in the art productions of their manufactures which enables them to compete so successfully with the mere mechanical skill and industry of other nations.

Jacopo Sansovino.

F. LUSH.

He was born in Florence, about 1479; died, aged ninety-one, 1570. His first studies were from the well-known cartoon by Michel Angelo (the *War of Pisa*), which was ordered to be drawn for a painting in the Council Hall at Florence, and which Michel Angelo gained in competition over Leonardo da Vinci. It was a great object of study among the students of the day, and Sansovino upon this masterly production laid much of his foundation of drawing the figure and knowledge of design. From Florence he repaired to the Eternal City, where he studied the *Apollo Belvedere*, &c. Bramante, then the Pope's architect, seeing Sansovino modelling in the Vatican, and pleased with a small vase which he held in his hand, that served him as an inkstand, and which he had designed, ordered him to model in wax from the celebrated statue of the *Laocoon*, giving the same example to three other young artists likewise to copy. Raphael was to decide as to which was the best among the four, and his approbation fell upon Sansovino. This model was cast in metal, and was considered to be a most perfect specimen. At this period Sansovino derived advantages from his inhabiting the same house with San Gallo, being in consequence induced to go through a course of architectural studies. Subsequently, he was with Pietro Perugino, and enjoyed the company of the first *literati* and architects of the day, among whom was Cesare Cesariano (the commentator

of Vitruvius), and Andrea del Sarto. The praises he now received, and the fame he acquired as a sculptor, though little more than the age of thirty, served as a stimulus to exert his talents, and produce works from which he might command higher and yet higher commendation. Temanza says (note p. 13), it is not easy to fix the true period in which Sansovino came to Venice. Vasari places it in 1527, after the sacking of Rome. In Venice he met with congenial spirits, and the friendship of Aretino and Titian; upon which Temanza truly remarks:—"E tutti e tre formarono un Triumvirato in cui trovavono le belle Arti come la lor residenza" (p. 15). In 1529, Buono, the architect of the Procuratie, dying, Sansovino was posted in his stead, with a provision from the State, and a house near the Orologia, on the Piazza. He was considered to have shown some skill in the mode in which he repaired, by means of circles of iron toothed and wedged, the cupola of St. Mark, which had been dilapidated for many years. Some of the work was assigned to him in the School della Misericordia, and in the church of St. Francesco della Vigna, though the elevation is Palladio's; and very beautiful are his bronze *bassi-rilievi* to the doorway in the chapel royal of St. Mark, which are given by Cicognara in the second volume of his "Storia sulla Scultura." He built anew the Zecca, in 1535, which is constructed entirely of stone from Istria. The admired loggia, at the foot of the Campanile, was erected about 1540, the pedestals, architraves, and cornices of which are of the beautiful *rosso* of Verona, the columns of the best Brescia and Grecian marbles, and the remainder of Carrara marble. It is richly adorned with statues, in niches, of *Pallas*, *Apollo*, *Mercury* and *Peace*, and *bassi-rilievi*, emblematic of the States of the Republic. The greater part of this most elegant building is by Sansovino; the rest by his pupils,

Copyright of Designs in France.

J. BOWRING.

The penal code recognises the right of every inventor to the protection of his patterns or other inventions, even though he should not be protected by patent, and provides that a penalty of not less than 100 frs., and not more than 2,000 frs., shall be levied on any individual who violates the copyright of another; and it also provides that a fine of not less than 25 frs. or more than 500 frs. shall be levied on any individual who sells a pirated article. I recollect no French term for "copyright" but the general term *propriété*, or property. The invasion of that property by the piracy of a patent mark or pattern is called a *contrefaçon*, or forgery, and the invader is denominated a *contrefaiseur*, or forger. The law also provides for the confiscation of all pirated copyright, whether of patents or otherwise; also all plates, moulds, and matrices which have been pirated. Formerly the application of this law was left to the ordinary tribunals; but it was found that that machinery was too cumbrous and expensive, as it is the fact at this moment in England, and a local tribunal now exists in most of the manufacturing towns of France, to which all questions of copyright are referred. That tribunal is called the Conseil de Prud'hommes; it is composed of an equal number of manufacturers and workmen, *plus* one manufacturer, who is the president of the tribunal, and this tribunal is charged with the decision of every question of manufacturing interest.

Scottish Mortar.

JOHN GIBB.

Sower (spread) together a quantity of lime and clean sharp sand for two or three weeks before being used; work this well and turn it aside, and as the proportion of the lime to the sand will always depend on the quality of the former, all that is necessary is to take care (in sowering), if the lime is of a rich quality, to put one-third less lime into the heap than it is intended to be built with; and, if the lime is of poor quality, say only one-fourth less. (It may here be observed that in general lime of the poorer quality is best for cementing building) When the lime which has been previously sowered, as before directed, is to be used in the building, or otherwise, it is to be again worked carefully over, and one-fourth of quicklime added in proportions, taking care never to have more in preparation than can be used in a short time; and this quicklime should be most completely beaten and incorporated with the sowered lime, and it will be found to have the effect of causing the old lime to set and bind in the most complete manner. It will become perfectly solid without the least evaporation to occasion cracks, which can only ensue in consequence of evaporation; and this can only happen from the want of proper union between the two bodies. But by mixing and beating the quicklime with the sowered mortar, immediately before it is applied to use, the component parts are brought so near to each other that it is impossible either crack or flaw can take place. In short, beating has the effect of closing the interstices of the sand, and a small quantity of lime paste is effectual in fitting and holding the grains together, so as to form a plastic mass by uniting the grains of sand which otherwise would not fit each other. This system will apply to lime-mortar for all descriptions of work, whether for building, plastering in the inside or outside of houses, water-cisterns, ground vaults, rough casting, &c., &c. It may not be improper to mention that whenever there is any difficulty in procuring proper sand for building, clay is an excellent substitute; and all that is necessary is to make it into balls and burn it, and then pound it like brickdust or pozzolano earth.

Superposition in Gothic.

SIR G. G. SCOTT.

It was the custom of the period (twelfth century) for persons of rank to have their living-rooms well raised above the ground. We accordingly find almost every important room in dignified residences of these early periods placed on an upper floor, and vaulted substructures placed beneath them, which were used for stores, cellars, and for other less important purposes. Even private chapels were often similarly raised for the convenience of being on a level with the living-rooms. It is so with the Abbot's Chapel in Chester, and this is the reason why St. Stephen's Chapel at Westminster and the Sainte Chapelle at Paris (both the private chapels of the palaces) were erected over crypts. We see the same in the Prior's Chapel at Ely, in the chapel at Ely Place, London, in the chapel of the Tower of London, and in many other instances.

Gothic Orbs or Blind Windows.

R. WILLIS.

It is well known that in the later periods of Gothic architecture the use of stone panelled tracery increased gradually to so great an extent that in the more elaborate buildings the walls and vaults, and every space unoccupied by actual windows, were covered by them. I shall proceed to show that these panels were termed "orbs." This I shall do by comparing three independent passages in which the word occurs, with the existing buildings to which they refer. The indenture for the tomb of King Richard II. and his Queen in Westminster Abbey covenants that there shall be niches for statues on each side having *orbs* between them to match. "Et les ditz masons ferront measons (maisons) pur xii images, c'est assavoir vi a lune coste et vi a lautre coste du dite toumbe, et le remenaunt du dite toumbe sera fait ove (avec) *orbes* accordauntz et semblables as dites measons." Accordingly the tomb has tabernables (*maisons*) at the sides, between which are placed blank panels (*orbs*) corresponding to them, as may be seen from the drawing of the tomb of Edward III., which is exactly similar, in Blore's "Monumental Remains." William of Worcestre describes the tower of St. Stephen's at Bristol in the following words:—

> Habet 4 storyes et ibi in quarta stori sunt campanæ.
> In superiori historia tres *orbæ* in qualibet panella.
> In secunda et tercia historia sunt duæ *orbæ* in qualibet panella 4 panellarum.
> In inferiori *historia* sunt in duabus panellis in qualibet panella [south and west] fenestræ, in aliis duabus panellis ex parte boreali et *orientali* sunt duæ archæ.

If orba be translated "a blank window," the above becomes a correct description of the existing tower. For its decoration consists not so much in stone panelling as in literal blank windows, which are formed in each storey. The lower windows are open as usual, but in the upper storey where the bells are the blank tracery is not pierced, but a window-opening is formed between part of the mullions only of the central blank windows of each side. The description, if translated thus, will agree perfectly with the tower as it stands:—

> The tower has four storeys, and the bells are in the fourth or upper storey.
> In the upper storey there are three *blank windows* on each side.
> In the second and third storeys are two *blank windows* on each side of the tour.
> In the lower storey there are *windows* on the south and west sides; but on the north and east there are *arches* (for on these sides the tower joins the church).

There exists an indenture for the furnishing of one tower at some one of the corners of King's College Chapel (probably as an experiment), for in the same document it is covenanted that all the fynyalls (pinnacles) of the same chapel shall be made according to one that had been set up. It is agreed that the said tower is to have "fynyalls, rysant gabbletts, batlements, *orbys*, and crosse quarters, and every otherthynge belongyng to the same—according to a plat thereof made." This description corresponds very well with the existing tower. I shall merely point out the orb, or blank panel, with its cinquefoil head, observing that this is not opened with tracery for glass as usual, but that the tracery, or string of cross quarters, is so introduced as to be a mere piercing of part of the stone panel, without destroying its character as a blank panel. As in all these examples the word so plainly applies itself to a blank or blind window, I imagine it must be derived from the Norman French *orbe*, "qui est caché, secret, privée de quelque chose, aveugle. *Orbus*, Lat.'

NOTES AND COMMENTS.

THE rearrangement of the pictures in the Louvre has given rise to unexpected discontent among the visitors who were most familiar with the galleries. The works might not have been hung in the places that were best adapted to illustrate the history of art, but everybody knew where to find them. Now an old visitor is put on the same footing as a stranger, and has to begin anew a topographical education before he is able to discover the whereabouts of things with which he used to be acquainted. The catalogues are not yet adapted to the new dispositions of pictures, and, moreover, was a Frenchman, or at least a Parisian, ever known to carry one of the massive volumes? The conservators ought to act upon the principle that is in use in the Salon, and put a sheet of paper with the names of the pictures at the entrance to each of the galleries which are altered in any way. The new works, which many visitors care alone to see, might be indicated in red. Better still would be a lithographed plan of the galleries on which the positions of the pictures could be marked.

FRANKFORT is about to erect a statue of ARTHUR SCHOPENHAUER. The philosopher was not a native of that city, for he was born in Dantzig in 1788, but from 1831 he lived in Frankfort, and it was there he produced his most noted works. The city naturally desires to have its representative philosopher set up in bronze. His system may not have superseded those of his rivals, but of late years it is more talked about, and that redounds to the credit of Frankfort. The sculptor for the work has to be selected, and it is no easy task. Was not SCHOPENHAUER once called "the dog-faced metaphysician"? He was the advocate of the universality of will, and his countenance suggested that he was endowed with no small measure of that faculty. But if a statue could be made of BEETHOVEN, something can be done with the systematiser of pessimism.

MR. EDGAR FARMAN, as honorary secretary, writes to say that the Architectural Federation Committee has considered the subject of a meeting of Assistants, and is in favour of such a meeting being held, and, further, the committee is ready to provide a suitable place of meeting in London, provided the Architectural Assistants will organise a committee with a view to discussing the subject of Architectural Federation amongst themselves. The Federation Committee will be ready to receive any deputation from such a meeting, and any resolution passed and forwarded to them through the chairman of the meeting will be carefully considered.

THE Ecole des Beaux-Arts has not gained much renown this year. In the examination which has just come to an end, no work by the architectural students was considered to be worth the medal for free-hand drawing. For the modelling of ornament and designing ornament, only third-class medals were awarded.

THE alterations of the customs tariff of the United States are becoming so subtle, that they almost match the problems of the old scholastic dialectics in their ingenuity. For example, there is a clause which decrees that "manufactures of wood, or of which wood is the chief component," are to be charged an *ad valorem* duty of 35 per cent. But when an article is made up of sawdust and glue that is fashioned in a mould, is the compound to be called "wood"? The United States Government have gravely deliberated on the subject, and have decided in the affirmative. It makes no difference if there is a preponderance of glue in the article. Are magic lanterns philosophical instruments? If they are used as aids to a lecture on a philosophical subject they might be so considered, but the stern Conscript Fathers regard them as toys, and henceforth they are to be mulcted in a duty of 45 per cent. That is higher than the usual rate, for the paper ornaments used for Christmas trees during the season pay no more than 35 per cent. Cement is sent over to the States sometimes in sheet-iron drums with wooden ends, which are worthless for other purposes. It was proposed to tax the casing as well as the cement, but, on consideration, the drums were considered to be "coverings," and therefore exempt. A citizen who has a few books sent over to him from Europe has to pay duty on them "without regard to value," which, we suppose, means that the cheapest will be treated as an *edition de luxe*, unless they are "printed and manufactured" more than twenty years before exportation. Manufactured is evidently the official term for composition, and in the official mind printing goes before inspiration.

THE French Minister of War has subscribed for copies of the excellent memoir of HENRI REGNAULT, by M. MARX, forming one of the series of "Artistes Célèbres," and it is to be included among the books recommended for the military libraries. M. MARX has recently visited Spain in order to report to the French Government upon the schools of art in that country.

IF the German statesmen have not an eye on Spain the German merchants have, and apparently they are resolved to captivate the country. It now appears that they are sending handsome volumes in the Spanish language broadcast through the country. We are officially informed that the books contain music, engravings and other attractive features, but they are in reality a mere aid to advertise German goods. The Spaniards must have grown very simple if they are caught so easily. In England, expense of the kind is thrown away, for it only serves the dealers in waste paper, and it is likely that if in Spain the engravings and music are preserved, the advertisements are converted into cigar lights.

THE French authorities, having taken over the buildings of Mont Saint-Michel, will shortly be called upon to pay what is considered a large sum to preserve a part from destruction. An allowance of 2,400*l.* a year was lately assigned for works of restoration, but that sum is insufficient to uphold the central tower, which is sinking with a portentous regularity. M. CORROYER, the architect, by the desire of M. GOBLET, prepared an estimate of the probable cost of the work, and the figures reach 12,000,000 frs.—an amount that is enough to drive the Chamber into a state of consternation. The Ministerial changes have deprived M. GOBLET of the opportunity of bringing in a Bill to authorise the expenditure of so much money, although from his present position, as head of the Cabinet, he will be able to help his successor when he makes the attempt. There is a fatality about the works at Mont Saint-Michel which may deter the deputies from approving of the outlay. A contractor for the works of defence lately brought an action against the authorities, and gained it, as the courts held that the plans were not prepared according to the rules of constructive science.

THAT an artist should be wary of interfering with politics in France is suggested by the fate of M. BAFFIER, who is now in prison for his attempt to kill one of the Paris deputies. A sculptor's life is hazardous, and it is possible that M. BAFFIER suffered much, for his *atelier* was filled with models for which no commissions could be obtained. But he was not in a state of indigence. He was too practical an artist to fail of work of some kind. M. BAFFIER worked before now as a monumental mason, and he was employed on the restoration of Angers Cathedral. At the time of his arrest he was director of the erection of the Gambetta Memorial. He had gained a Salon medal, and the figure he exhibited last year (*Marat*) was purchased by the Municipality, although it was not a work of genius. With patience he might expect further success. M. BAFFIER, like so many artists, imagined that he had a mission, which was to emancipate sculpture from classic trammels, which not only are supposed to bind but to freeze the soul of an artist. He, in consequence, over-estimated the value of his own works, and was bitter against a world which declined to accept them as the latest gospel of art. Then he took to attending political meetings, and discovered that his representative's speeches were as false as the statuary of Greece and Rome. M. GERMAIN CASSE was therefore selected as a victim, but the intervention of some other deputies saved his life.





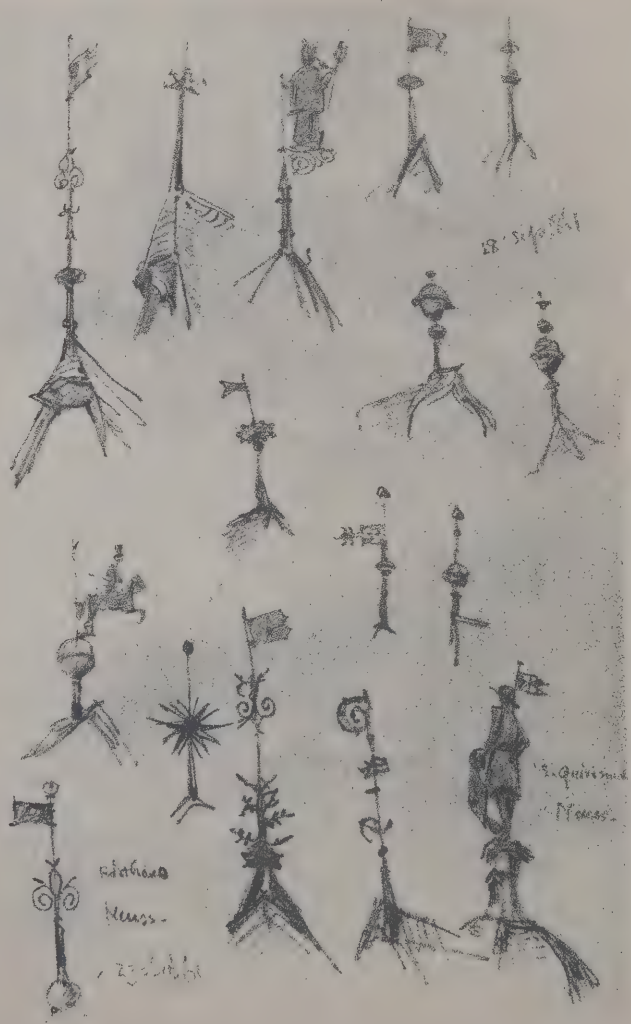
"INK-PHOTO." SPRAGUE & Co 22, MARTINS LANE, CANNON ST. LONDON, E.C.

CHÂTEAU LANGEAIS.

Drawn by W.R.LETHABY.









LEAVES FROM

By A W

Dec.ʳ 17ᵗʰ 1886.









"INK-PHOTO." SPRAGUE & Cº 22, MARTINS LANE CANNON ST LONDON, E.C.

SKETCH BOOK.

HOUSE RA





INTERIOR OF THE MOSQUE OF SULTAN HASSAN, CAIRO.

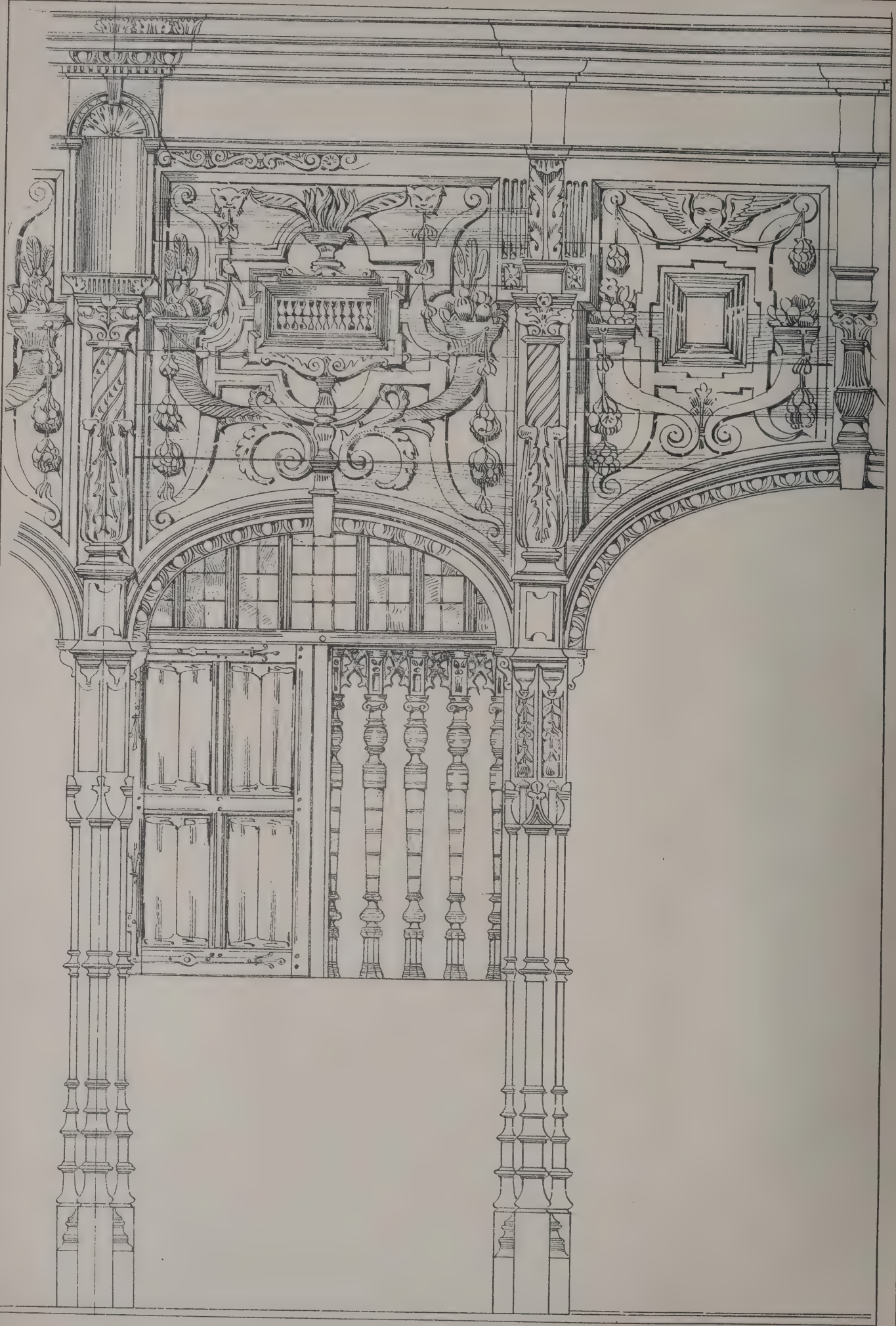
Drawn by R.PHENÉ SPIERS.



"INK-PHOTO" SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.

FONT IN FRARI CHURCH, VENICE.

From a drawing by REGINALD BARRATT.

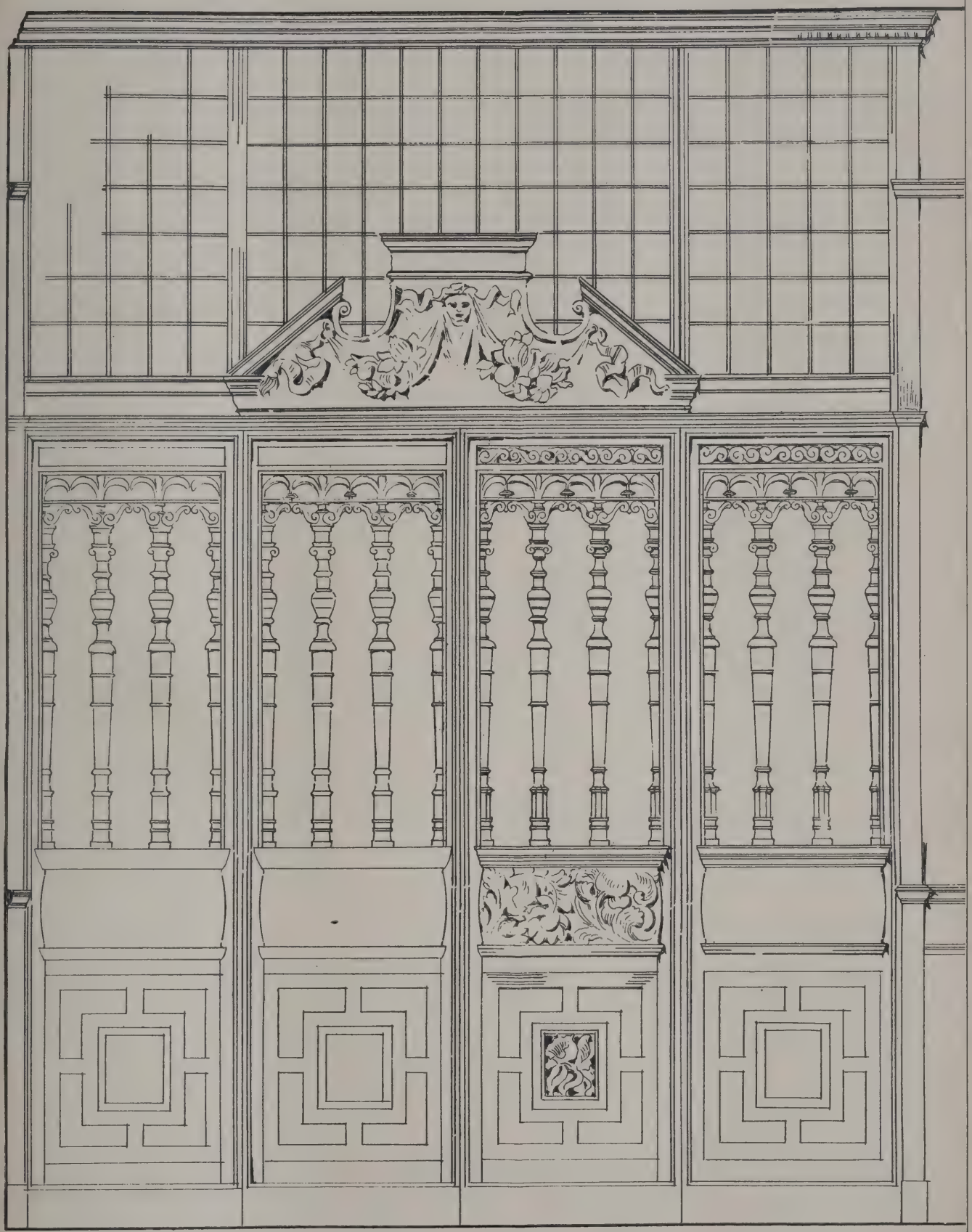


Printed by Sprague & Co 22, Martins Lane, Cannon St. E.C.

DAWPOOL, CHESHIRE.

DETAIL OF SCREEN IN PICTURE GALLERY

R. NORMAN SHAW, R.A. Architect.



SCALE OF 0 1 2 3 4 5 6 7 8 FEET

"PHOTO-LITHO" SPRAGUE & Co. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

PRINCES GATE. SCREENS IN DRAWING ROOMS.

Designed by R.NORMAN SHAW, R.A.

Amiens: The Gate 'Pharoah.' ✝ [GH]
June 26th 1886.



"INK-PHOTO" SPRAGUE & Cº 22, MARTINS LANE, CANNON ST, LONDON, E.C.

AMIENS, THE STALLS.

From a drawing by G.C.HORSLEY.

ILLUSTRATIONS.

ARCHITECTURAL ILLUSTRATION SOCIETY.

NO. 42.—SCREEN, DAWPOOL, CHESHIRE.
NO. 43.—SCREEN, PRINCE'S GATE.
NO. 44.—LEAVES FROM A SKETCH BOOK.
NO. 45.—MOSQUE OF SULTAN HASSAN, CAIRO.
NO. 46.—CHATEAU LANGEAIS.
NO. 47.—FONT IN FRARI CHURCH, VENICE.
NO. 48.—STALLS, AMIENS.

THE ROYAL ACADEMY.

ON Friday last, Sir Frederick Leighton presented the prizes to the students who had been successful in the competitions held in the schools. There was a large assemblage of students and their friends, and the following Academicians were present :—Sir J. Millais, Messrs. Alma Tadema, Marks, Ouless, Poynter, Leslie, Armstead, Armitage, Frith, Waterhouse, Norman Shaw, Yeames, Burne Jones, Marcus Stone, Fildes, Leader, Seymour Lucas, Briton Riviere, Hook, and Calder Marshall. Sir Thomas Jones, president of the Royal Hibernian Academy, and Professor Marshall Wells were also present.

The President delivered a short address to the students, remarking that he could never take part in any distribution of awards without some little disturbing consciousness of the want of proportion in the operation. He saw coming up to the table the successful candidates, relatively few in number—coming up one by one to receive their well-merited honours amid the clamorous and generous applause of their fellow-students. The victors were raised above their fellow-students, and between victory and defeat there was an enormous difference. There was a gulf fixed between a prize and no prize, but yet he could not silence the recollection of how narrow was the margin that often divided those who had failed from those who had won. But that anomaly was inherent in all competitions and therefore inevitable. Proceeding to deal with the merits of the various competitions, Sir Frederick pointed out that in four of them they had not felt justified in giving more than one prize, and in two out of those four the prize was a second prize only. On the other hand, there was one class in which the display of work had been so extremely gratifying as to justify and demand altogether exceptional acknowledgment. He alluded to the Creswick competition for landscape painting. In that competition no less than three "honourable mentions" had been awarded in addition to the one prize which they had to dispose of, and out of the three works so mentioned one ran the victorious work so close that the result hung on one single vote. To that work a *proxime accessit* had been given. Between the two extremes of merit the average of works seemed to them altogether satisfactory, but the great and culminating fact and feature to him of this distribution had not been mentioned. He had often told the students how deep a satisfaction it would be to him if he were able some day before long to make in the class of design for the decoration of a public building the highest award possible, namely, by a commission to execute the design. That had been long deferred, but that night, for the first time, he had the great joy to announce that it would be realised. In the class of drawing of a figure from life an occasional hankering after manual dexterity, indeed almost trickery, had been noted. He wished earnestly to impress upon them that the true mastery was never effected by anything that savoured of a trick. Trick and dignity could never go hand in hand. He wished also to remark with regard to the class of a cartoon of a draped figure that it seemed to him that there was a tendency to forget the object for which the competition was instituted. The object was to encourage students in the study of drapery as an element of design. It was not sufficient that the figure should be draped, but it must be draped in such a way that the drapery increased its beauty and enhanced its dignity. That condition had been held in view by only one competitor, and he was the prize-winner in the class.

The presentation of the prizes was then proceeded with, the following being a list of the chief prize-winners :—Landscape Painting.—Creswick Prize of 30*l.*, Arthur John Foster ; honourably mentioned, Arthur T. Nowell, Burnard Rooke, and Stephen B. Carlile. Painting of a Figure from the Life.—Silver medal—1st, H. Barrett Carpenter ; 2nd, George G. Kilburne. Painting of a Head from the Life.—Silver medal—1st, J. W. Perrin ; 2nd, F. H. A. Parker. Copy of an Oil Painting.—Silver medal—1st, J. D. Penrose ; 2nd, L. A. Pownall. Copy of a Landscape.—Silver medal—W. G. Wilson. Design in Monochrome for a Figure Picture.—Armitage Prizes—1st, 30*l.* and a bronze medal, Sidney Paget ; 2nd, 10*l.*, not awarded. Design for the Decoration of a Portion of a Public Building.—Prize 40*l.*, H. J. Draper. Cartoon of a Draped Figure.—Silver medal and 25*l.*—R. A. Bell. Drawing of a Figure from the Life.—Silver medal—1st, Alfred Andsell ; 2nd, F. S. Beaumont. Set of Six Drawings of a Figure from the Life.—1st, 50*l.*, Albert Starling ; 2nd, 25*l.*, Alfred Andsell ; 3rd, 15*l.*, C. H. Bartlett ; and 4th, 10*l.*, G. H. S. Cowell. Drawing of a Head from the Life.—Silver medal—1st, Helen S. Squire ; 2nd, Florence H. Burgess. Drawing of a Statue or Group.—Silver medal—2nd prize, H. P. Mostyn. A prize of 10*l.* was also given in this class to Alice Maria Dicker. Perspective Drawing in Outline.—Silver medal—Anna Maria Gayton. Model of a Design.—1st, 30*l.*, W. H. T. Venner ; 2nd, 10*l.*, G. J. Frampton. Set of Three Models of a Figure from Life.—1st, 50*l.*, H. A. Pegram ; 2nd, 20*l.*, W. G. John. Model of a Figure from Life.—Silver medal—1st, W. G. John ; 2nd, A. G. Walker. Restoration of a Mutilated Antique Statue.—John Rhind. Model of a Group or Statue.—2nd prize, John Rollins. Design in Architecture.—Travelling studentship, 60*l.*, E. H. Sedding. Set of Architectural Drawings.—Silver medal—G. T. M'Combie. A further prize of 25*l.* in this subject for the upper school was taken by S. B. Russell. Set of Drawings of an Architectural Design.—10*l.*, C. C. Wilson. Perspective Drawing in Outline.—Silver medal—R. S. Ayling.

GERMAN CRITICISM ON ENGLISH PAINTING.

THE last number of the *Deutsche Rundschau* contains an article on the recent exhibition in Berlin, by Herr Herrmann Grimm. In speaking of the English pictures the critic writes :—

At a time when it would almost seem as if the art of producing anything really beautiful no longer existed, we are met by a proof to the contrary in the exhibition of portraits by English painters, which charm us by their spiritual depth and an excellence which is all their own. Much has been said as to the causes of the extraordinary artistic capacity of these masters. Most people appear to have come to the conclusion that it is because artists can allow themselves more time for their work. I would remind my readers of the following. We all know art as well as politics went through its revolution at the end of the past century, and the disastrous effects thereof. Art in England was untouched by that revolution, and, undisturbed, pursued its own course forwards and alone. Editions of Reynolds's writings followed one another in unbroken succession from the end of last century on into the present. Reynolds remained the critic who set the tone, and his pictures also enjoyed without interruption a similar place of honour. The English had no need of either Greece or Italy, for the best art of both countries in every century was to be seen at home. A critic such as Ruskin could hardly exist in Germany. Another Englishman, Mr. J. A. Crowe, has done much to bring the modern historiography of art to its present high level. So it has come about that the English painters of the first rank are carrying on their art in that tradition of the eighteenth century which we possess no longer. When I speak of tradition, I mean the direct connection of the school with the great masters from the Cinque-cento onwards. Tradition does not mean the copying of the special style of this or that master by individual painters according to their personal fancy, but the general carrying out and development of conceptions transmitted from earlier generations. We, too, have our painters after Titian, Rembrandt, and Holbein. In England art has made its own the totality of all that the previous century drew from the study of all the earlier masters, and has gone forward in that path without even imagining that it could do otherwise. Hence the all-round completeness of the English portraits at our exhibition ; the complete satisfyingness of this manner of representing a personality in a picture ; the virility, strength, scholarliness, and at the same time freedom of this art. These pictures are produced by really cultivated men, who know the world, who understand the great masters, who are conversant with the history of art, and who work for a public which, as far as æsthetic culture goes, is on equal terms with them. They may be proud of having produced work of real artistic value—of pictures which have a fixed historic currency, and are not mere experiments which can hardly be bought for money to-day and to-morrow will perhaps hardly find a purchaser. Of masters such as these we have but few in Germany, and what there are of them are not represented at our Jubilee Exhibition by anything worthy of their powers. English art is the outcome of a harmonious and consistent national development. I myself have no partiality for England. The passionate coldness (*sic*) of the English is antipathetic to me. There are occasions on which they at once freeze up—become spiritual icicles. But who would deny the culture that this people possesses? What thirst for truthfulness! What efforts they make to inoculate their children with the feeling for a manly freedom! Nowhere is the individual so developed as in England. Nowhere is a

special endowment so well able to find out for itself the especial place from whence it can effectually work. I feel as though this spirit were speaking to me from the pictures which the English painters have exhibited in Germany.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE fourth ordinary sessional meeting of the Liverpool Architectural Society was held on Monday. Mr. G. E. Grayson, the president, was chairman. Mr. J. M. Hay read a paper entitled "The Liverpool Cathedral.—What! Something more about it." The original design of Messrs. J. and W. Hay for the proposed Liverpool Cathedral was exhibited on the walls, as well as two new designs of the exterior, one of them showing a reversed order of composition, inasmuch as the dome was made to form the principal feature and the western towers a secondary one. Messrs. Hay adhere in their preference for their original design as the best and the right one; for though it may be inferior as an architectural composition, they consider it is so in order to attain a nobler idea.

Mr. Hay said that whether the cathedral should be begun now or never erected at all, it was nevertheless a theme of surpassing interest and a splendid text for a lecture on architectural art. He touched upon the questions of style, site, the proper position of the building on the site, and then dwelt at considerable length on the mixture or combination of styles, as shown in their design. Amongst other things he adduced St. George's Hall, one of the noblest architectural productions of the nineteenth century, as a case in point for them; while, in the interior, with its vaulted ceiling and round arches the style was Roman, there was nothing of that outside but the pure Greek ordonnance. The rise and progress of Gothic art was to be found in the cathedrals of France, England, and Germany. Its course for three centuries was the most glorious in architectural history. But that course was run and could not be run again. They could no more revive the Gothic glories of Christendom than they could the Classic glories of Athens. There was much in both styles that must live, for the good cannot die, but only by recasting it in modern thought, and not by slavishly reproducing the lineaments of a bygone age. He pointed out as a defect in all our cathedrals the obstruction caused by the heavy pillars which support the vaulting at the main intersection, the solitary exception being that at Ely, where Alan de Walsingham tried to remedy the defect, and therein showed that he had some glimmering light of what the dome was destined to achieve in the future service of Christian art. Nothing further was accomplished till Sir Christopher Wren picked up the pencil which had fallen from his fingers of Ely, and at St. Paul's carried the application of the dome another stage forward. Another blemish was that of the roofs being always constructed of perishable materials. They avoid that defect by having their domes covered with an arch of stone or hollow brick, which is at once the ceiling and the roof, and those portions of the building which were to be vaulted would be laid with lapping flags of stone lineable with the pediment, by which means the fabric would be rendered imperishable, the roof and ceiling being of the same material as the walls. Although they have no outer covering to the dome like those sometimes made to raise it for the purpose of rendering it a more important feature in external design, he was not prepared to condemn such coverings. Some strict architectural critics did so, and Pugin in his "True Principles" designated that of St. Paul's as a huge expensively constructed sham. He did not think we should go so far as that; we have a right, however, to insist that it should at least be constructed of materials that would neither rot nor burn. A few weeks ago there came under his notice an interesting work by the Professor of Fine Arts in the University of Edinburgh. There was much in what the author said which confirmed his own views respecting the dome, both as to its general treatment and its use as an architectural form; but, notwithstanding the exalted terms in which he referred to the interior effect of St. Sophia, and affirmed that the problem of the Christian domed church there received its full solution, Mr. Hay considered that he had failed to perceive the full nature of its language as an element of architectural expression in Christian art. The Gothic structures of Christendom all speak with one voice—the voice of aspiration, the longing cry of the human soul after the Infinite. But that was only a part of Christianity. What was wanted was the other—the Gospel part—the response to that cry—the expression of the Divine presence. There was no other architectural form in the world but the dome which spoke to us in that voice. If then there was more gospel in the benediction than in the cry, there was more Christianity in the dome of St. Sophia than in the tower of Strasburg and the choir of Beauvais. But why was it that Christianity spoke through the tower of Strasburg and choir of Beauvais and not through the domes of Florence and Rome and London, but that the style of those buildings could not speak the language of aspiration; and the language of the Divine presence and response which that style could have spoken was left unuttered by them? The architects of those buildings had misapprehended the true meaning of the dome, for both externally and internally, instead of allowing it to speak in its own native tongue they pronounced it with a foreign accent. Had the inner dome of St. Paul's not been made to assume a Gothic form, for which there was no collateral necessity?—for, sprung over at about the level of the whispering gallery, it would have doubled its effect, and its language would have been distinct, intelligible, and impressive. The outer dome and peristyle of St. Paul's was perhaps the finest thing of its kind that was anywhere to be found, but its voice was in falsetto. He feared that the noblest use of the dome in modern times had been missed by Brunelleschi, by Buonarotti, and by Wren, for by setting it upon a drum, and elevating the pitch of its curvature, they had certainly made it an imposing architectural feature, well seen at a distance, but they had robbed it of expression—a nobler quality. They must have both expressions in the building which was intended to be representative of the fulness of Christianity. Referring to Messrs. Hay's original design, he said that here for the first time in architectural history was the attempt made to combine in one building the two grandest expressions of architectural language—human aspiration and the Divine presence; to set up, as it were, the Jacob's ladder which should typify the Union and the Communion of Heaven and Earth. In the vertical lines and pointed arches they perceived the ascending thoughts and the human cry; in the great round dome the Father's presence and outspread hand. The distinguished author already referred to says (as if by way of disparagement) "that the dome tends to its centre, and bars egress." But in that again he misread its character. Its function was not egress, but ingress—not ascent, but descent; not aspiration, but response: and beneath it they were each made the centre of an influence which—manifesting itself at the zenith—streams down in all directions, until overflowing the natural boundaries of its own circumference it reaches beyond the supporting arches to those which terminate every vista and fills the whole house with its presence. His design might be faulty in many respects; but if the Liverpool Cathedral was to be a true exponent of the most advanced thought of the present day it must be conceived somewhat in the manner of those lines, and not a mere travesty of the dead-letter of the past. From the complex nature of the Christian Faith the material edifice could not be truly representative unless by a homogeneous combination of styles. As to purity of design, there was no such thing in the strict sense of the word in modern architecture. It was impossible, unless the architect shut his eyes to much that was noblest and best around him. It was impossible, as long as three principles of construction were in daily use—often all three of them present in the one building at one and the same time. It was also impossible, because any style that was merely pure and simple could not meet all the exigencies and requirements of modern life. The pre-Raphaelite recipe of selecting nothing, rejecting nothing, was of no service to the architect; for the art of design was pre-eminently one of selecting and rejecting, of refining and combining, and by thus obtaining the best of the best insuring the survival of the fittest.

In the course of a discussion which followed Mr. Mercer expressed the opinion that the design which Mr. Hay had so highly praised was of an absurd character, according to the present feeling existing among the bulk of architects. Mr. Crofts said that Mr. Hay's proposal to erect a cathedral at right angles to St. George's Hall was a good one, and should be adopted by the Cathedral Committee. Mr. Goldstraw remarked that there was much to be said in favour of Mr. Hay's arguments, and the paper was in more respects than one remarkable. On the motion of Mr. Mercer, seconded by Mr. Crofts, a hearty vote of thanks was accorded to Mr. Hay for his paper.

EARLY TRIALS OF ACADEMICIANS.

AT the meeting of the Carlisle School of Art, which was held last week, the Rev. Canon Richmond (who is the son of Mr. G. Richmond, R.A., and a brother of Mr. W. B. Richmond) told the students that his father became an artist and earned his living from the time that he was 14 years of age. Like an artist, his father married early, and he was his eldest son, and had seen his father through the early difficulties of his life, when he was at times painting from eight o'clock in the morning till eight o'clock at night, and only lay down on the hearthrug for rest and refreshment between the visits of his sisters. He (the speaker) was quite a little lad at the time, but when he saw how hard his father had to work he said to himself he would never be a painter, and he stuck to that resolve. Although he was made to draw for two hours a day for some time when he was about ten years, he struck entirely

and never drew another line when he went to school at eleven. The days were gone by when Sidney Cooper, the animal painter, and his (the speaker's) father finding themselves on a journey in the middle of Kent, and many a mile from London, collected their money, and found that it only amounted to 1½*d.* That was their case, but he did not believe the time had gone when the artists would have to work very hard from the beginning of their time. They knew the artist Mr. Phil. R. Morris, whose pictures were sent out at Christmas in the social journals. That man he had known in his early times and struggles, when it was a very difficult thing for him to keep body and soul together, and now he was quite successful, and looked up to by the whole profession of artists, and, what was more important, by the profession—or should he call it the trade?—of picture dealers. It was said that art was long and life was short. Art was long, it was perfectly true, and it was very conservative. Education generally must be more or less conservative. Look at our education nowadays. He meant to say the liberal education. A little time ago it was for teaching everybody French and modern languages, and all that; but they found it was very much better to ground their scholars in their Latin and Greek as being the best sort of education that they could have. They must go back to the classics, and he was reminded of the fact that the *Dancing Faun*—for which one of the prizes for drawing was given—was the very same model as that from which his (Canon Richmond's) father drew, and which admitted him as a little boy something like twelve years old into the Royal Academy. So they saw the same grammar studied now which was studied about sixty years ago, and it would have to be continued. At the time when art schools and art education was first interesting Mr. Gladstone, somewhere about 1842 he thought, then there were different people put on the Commission in London, among them being the speaker's father and Mr. Richard Redgrave, and the grand stand was made on what he might call the grammar of classical education to artists. It was not to be mere utilitarian art that the School of Art was to teach, but the students were to learn to draw the figure, because, as he remembered very well being said by Mr. Mulready, the Royal Academician, any man who could draw the figure proper could also draw a tree and pretty well anything else.

GLASGOW ARCHITECTURAL ASSOCIATION.

A PAPER was read by Mr. W. J. Anderson at last week's meeting on "Evolution in Architecture." The subject was treated first as analogous to evolution in nature, though actually comprehended in it, the sphere of human thought and work being regarded as under the control of natural law. An examination was made of the factors in the process, and of the characteristics of periods in styles or cycles of art, as being just those which would attend corresponding periods in any common natural process. The features of the column-shaft and the buttress were instanced as typical examples of accommodation to varying conditions, and an interesting account was given of their origin and development by the working in and around them of causes and effect. The essay was illustrated by drawings and photographs, and at its conclusion, after a discussion opened by Mr. Boston, a vote of thanks was passed to Mr. Anderson.

THE ASSOCIATION MASONRY CLASS.

ABOUT a month ago we gave a short account of the opening meeting of the classes of masonry at the City and Guilds of London Institute. It was said that the instruction was to be given by means of two classes, the one limited to a few pupils who were to be prepared to serve as foremen or assistant teachers to other classes. Since then the members of the first or preliminary class have had three meetings, and feeling themselves sufficiently prepared to take up their duties as foremen, it was decided to start the second classes on last Tuesday.

In Mr. Harvey's opening speech, which was reported at the time, this class was called the subsidiary class; but it is, on the contrary, the principal class of masonry fully organised. It resembles nothing which exists in any of the technical high schools, either in England or abroad, and it is to some extent an adaptation of the educational teaching which was formerly given in the Ancient Guilds of Stonemasons. It might be described as a large builder's yard on a small scale, for it presents a formidable staff of officers, as the class is divided in eight divisions each headed by a foreman. On the other hand, luckily, the number of privates that form each division is but small, otherwise the building of the Guilds Institute, large as it is, would be too limited to contain Mr. Harvey's army of amateur masons. According to sound military principles of organisation nothing is left to chance; but each foreman receives written instructions for the day, clearly defining his duties, the work he has to see carried out under his supervision, the method to use in imparting his instruction, &c. &c. He has to keep an account of the stones worked by each mason in his division, and to see that each stone is signed in large letters on the face with the name of its author. With such a large staff of foremen the class could certainly accommodate more pupils, and architectural students would do well to seize this exceptional opportunity of getting useful knowledge in a practical way. In a class of that kind there can hardly be too many pupils; the work will be got through all the more rapidly by having more hands to do it, and the proceedings will be all the lively and interesting. Senior members of the profession who are interested in technical education ought to visit this class, which presents features which might with advantage be adopted elsewhere. The next meeting will take place on January 11.

SAXON REMAINS IN THE BATH DISTRICT.

AT the last meeting of the Bath Antiquarian Field Club, the Rev. Prebendary Earle read a paper on "The Traces of the Saxon Period in Bath and Neighbourhood." He said it was more than 800 years ago since the Saxon period was brought to a close, or supposed to have been brought to a close, by the Conquest; and then from the time that it closed to the time when it began they must reckon a period of 500 years. A remote period, certainly, and yet it was not long ago to any one who studied national life. Bath was a spot in which one might be naturally led to inquire after Saxon traces, from various historical reasons. It was first of all a Roman city, and then it was captured by the Saxons from the Britons and lay waste for a hundred or two of years, for the Saxons were not fond of city life. At length it was occupied by a religious house founded by King Osric, and this house became the centre around which a new population grew. Of all this they had records; even of the time of desolation they had a written memorial in the form of a meditative poem on a city in ruins, and pools of water of natural heat, which appeared to him to indicate no other place than Bath. The Chronicles mentioned the capture of Bath in 577, and they had a considerable number of documents relating to Bath, documents of various dates during the Saxon period, and these dealt with two things, the transfer of land and the manumission of slaves. In these documents they had mention of Widcombe, Lyncombe, Northstoke, Priston, Farnborough, Corston, Weston, Hampton, and Freshford. An American or New Zealander, or any visitor to their land who had studied their early literature, might naturally ask what visible and tangible objects remained in existence in the neighbourhood. Dealing, in the first place, with what had been here, but which had been removed, he alluded to two books in a Cambridge library relating to the landed property of the monastery of Bath, and then proceeded to speak of Saxon coins. There were, undoubtedly, a great number of coins struck in Bath from the time of Athelstan, and he was of opinion there was a regular coinage there, or more than one coiner, for there were a large number of coins in existence of the Saxon period and with the name of Bath on them; but, he was sorry to add, there was not one to be found in the city itself. Nor were there any traces of the old Saxon abbey. There were traces of the Norman buildings, but of the Saxon they had no portion of the architecture remaining, though he thought he could point to certain fragments which were connected with it. There were in the Institution portions of two Saxon crosses, and in the excavation at the Roman baths a good, bold piece of Saxon carving, apparently the upper part or shaft of the cross, was discovered, and also the basement of a Saxon pillar. At Bitton Mr. Ellacombe said that over the chancel arch, which was Norman, there was a trace of a previous Saxon chancel arch, and at Limpley Stoke there was a very remarkable Saxon doorway in complete preservation on the south side of the church. The Prebendary then spoke of the Saxon church at Bradford, discovered in their own time, and which corresponded exactly to William of Malmesbury's statement that Bishop Aldhelm built at Bradford an ecclesiola. This church contains what he supposed was the finest piece of Saxon sculpture that was known, though in the vestry within the chapter-house of Bristol Cathedral there was a fine Saxon relief, but it must yield the first place to the sculptured angels in the Bradford church. Another feature of the Saxon period to which he referred was the earthen mounds, many of which could still be observed, which were no doubt Saxon, and represented the ground-plan of a Saxon gentleman's house—the house of the owner of the property. He thought the mounds at Englishcombe—distinct from the Wansdyke—might be claimed to belong to these traces of fortified houses—one of the most durable features of the Saxon times. Mention of the yew-tree at Charlcombe Church led the speaker into an interesting discussion of the reason why these

trees were so often to be found in our English churchyards. He did not accept the idea that they took the place of cypresses as a symbol of mourning in consequence of their dark foliage, but considered rather that they were originally planted for the shelter and protection of worshippers at the cross at a time when they had no roof over their heads.

HOUSE RENTS IN GLASGOW.

AT the meeting of the architectural section of the Glasgow Philosophical Society on Monday, Mr. John Honeyman read a paper on "The Incidence of Taxation as affecting the Housing of the Poor." Mr. Honeyman, considering what taxes affected the rents of dwellings, and how the rents were affected, said that the taxes which chiefly contributed to increase rents were municipal, parochial, and school rates, house duty, and property tax, altogether about 5*s.* 3*d.* per 1*l.* of rental. It was a popular delusion that part of these rates was paid by the proprietor; it was paid by the tenant through the proprietor. The amount added to house rents in Glasgow which tenants fondly supposed to be paid by landlords was about 98,000*l.*, and that was over and above the still larger sum paid by themselves directly. The rates for municipal, parochial, and imperial purposes actually added 25 per cent. to the rents. Considering how different classes of tenants were affected by these taxes, and especially how important it was in the interest of the working-classes that houses and every other kind of heritage should be entirely exempted from taxation, he contended that the burden was more oppressive to the poor than to the rich. The poor man's tax was oppressive and the rich man's was not, for the manifest reason that whereas the rich man could pay his tax without depriving himself or his family of one single thing necessary for their health and comfort, the poor man could not without doing so. To the rich man the tax was no burden—it was not oppressive because he threw it off whenever he liked by taking a cheaper house. The poor man could not; however grievous to be borne he must bear it, and it was therefore oppressive to him. He maintained, further, that it was unjust that some of the poor should pay and some should not; and utterly intolerable that while the burden was rigorously laid on the shoulders of the honest and the thrifty, the dissolute and the profligate should be relieved. What could be said for a system which allowed an unencumbered man with 30*s.* or 2*l.* a week, who lived in a model lodging-house, to go Scot free, and exacted more than 4 per cent. of his total income from the man who had a large family to provide for? Why was this iniquity perpetrated? There was but one answer. The decent labourer had a house of his own, the spendthrift mechanic had none. They, therefore, for this, and for no other reason whatever, taxed the one and not the other. The question naturally arose, how could the necessary taxes be raised in any other way? It was impossible for him there to enter upon that subject—his only object was to point out the evils of the present system—but he was tempted to refer to one objection to any change in the incidence of local taxation raised by Mr. Goschen. Mr. Goschen said it was impossible to localise income. Mr. Honeyman submitted that all that was necessary to localise income was to individualise it, and, having individualised it, the location of the individual could easily be determined by the register. Where the individual voted there let him be taxed. A comprehensive and a radical change of the present system, he contended, was required. The inequality and inexpediency of that system was equally apparent if its application to shop, warehouse, and other property was considered. In no case did it necessarily bear any relation whatever to the income of the person taxed, and in every case it was equivalent to a tax on the industry of the country—a tax which in those days of keen competition and one-sided free trade the industry of the country was unable to bear.

STONEHENGE.

IT was stated by Dr. Stevens, of Reading, that he had authority for believing that fragments of the great monoliths at Stonehenge were removed. Sir Edmund Antrobus, the owner, in writing to a local paper, says:—

I believe the facts to be far different from those which Mr. Stevens assumes as unquestionable. If, however, Mr. Stevens would furnish me with the name of his friend, and we could find the stone on which the fragment would fit, it would furnish an excellent opportunity to test the working of the Ancient Monuments Preservation Act, but I am doubtful of the source whence most of these specimens are derived.

Some forty years ago my father received a communication to the effect that a shepherd was selling specimen bits of Stonehenge, wholesale. He rode up, and having business habits, first made an examination of the monument, with the view of discovering whence the specimens had been taken. He was unable to do so, and, finding the shepherd, spoke to him, telling him of the charge made. "Lor' bless ee," said the man, with a broad grin on his face, and in the broadest Wilts vernacular, "I wouldn't hurt the old stöans. Now when they ploughed over the barrow" (pointing to a low one in the neighbourhood) "they ploughed up a lot of bits, which, I s'pose, they as put up the old stöans buried there, and I always has two or three bits in my pocket, and when one of they archilogical chaps says, 'Shepherd, can ee get I a bit of the old stöans,' 'Yes, sir,' says I, 'if so be as you'll please not to tell Sir Edmund,' and I gets half a crown and the old stöans aint never the worse." The connection, if it existed at all, between the specimens and the monument, was purely pre-historic. I believe, with the exception of the case of the Oxford Professor, who on the principle of "detur digniori" endowed his University with a few grains of each of the more remarkable specimens, nothing is carried away; but the idea undoubtedly exists that such injury is of constant and daily infliction. Some few months back, after perusal of a remarkable document, purporting to give a view of the present state of Stonehenge, and implying, so far as I recollect (I have not got it to hand), that in the vast majority of cases the damage was of recent occurrence, I went up, and whilst making examination as to any damage thus recently effected, was accosted by an elderly gentleman, who, remarking that he understood I had an interest in the place, observed that it was being carried away "wholesale and piecemeal." I expressed my regret, and asked him to show me some of the damage of recent date. I followed him half round the monument. At last, pointing to two undeniable abrasions, "There, sir," said he, "what do you say to that, and that?" "Well," I replied, "I have nearly sixty years' acquaintance with the monument, and know something of the colour the stones exhibit when recently injured. Will you," I asked, "give me the assurance that either of those abrasions has taken place within fifty years?" He looked me hard in the face, and walked away. The last words I heard him muttering were, "Wholesale and piecemeal! wholesale and piecemeal!" Without a doubt, on reaching home, he wrote an account to his local paper.

If the damage done in the last ten or twenty years were fairly and thoroughly estimated, it would be found that with each year greater respect was shown and less damage done to our great Wiltshire monument, and this notwithstanding that no iron railing is interposed to obstruct spectators, no guardian, as suggested, to utter the mandate of "move on," and that picnickers are still allowed to eat a bun or sandwich within the circle.

The *genus irritabile* of the archæologists have determined on its annexation, and in these days to covet is sufficient justification for attack, and for that purpose nothing is so available as, to say the least, misrepresentation.

SOCIETY OF ANTIQUARIES OF SCOTLAND.

THE first monthly meeting of the present session was held on Monday, Professor Norman Macpherson, vice-president, in the chair. The first paper was an account of the prehistoric forts of Peeblesshire, by Dr. David Christison. Circumstances had favoured his investigation of the area of Peeblesshire, in which there was a total number of eighty-one fortified sites known, although of these there are only about twenty-four in fair preservation. Roughly speaking, these forts might be divided into two classes, the first consisting of forts constructed of stones only, and these are usually distinguished by the absence of earthworks and trenches. They are ten in number, and perhaps the most remarkable of these is that of Cademuir Hill, in which the main wall of the fort has been strongly built, and several annexes clustered round the main enclosure. The second class of forts, those constructed of earthworks, includes several varieties—(1) with a single rampart, (2) with a double rampart, of which there is a good example called the Harehope Rings, (3) of more complex form, as at Whiteside, which has four concentric rings of defence and platforms within the inner ring. There was yet another class of forts placed in valleys or on ground which gave them no advantage of position, and this fact seemed to show that the term "hill-forts" was too restricted to be applied as a generic term to the whole of our prehistoric forts. Considering these fortified sites generally, there was one thing which seemed to point to the conclusion that they could not have been for permanent occupation, namely, the absence of a water supply. The second paper, by Mr. James Macintosh Gow, dealt with the antiquities of the neighbourhood of Balquhidder. Mr. Gow described the remains of a stone circle which seemed to have been about thirty feet in diameter, and of which only one stone remained erect. Close to the high road lies a large granitic boulder, 8 feet by 5, and standing 2 feet out of the

ground, in the upper part of which is a basin 18 inches in diameter and 6 inches deep, which is still called "The Priest's Basin," and is supposed to have been used as a font for baptism. Mr. Gow, while spending a holiday, searched the district for cup-marked stones, and was fortunate in discovering three on the farm of Wester Achleskine and one on the farm of Gart-na-Fuaran, on the opposite side of the stream. In the third paper, Mr. Ivison Macadam dealt with the ancient iron industry of Scotland, remarking that, beyond scattered notices of the masses of metal or cinders in various parts of the country, little or nothing was known of the extent and characteristics of this industry. A list of nearly one hundred bloomeries had now been obtained, and was still being added to. These primitive ironworks might be divided roughly into (1) those that used only ore and fuel, and (2) those in which a flux was also added. In the first case the slag was dark, while the second series gave light lime slags very similar to those now produced in ironworks. The ore used in most cases was bog-iron, but occasionally red iron ore was employed, and even clay-band iron stone. The two latter varieties were imported from England. The fuel was wood or peat-charcoal, large supplies of which could be obtained in the neighbourhood of most of the sites of these old ironworks. Mr. Ivison Macadam quoted documents to show how well known the west of Scotland especially was to the English ironstone masters during the reign of Queen Elizabeth. Professor Macpherson exhibited an interesting silver chalice, the property of Mr. Macleod, of Cadbole, which is beautifully chased on the exterior with Celtic patterns of the same character as those on the West Highland slabs, and bears on the inside, engraved on the bottom of the cup, a shield of arms quartered apparently of Macleod, but not exactly answering to any known Macleod shield. Another cup of taller form, also from Cadbole, was likewise exhibited.

Bygones.

"Antiquity after a time has the grace of novelty."—HAZLITT.

A LIVERPOOL CATHEDRAL PROJECT IN 1827.

LIVERPOOL has not long enjoyed the dignity of being the seat of a bishop, and this is the more strange when we remember that it used to be represented by influential statesmen. However, various attempts were made from time to time to make the town a cathedral city. One of them was about sixty years ago. The following article from a publication of the time will suggest what was thought of the project, and give rise to reflections about the difference between Then and Now:—

Projected Cathedral at Liverpool.

The Corporation of Liverpool are said to have solicited the erection of a bishopric, for which they are in return to show their zeal by the erection of a cathedral. The bishopric is to be composed of the diocese of the Isle of Man, and a fragment of that of Chester. The diocese of Man is an absurd anomaly in the Establishment, for it makes His Grace the Duke of Athol head of a church, and gives him the disposal of a mitre, which, of course, always falls on the head of the "gude blude." This strange privilege ought to be extinguished, and probably will, by the way most congenial to the pockets of the great dispensers of the good things of this world. But the formation of a new diocese out of that of Chester may have its difficulties. Chester is an immense diocese, extending over a considerable part of the north-west, even into Yorkshire; but it has the episcopal objection of being rather unproductive as it is. Such a bishop as Bishop Blomfield deserves the richest see of them all; and even if he should be translated, his successor will have to stomach the mortification.

But the proposal of the Liverpool people is more obnoxious. To build a cathedral would be to embark in a tremendous expense for no useful object under the sun. Cathedrals were the natural growth of the monkish system. When rival abbots laboured to attract popular favour to their pious fooleries, by exciting popular wonder, the cathedral, too, was the scene of rival ambition. Nothing could better show off the idolatrous tricks or the pompous train of this early prelacy. The cathedral, besides, gave the chief employment that men of monkish seclusion could find for the exercise of their tastes in architecture, which were sometimes cultivated in Italy, and were admirable. The expense of the building was unimportant to those who received immense sums of money which they had but few other means of employing; the work gave occupation to artists and the peasantry. It was equivalent to the manufacturing occupation of later days, and at once made the brotherhood popular, serviceable to the district, comfortable and stately in their dwellings, and secure in the possession of a property which could not be taken from them by the common predatory habits of the time. They produced noble buildings, and however it is to be regretted that the enormous sums laid out on them were not better employed in the popular education, in the propagation of science, or in works of humanity and charity, yet here we have them, and it would be culpable to let them go to decay. But the idea of building new cathedrals is totally absurd, extravagant, and useless. The modern expense of building a single cathedral on the old scale—and to build it on any other must be beggarly—would actually erect fifty tolerable churches, which are as much wanting in the northern parts of the diocese of Chester as in any other quarter of the kingdom; would repair all the glebe-houses; would erect and furnish a hospital in every town in Lancashire, and, in short, do a multitude of most useful and most necessary things. The best cathedral that we could build would be a bad one, for economy would, of course, be among the principles of the founders. But economy has nothing to do with the lavish expenditure that alone could make one of those edifices in any degree correspondent to the name. We should have a bad cathedral, probably never more than half-finished; for the funds and the zeal of the Corporation would soon be equally exhausted by the expenditure, which would so soon be discovered to be totally misapplied.

The fact is, that the whole cathedral system is, to the mind even of churchmen, the most cumbrous and inefficient part of the Church polity. The reformers, however, were forced to take it as it was—edifice, form of government, and state of revenue. The prebends were once little better than sinecures; and though they are now often given to men diligently employed in parishes, or perhaps as the rewards of literature, they are obnoxious from their being connected with scarcely any other actual duty than that of sitting in a stall twice a day, for a month or two in a year, for an hour at a time, which is called residence, and which any man alive may do, and devote the rest of his existence to lounging at a watering-place, touring on the Continent, or going pleasantly through the nothingness of London life. This is not said in a spirit of reproach to the general spirit of the British ecclesiastics, for they uniformly, when they have any sense of the infinitely solemn importance of their duty, regret this temptation to indolence, a temptation which is besides chiefly reserved for men willing enough already to save themselves trouble—the sons and connections of the higher orders. The whole system ought to be revised. The stalls ought to be connected with positive duties. The cathedrals ought to be turned into colleges for theological education, or for some public purpose connected with the public knowledge. The stalls ought to be given to clergymen distinguished by their literature, and who would be actual professors. It is singular that in England, the Protestant head of Europe, and the actual stronghold of whatever religious truth subsists among men, there is no institution for religious education. In the Universities it forms an altogether subordinate branch, and the divine is left to hunt out his knowledge as well as he can.

What is the practical value of St. Paul's and Westminster Abbey as churches? Next to nothing. A corner is railed off, in which a service is chanted, which during the week nobody attends, which on Sundays is attended by no more than the ordinary congregation of any of the small churches, and which is the most incongruous and unsuitable form of service, as any one will know who attempts to sing his prayers. The cathedral and its service are equally the legacy of Papal times. St. Paul's and Westminster Abbey are actually little better than cemeteries, and very fine ones they are; and it is well, on the whole, that we have such receptacles for our national monuments. But as there are no such uses for our country cathedrals, however it may be right to keep them up, the Liverpool Corporation will act wisely in thinking a little before they fling away their money on a mountain of stone, useless to every purpose but those of the contractors for the stones, and the idle, who may be pleased to promenade its aisles. Let them build churches, hospitals, and almshouses, if they have money to dispose of and desire to dispose of it usefully.

CHURCH BUILDING AND RESTORATION.

Ipswich.—The restoration of the tower of St. Nicholas's Church has been completed. The work has been carried out by Mr. G. Nevard, of Nayland, under the direction of Mr. E. F. Bisshopp, architect, Ipswich.

Lasswade.—The parish church has been reopened after repairs. The heating of the church, which had always been defective, was entrusted to Mr. Grundy, of London. The necessary repairs and painting of the church have been carried out under the direction of Messrs. Hardy & Wight, architects.

Liverpool.—The church erected for the Roman Catholics, Mount Vernon Street, has been opened. The church is in the Decorated style, and is built to accommodate 800 people. It consists of a nave, 10 feet by 29 feet; north and south aisles,

83 feet 6 inches by 13 feet; and chancel, 23 feet by 29 feet, thus having an intermeasurement of 141 feet 4 inches. At the east end of both aisles are chapels; at the west end of the north aisle a baptistery, and the corresponding end of the south aisle a large committee-room. At the south-east corner are two large sacristies, first a boys' and working sacristy, opening into the church, and beyond this the priests' sacristy, in direct communication with the presbytery. The architects were Messrs. Goldie, Child & Goldie, and the general contractor Mr. M. Fogarty (Old Swan), Liverpool.

Witham.—The Congregational chapel at Witham has been reopened after renovation under the direction of Mr. Charles Pertwee, architect, of Chelmsford. The heating of the church and schoolrooms in the rear has been carried out by Mr. John Grundy, of London. The general works have been carried out y Mr. Joseph Smith, builder, of Chipping Hill.

SCHOOL BUILDINGS.

Basingstoke.—The foundation-stone of schools to be erected for the Basingstoke School Board has been laid. The architect is Mr. Charles Bell, of London, and the contractor, Mr. H. J. Goodall, of Basingstoke. The buildings will be in two blocks—one for the infants and the other for the older scholars—and the material used flint, with brick dressings; the central hall principle—classrooms leading out from the hall—is adopted. The contract price is 10,351*l.*

Glasgow.—An extensive addition to the Garnethill public school has been opened, accommodation being provided for between 1,500 and 1,600 scholars, at a cost of 8,309*l.*, a total of 11,000*l.* with cost of site, &c. The buildings were designed by Mr. W. F. M'Gibbon, architect, and Mr. John Thomson was clerk of works.

York.—A building to serve as Mission church and schools has been opened in the Foundry district. The ground-floor is reserved for school purposes, and above is the Mission church room. The contractors were:—Mr. W. Biscomb, brickwork and masonry; joiner work, Mr. H. Creaser, jun.; slating, Messrs. J. Dodgson & Sons; plastering, Messrs. Rawlings & Sons; plumbing and glazing, Mr. J. H. Shouksmith; painting, Messrs. Bellerby & Sons; and ironwork, Mr. W. Thomlinson Walker, all of York. The architect was Mr. C. Hornsey, Railway Street, York.

NEW BUILDINGS.

Bolton.—A new mission-room was opened recently in connection with St. Matthew's parish, Bolton. It is a well-proportioned room to seat some 200 persons, neatly fitted up with comfortable benches, and having pulpit, prayer-desk, lectern, communion-table, and choir stalls, all of pitch pine, well made and of very pleasing appearance, being constructed by Mr. J. Pearson, of Pendleton. The total cost of the building and furnishing is about 850*l.* Messrs. Stead & Morris, Bolton, were the architects.

Conservative Club, Birmingham.—This building, which is almost completed, stands in Temple Row, and faces the Burnaby Memorial. The style adopted is a Roman type of the early Italian Renaissance, and the chief features of the front are the boldly outlined entrance portico and lofty bay windows, which are carried up on either side to the level of the third storey, with balconies and parapets on the two principal floors. The main entrance from the street is by a broad flight of steps beneath the portico, and leading to the ground floor, which is raised sufficiently above the street level to secure the privacy of members from curious passers-by. The whole of the façade is in Portland and Hollington stone. The vestibule has large inner and outer screens, filled with enamelled glass. The hall is paved with mosaic tiles. To the left is a morning and writing-room, 50 feet by 30 feet, lighted from the front by a large bay window filled with plain plate glass, and in the rear by a smaller window of enamelled glass. The staircase hall, as it is called, is 30 feet by 25 feet, has a wide open fireplace on one side, and is lighted by large windows of enamelled glass on the staircase and also by a lantern in the roof. The staircase runs from the ground to the second floor, and the guard is a beautifully worked open wrought-iron scroll balustrade, manufactured by Messrs. Brawn & Co., of Birmingham. From the staircase hall a wide corridor leads to a luncheon room, 50 feet by 26 feet, and correspondingly lofty, lighted by windows which look into a conservatory running the entire length of the room. On the ground floor are also serving-rooms, a steward's-room, a bar office, strangers'-rooms, a telephone-room, and cloak-room accommodation. On the first floor the front of the building is occupied by the great dining-room, 50 feet long by 43 feet wide. Behind are a card-room, 25 feet by 22 feet 6 inches, a large billiard-room, and a smaller billiard-room lighted from the roof. The large one has a floor space of 32 feet by 26 feet, and the other is 24 feet by 20 feet. On the second floor, in the front are the smoking-room, 50 feet by 22 feet, and a private dining-room, 34 feet by 18 feet. The remainder of this floor and the whole of the upper storey are occupied by the steward's and servants' apartments, store-rooms, &c. On each of the floors ample lavatory and dressing-room accommodation is provided. Throughout the building the staircases, corridors, and halls are of fireproof construction, and the ventilating appliances and heating apparatus are of the most modern character, supplied by the Æolus Company. Where the exterior of the building is not of stone, the material employed is a peculiarly hard glazed white brick, and internally the walls are partly in panel and partly in cement, painted and coloured in distemper. Messrs. Barnsley & Sons, of Byland Street, have carried out the whole of the building work. The architects are Messrs. Osborn & Reading.

GENERAL.

The Painting of a ceiling decoration by Sir Frederick Leighton, P.R.A., which was shown in the Liverpool Autumn Exhibition, has been shipped to New York for Mr. H. G. Masquand, who purchased it prior to the Exhibition.

The Third Exhibition of Pictures will be opened in the Leeds Corporation Galleries next week.

A Fine Art Gallery is proposed to be erected in Dundee during the Jubilee year.

Mr. John Hutchison, R.S.A., was, at the last special general meeting of the Royal Scottish Academy, elected treasurer of the Academy.

Mr. B. J. E. Bruce, of Hull, has been appointed engineer of the Hull Waterworks.

Two Norman Arches have been discovered in the south aisle of the chancel of the parish church of Hythe. It is, therefore, concluded that the Norman church which once stood on the site was of large size.

Mr. R. Vawser, C.E., of Manchester, will prepare for the Royton Local Board plans, sections, and estimates for the works required for dealing with the drainage and sewage of the district.

The "Scotsman" says that after protracted negotiations, the French Exhibition authorities have finally determined not to purchase the Old Edinburgh buildings, their refusal being based on the ground that they have been exhibited before. Mr. Pender, who has conducted the negotiations, has, it would appear, asked the architect to delay the destruction of the buildings, as he hopes to induce the South Australian authorities to acquire them in connection with their Exhibition in 1887.

The Bassett Tomb, in Blore-Ray Church, Staffordshire, has been restored under the direction of Mr. Charles Lynam, architect, who has also made a report on the condition of some beautiful recumbent thirteenth-century effigies at present unprotected in Stone churchyard.

The Heavy Gale of Wednesday night in last week brought down an immense zinc cowl, weighing between two and three cwt., recently erected on the Grosvenor Gallery for electric-light purposes, from the top of the roof through the skylight of Messrs. Dowdeswell's gallery, causing considerable damage.

The Dunnottar School Board, Stonehaven, at their meeting on Thursday in last week resolved to invite competitive plans for a school to accommodate 500 pupils.

A New Cathedral is to be built in Pekin by the Lazarists on a fresh site, at the expense of the Chinese Government.

The Memorial of the Late Archbishop Whately has been removed from the northern to the southern transept of St. Patrick's Cathedral, Dublin, and is now surrounded by a brass railing.

A Committee of the Corporation has been appointed in Gloucester to consider and report on the question of providing improved municipal buildings for the city.

The Gordon Boys' Memorial Institute, Liverpool, was opened on Saturday by the Mayor. The building has been erected at the sole cost of Mr. W. Cliff, from the designs of Mr. David Walker.

Glasgow Bridge is to be widened according to plans prepared by Mr. D. Miller, C.E. The estimated cost is 31,710*l.* It has yet to be decided whether a larger amount of work will be ordered.

An Arbitration between the Hull and Barnsley Railway Company and Mr. Shelford, C.E., who claims 16,269*l.* for professional services, was opened at the Surveyors' Institute on Wednesday.

The Chester Archæological Society held its monthly meeting on Monday evening, when Mr. Alfred Rimmer, joint author with the late Dean Howson of "Ancient Streets and Homesteads of England," read a paper entitled "The Black and White, or Half-timber Architecture of England, with a Special Reference to its Development in Chester and the Neighbourhood."

The Architect.

THE WEEK.

OBJECTIONS were raised against the arrangements which were proposed in respect of architectural designs in the forthcoming Jubilee Exhibition in Manchester, and it might be assumed that very few architects would care to send works under the conditions. The committee have, however, grown wiser, and it is now announced that the whole work of collecting, selecting, and hanging such drawings as will illustrate the progress of architecture in the United Kingdom during the half century, has been entrusted to the Manchester Society of Architects. It may now be taken for certain that the display of drawings will be worthy of the occasion, and form one of the most interesting sections of the Exhibition.

MR. A. M'KAY is preparing a catalogue of the collection of prints belonging to the Duke of BUCCLEUCH, which will be sold by auction in the spring at CHRISTIE'S. They will comprise (1) a nearly complete collection of REMBRANDT'S etchings, wanting only a few which are almost unique or doubtful—the etchings come from the AYLESFORD, ESDAILE, HAWKINS, VERSTOLK, and other collections, and several are in various states; (2) the complete etched work of OSTADE; (3) the complete etched work of VANDYKE, in the finest states; (4) a nearly complete collection of the works of ALBERT DÜRER, including the rare etchings on iron plates; (5) works of MARC ANTONIO and other Italian engravers; (6) a complete collection of the engraved works of Sir JOSHUA REYNOLDS, in the finest proof states; (7) a superb copy of TURNER'S *Liber Studiorum*, including etchings and engraver's proofs; (8) a complete collection of the engraved works of LANDSEER, the proofs being in progressive states, from the etchings to the finished copies.

IT is satisfactory to find the Chairman of the London School Board advocating the teaching of drawing in the metropolitan schools. The Rev. Mr. DIGGLE bases his recommendation on the educational value of drawing. He knows that comparatively few people are able to convey a notion clearly of any question that relates to form and size; and, as he is aware that even a little skill in using the pencil would make up the deficiency, the Chairman therefore advises the teachers and pupils to find an interest in the subject. Anyone who has observed what takes place in a foreign school can testify that the lessons in drawing appear to be the most attractive part of the curriculum for the pupils. It is rather early to criticise the work of the drawing-classes in the English Board schools, but vigorous efforts will have to be made before it can bear comparison with the drawings by the students of the Christian Brothers' schools abroad, or even with the drawings from the municipal schools.

ANYONE who has had opportunities to compare the procedure in the Superior Courts of England and Ireland is not likely to be convinced that there is a better system in the Sister Isle. A case was heard a few days ago in Dublin which will be suggestive of the difference between the two countries. A firm of builders in Limerick sought to recover 325*l.* 9*s.* from a lady in Clare who is the owner of a building called Dangan Castle, which must not be confounded with the building in Meath where the Duke of WELLINGTON was said to be born. The case was first tried at the Limerick Assizes in the summer. The defence then set up was that the works were not complete, and that Mr. R. FOGARTY, the architect, had not given his certificate. It is supposed in England that an architect's certificate is a condition precedent to a claim of the kind, but apparently there is less reverence for the document in Munster, for the jury returned a verdict for 200*l.* 9*s.* The plaintiffs were dissatisfied and brought the case before the Superior Courts in Dublin. It was there decided that the jury should have been told to find for the defendant, owing to the absence of the architect's certificate. This was following English precedents without number. But then it was laid down that the defendant had waived her right to the certificate by taking possession of the premises, which had been vacated in order to carry out the repairs. Is not that a novel ruling, unless there was a condition in the contract to that effect? We cannot recall one of the kind. It might even be agreed that the final certificate should not be given until a certain time after occupation. However, if that ruling is law, the plaintiffs ought to have had the amount of their claim or a new trial should be ordered. But the judges considered that a new trial was inexpedient, and, owing to the difficulty of the certificate, the verdict of the jury was allowed to stand, but without bringing costs to the plaintiffs. English builders will pray that the arrangement may not be made a precedent.

AT last the authorities of the districts of Richmond, Barnes, Mortlake, Kew, and Petersham have received permission to borrow 100,000*l.* in order to carry out a joint system of drainage. This is a work which has been the subject of many costly inquiries in which the leading engineers gave evidence. It is proposed to convert some of the fields between Mortlake and Kew into a sort of sewage farm, and allow the effluent water to flow into the Thames. At present much refuse is conveyed in barges and deposited there: it cannot well be said that the district will suffer through the proposed works. The districts between Richmond and Kingston are not comprised in the scheme, and they will probably have to pay again large sums before a solution can be discovered for the sewage difficulty.

WE have already mentioned that the French Minister of War has made arrangements for giving commissions for pictures of military events, which are to be placed in the headquarters of the different regiments. It is needless to say the works will be of a high class. M. BERNE-BELLECOUR has received one of the first commissions. He is to paint the bravery of the battery commanded by Colonel GERVAIS at the siege of Sebastopol. The picture is to be assigned to the First Regiment of Engineers.

IT is now calculated that, when all debts are paid, there will be a surplus of ten or eleven thousands of pounds from the Edinburgh Exhibition. What will be done with the money has to be determined, but the exhibitors desire to have gold, silver, and bronze medals instead of pictorial certificates, and in that way they would save the committee from the trouble of seeking an outlet for at least four of the thousands. Exhibitors must be credited with knowing what is best for their business, otherwise a certificate that is well designed tells better as an advertisement than a medal. It is necessary for medals to be small in size; it is very rarely that one of them bears a figure or a device that calls for attention; while, owing to the number of medals representing awards from big and little exhibitions during thirty-five years, it is difficult to discriminate between them and to discern a new addition. If certificates are designed by an artist—and no others should be employed—they are free from many of the objections that apply to medals. There is, moreover, a legal difficulty to granting medals, unless with the sanction of the Board of Trade. According to the Solicitor-General for Scotland, a disposal of the surplus in that way is illegal, since in the memorandum of association for promoting the Exhibition it was distinctly stated that the surplus was to be applied to some institution.

THE excavations in Lincoln Cathedral were rewarded by the discovery, in the south aisle of the choir, of a portion of the foundation of the original eastern termination of the cathedral as erected by ST. HUGH, subsequently taken down for building the Angel Choir. This is supposed to prove that ST. HUGH'S church ended in a polygonal apse with chapels attached, somewhat resembling that at Westminster Abbey. The apse formed a semi-hexagon with semi-circular chapels, similar to those of the eastern transept, projecting from the two sloping sides, and a polygonal chapel, forming a complete hexagon, attached to the eastern wall. This was probably the Lady Chapel. Between this chapel and the semicircular chapels on either side there is a small circular appendage, the purpose of which is not very evident. Under the table of black marble erected about 1670 by Bishop FISHER, a stone coffin has also been found, and it is imagined that it may have contained the body of ST. HUGH.

THE CHICAGO CONVENTION.

THE annual meetings of the architects of the Western States of America are always important events. They are well attended, and the proceedings are conducted in a spirit that is suggestive of a friendly feeling among those present. The difficulties that attend the profession of architecture are much the same all over the world, and many things that are said in Chicago or one of the Western cities on those occasions will be found to have a general application. In addition, there is the interest which springs from kinship. The doings of American architects are watched in England with an attention that is very different to what is given to the works or the speculations of continental architects.

This year the Convention at Chicago was under the presidency of Mr. D. ADLER, and he began his address by congratulating the members on their privilege "in being part, not of a renaissance, but of a naissance in architecture," for, as he said, a new style, a style that was representative of the nineteenth century, of America, and of civilisation, was surely being born into the world. Mr. ADLER was able to point to the fact that there was a growth of power among American architects, and he referred to the earlier and later works of such men as RICHARDSON and ROOT in proof of his theory. There is no doubt that in America architecture is not so trammelled by precedent as it is in England and in Europe, and if Mr. RICHARDSON had lived for a longer time much more would have been achieved. It is to the credit of the new school that, in allowing their imagination some play, there is not much desire to be fantastic. The later American buildings err, if at all, in being over severe and solid. If any of them are suggestive of European or other models, the President claimed to consider the treatment as distinctively American.

But the new architecture is exemplified in the private rather than in the public buildings of the country, and owing to the influence which the latter must exercise upon the architecture of the future, Mr. ADLER had much to say upon the unsatisfactory way in which authorities give their commissions. The competitions are not always conducted fairly, and if the judges are disposed to be honest, they are liable to be captivated by showy drawings. Mr. ADLER, it is evident, would bring back the days when competition was not supposed to be the only means to obtain a satisfactory building, and his desire is inspired as much by the client's interest as by the architect's. "In competitions," he said, "the immediate personal contact and intimacy, the free interchange of ideas between projectors or owners of the proposed buildings and competing architects becomes to a great extent an impossibility. The more fair, the more honest the competition, the more complete the isolation of client and architect. Hence the resulting designs can attain only academic perfection, and will be deficient in the sympathetic, life-giving qualities; this implies a loss to the owners of the building, to the public at large, and to our profession." These are remarkable words, especially when it is remembered that they are heard in a country where go-aheadness and competition are supposed to be equivalent terms. But American shrewdness may be trusted to discover that architectural competition is a species in itself. If a producer of wooden nutmegs is beaten out of one market by cheaper and more deceptive imitations, the country is wide enough to afford him another chance to dispose of his products. Architects are not so fortunate. Mr. ADLER referred to a recent competition which was so honestly conducted as to be styled "the best, almost the ideal, competition." What was the result when considered presidentially? We are told that "forty-seven architects expended an aggregate of probably 25,000 dols. in cash, or its equivalent, and an aggregate of vital energy worth many times as much if applied to the prosecution of their legitimate business, and all for the chance that one of their number be given the opportunity to earn by hard work and the further expenditure of 7,500 dols., the sum of 20,000 dols. and the glory of having vanquished his fellows in fair and open combat." In England enterprise of the kind is taken as a matter of course. America has a chance of showing us the advantages of a less hazardous system.

The first report that was read at the Convention was on a subject that excites much interest among American architects, namely, the regulation of the office of Supervising Architect. A Bill on the subject was introduced into Congress, and architects were told off to try their hands in "lobbying," so as to make it law. But they were compelled to confess that "the attitude of the members of the Committee on Public Buildings and Grounds seemed to be one of indifference"—a description that might have been taken from a committee of our Lords or Commons. There is no hope of passing the Bill in the present Congress, but who can tell what may be done when a different set of representatives are installed in Washington?

The committee on the subject, and those on several other matters that were also unsuccessful in their efforts, were reappointed. The architectural societies of America seem to have local committees without end. As ladies are allowed the privileges of membership, it is not surprising to find it announced in official English that "Mrs. BETHUNE, your committee from New York, has organised a Buffalo society of architects, fourteen members, who are working in a harmonious manner, and has turned her attention to the various other cities in the State with prospect of success." Happy are the societies that can boast of canvassers with so much energy.

It is easier for any one to dignify himself with the title of architect in America than in England, for there it is less practicable to discover a man's antecedents, and how he was trained in the art. The question of membership must, therefore, be a standing difficulty with American societies for many years to come. At the last Convention one candidate did not condescend to adopt the usual course of asking a member to recommend him, and we suppose so much independence will be no obstacle to admission. It was also found that, in other cases, members who had recommended candidates were not aware of the regulations by which membership is restricted to those who are engaged in the exclusive practice of architecture. As far as we can judge, there is no desire in the Western Association of Architects to reject a candidate unless there are very strong reasons against an association with him. Hitherto the practice appears to have been for names to be submitted, and if the directors or Council of the Association approve of them, the applicants are recommended in a batch for adoption at one of the meetings of the Convention. It is asked by the President if there are any objections to the admissions, and if, as commonly happens, there is no expression of dissent, that is taken as election. It does not follow that there is no latent dissent. It is proposed to change the system and to adopt vote by ballot, with a provision that five adverse votes will bring rejection. Opinion was divided on the merits of the proposal. Some thought that as every architect must have enemies, there would be little difficulty in finding five opponents at an election, while others were confident that it would be almost impossible, assuming that the candidate was an architect of standing. Every one will wish that the latter view should be representative of opinion in America.

In the Western States, as in England, there are architects who are of opinion that they would be gainers if they received periodically a diploma or certificate which they could display to their clients. But the good sense of the majority at the last Convention was against the proposal. One member advocated it for the reason that it might help members to recover their fees, on the ground of belonging to a Society which had a fixed scale of charges for work. At present, he said, it was possible to obtain architects as witnesses who would declare that they were willing to work at one-half the rate of the charges contested. But it was shown that the American Courts would not pay attention to any certificates of membership, and finally the subject was put off for another year.

The papers which were read merit a separate notice, but there was one exceptional resolution which is worth attention in other places. It was proposed by Mr. J. M. ROOT that a blank form should be prepared by the Association and supplied to the members, who were to fill it up with such information about the strength of a building as it was advisable to give a client. A building intended for one purpose is often used for one that is entirely different, and instead of light manufactures it may have to sustain the strains arising from heavy loads. If it were

stated to every owner that his building was equal to so much work and no more, then the responsibility for many dangerous contingencies would be removed from the architect.

MR. CHRISTIAN'S REPORT ON THE DESIGNS FOR THE LIVERPOOL CATHEDRAL.

(*Continued from page* 349.)

Mr. Brooks.

IN dealing with the site Mr. Brooks takes it as it stands, and makes no suggestion as to the possibilities of the future.

He carries the projecting portions of his building close up to the northern boundary in William Brown Street, and pitches the level of his floor so as to allow of access by steps on the north and west sides, and by carriage road on the south. This requires a descent on to the site by thirteen steps at the north-east corner. Under the nave, aisles, and chapter-house he proposes a crypt, but although it would be spacious, and at the sides well-lighted, he does not appropriate it to any particular use, the cathedral offices being provided for elsewhere. Considering the large space available, this is somewhat of a waste, as there is in the two aisles alone, eastward of the baptistery foundations, a larger area than in the available ground floor of the subsidiary building proposed next St. John's Lane. Mr. Brooks says nothing of the reinterment of remains from the churchyard; but it could be abundantly provided for within the foundation-walls of the church.

As regards structure, Mr. Brooks's plan is a very fine one, carefully studied on pure Mediæval principles, but freely treated with a view to modern requirements. Mr. Brooks states the width of the nave to be 50 feet, but that dimension is taken to the centre of the pillars, and the clear actual width does not exceed 45 feet. The general area is very free and open; the choir is large and commodious, and stalls and seats are provided therein for 118 adults. The choir has north and south aisles, and an ambulatory round the apse. The morning chapel, which is shown to be separated from the aisle by metal screens, is ample in size, and there is a fine baptistery at the south-west corner of the nave.

The vestries for the bishop, dean, and canons, are on the ground floor, and over them choir vestry and muniment-room.

The doorways, twelve in number of openings, are very ample for entrance and exit of large congregations, and the western portals are of grand proportions.

Two points of importance in Mr. Brooks's design require special mention, namely:—

1. The placing of the two western towers clear of the main structure, thereby securing great width of western frontage. 2. The complete and lofty well-lighted triforium gallery over the aisles, which is continued entirely round the church, and carried at the end of the nave over the western portals. It it possible that Mr. Brooks may have exaggerated the value of this in a utilitarian sense, but there can be no doubt that it would be a very fine architectural feature, and not unfrequently one of considerable importance for the easement of crowded congregations. Over the north aisle of the choir also it affords fine space for an organ of the largest size. The weak point in connection with it is that the six staircases giving access are all circular, with a clear gangway of only 3 feet, which in case of a crowd would hardly be adequate, except under restriction.

Another fine feature in Mr. Brooks's interior design is the lofty open lantern tower at the crossing: this would give good light to the centre of the church, and could not fail of being beautiful as well as useful.

It is somewhat difficult to estimate the numbers that could conveniently see and hear in a church of this construction; and an exact statement on this head would be almost necessarily misleading, but it may be safely stated at not less than 3,500, though for some services it might largely exceed that number.

As regards architectural features, Mr. Brooks says:—

An ecclesiastical building of leading character, surrounded with magnificent buildings of some form of Classic architecture, should necessarily be marked by a distinctive style, such as is adopted in connection with the religious worship of the country; and such a building would form a pleasing contrast to those around it. In pursuance of this idea, I have endeavoured to produce harmony, as it were, with existing buildings, while retaining the distinctive features of the style which I have chosen. For instance, horizontality is obtained by the ranges of windows, string courses, parapets, &c., and the constructive distinctions of the Pointed style are maintained in the high-pitched roofs, the flying buttresses, the special formation of doors and windows, and the lofty towers and spires. The introduction of the apsidal or circular termination of the east end serves, also, to suggest a contrast with the adjacent pile of St. George's Hall, and gets over the difficulty which might arise from the awkward line that would be produced by a square-ended building, in close proximity, but not at right angles with it.

Mr. Brooks.

He also further remarks:—

The style selected enables me to give windows of a severe type, but these will, in my opinion, harmonise better with the Greek or Classic architecture of the adjoining buildings than would windows having more or less elaborate tracery.

There is truth in this; but it has not precluded his indulging, and notably in the western elevation, in portions of sumptuous decoration, nor need it, for when the main structural lines are strong and bold, as in his design they are, great richness may be indulged in in details near to the eye, or where comprehensible above.

As regards the western façade, I cannot but think that Mr. Brooks has missed a great opportunity. I do not myself see the reason for his varying treatment of the towers, yet doubtless he has one; but the main lines and levels being similar, no mental disturbance is caused thereby.

The portals at the base, and the central composition throughout, are really fine; but the disconnection produced by the falling lines on either side of the nave destroy the great value of the broad façade; a glance at the west front of Lincoln Minster would show the proper treatment, and a few strokes of the pen would give that unity of mass so obviously called for, and make what is now broken and disjointed into a magnificent whole. The want of this is really distressing.

The central lantern tower is somewhat disappointing, and its conversion from a square base into an octagon above still further diminishes the idea of bulk, which should satisfy the eye in a great central feature of so large a structure.

On the northern elevation the most striking and prominent feature is the transept, the treatment of which, with its fine portals, produces what is really a most beautiful composition, stately in outline, solid in structural lines, and rich in detail—a piece of work pleasant to look upon.

The aisles are simple, and may possibly be deemed severe, but their treatment is characteristic and good, and the clerestory is well proportioned.

The eastern front calls for no special observations, and what has been said about the north will, in great measure, apply also to the south, but there are also some important variations.

Viewed as a whole, the design of the exterior is undoubtedly one of noble proportions and vigorous and masculine character, but having regard to the site, I cannot but think that the general structure is excessive in height.

As regards the interior, this remark perhaps would not so strongly apply, but it can hardly be doubted that the great height of the triforium is not attained without some sacrifice in respect of general proportion.

Mr. Brooks is of opinion that the acoustic properties of his church would be good, which I think probable.

As regards the subsidiary buildings, Mr. Brooks provides more than ample accommodation, and considering what might be done with such a crypt as he has designed, I cannot see that such separate buildings are needed.

As regards construction, Mr. Brooks says the material should be—

Of the most durable and lasting character, both as regards resistance to the weather and capability of supporting great weight. The materials for the walls should be of wrought or cut stone, both externally and internally, and with regard to the kind of stone, I should recommend the use of Irish limestone, which is as durable a material as could be employed for all parts of the building, up to the plinth. I think the same stone should be used for the piers of arcades, as its resisting powers are well known, and when wrought with a finely-picked or sanded face its colour is most agreeable. For other portions of the building might be used such stones as Darley Dale or Hollington, the stone used at St. George's Hall. For the external covering of the roofs it is intended to use lead.

As regards the internal vaulting, Mr. Brooks says:—

At this place I should like to give reasons why buildings of this nature should be vaulted. With a vaulted ceiling the atmosphere is less affected by the heat of summer or by the cold of winter than by any other construction, and if from any accident the fittings took fire, the injury would be limited by it, and prevented extending to the roof. With a vaulted ceiling a much more imposing and dignified effect is obtained than is possible from timber construction. Vaulted ceilings, as I have designed these, are by far the best for acoustic purposes, as, for instance, may be observed in the case of Westminster Abbey, which has an apsidal end.

As regards cost, Mr. Brooks says:—

Having gone carefully into the cost, and given due consideration to this part of the subject, and having had, moreover, a long experience in church building, many of my churches being of considerable magnitude, I am of opinion that the magnificent sum provided for this work will be sufficient for the purpose, and my views are confirmed by the opinions of others who have gone with me into this matter.

Having myself had the quantities tested, I believe I may safely confirm Mr. Brooks's opinion on this point.

Messrs. Bodley & Garner.

These gentlemen, like Mr. Brooks, take the site as it stands, and have made their plans to suit its present boundaries, but they say :—

On the plan supplied to us by the committee, the space allotted to the cathedral is not, in our opinion, quite sufficient. The cathedral we have designed is, indeed, contained within its limits, and one bay of the nave could be omitted if necessary; but we feel that it approaches too closely to St. George's Hall, and that it would be most desirable to remove it a little westward. The scale of the building could be slightly reduced without alteration of the design, and so more space be gained, if it is thought desirable. We have indicated this on a suggestive plan for the rearrangement of the site, and there does not seem to be any difficulty in the way, as there is a large open space in front of the site already which is now occupied by the weighing-machine.

But we think also that the removal of the mean and unsightly modern houses at the west end is merely a question of time, and that a plan for the rearrangement of this portion of the town will form a part of the cathedral scheme. In our present plan, however, we should only require about 25 or 30 feet more, and this the open space at the west end easily affords us.

As regards the last remark, I presume Messrs. Bodley & Garner mean that more length is required in order to clear St. George's Hall, to which their building is undoubtedly too near, but there is no real necessity for making it so long.

They further say—

Although we feel the advantages of the present site, and that it would be quite possible successfully to grapple with its difficulties, we think it should be a matter of careful consideration whether another site should not be selected, as the one proposed is certainly very confined. Another objection, and a still stronger one to our minds, is the fact that the cathedral will stand half-way up the hill which is crowned by the fine building of St. George's Hall. It will be difficult to give proper prominence to the one building without in some degree detracting from the dignity of the other, as they are in such close proximity.

This brings us to the consideration of how far the present site must affect the choice of style. Surrounded as it is by a series of unusually fine buildings of the Classic style, it becomes at once a question how far they should influence the style of the cathedral. We have no doubt at all that, for the reasons stated at the beginning of this report, a new cathedral should be English rather than Italian, but we also think that it is extremely important that the different uses to which the buildings are dedicated should be at once apparent. There is great danger that a group of buildings, arranged as they must be, very closely, and designed in the same style should be confused together. The cathedral must, of course, be the most important in every way, but it would not occupy the place of honour, which is already occupied by St. George's Hall; and we think that it would be difficult, if not impossible, to prevent the latter from appearing a part of the former. Of course the group would, architecturally, be very fine.

I agree with the last remark, but not with that which precedes it, about St. George's Hall. It would be no advantage to the cathedral to occupy the position of the latter, but rather the contrary, on account of the constant noise of unintermitting traffic; and the principal view of a cathedral church should be from the westward, which gives the natural approach; and under the conditions of possible improvements to which I have elsewhere alluded, there can be little doubt but that difficulties seen by Messrs. Bodley & Garner have no real foundation. The hall and cathedral would, as I believe, be a mutual advantage, but in Messrs. Bodley & Garner's design, to give proper space, the nave would have to be shortened one bay, or the site lengthened as noted in the former extract from their report.

Messrs. Bodley & Garner propose to put nothing but the cathedral upon the ground, and place the transept on the line of the northern boundary. In the arrangement of the entrance in the position shown they have not sufficiently allowed for the fall of the ground, which in William Brown Street could not well be changed, as shown upon their north elevation. They propose an avenue of trees up to the south porch, but this in a climate like that of Liverpool could hardly be expected to be a success.

As regards structure, the striking feature of their design is the great central lantern, modelled on that at Ely, the work of Alan Walsingham, the result of a failure and its most successful remedy. As regards this the architects say :—

We think that the octagon we propose, with its eight nearly equal arches, would produce an interior effect which has not been obtained, so far as we know, in any cathedral yet erected in the world.

I cannot indeed doubt that it would be very fine; nevertheless it has its disadvantages, the chief being that in order to produce the exact octagon the arches are all of equal width, and the main piers project so far as considerably to limit the clear view of the nave, choir, and transepts. This is a difficulty that might to a great extent be got over, but, as shown on the plan, it is unquestionably a serious blemish to what is otherwise a very fine idea. Considering that no practical advantage is

Messrs. Bodley & Garner.

gained by the equality of the alternate arches, I can see no reason why the vista should not in each case be increased by a widening of at least four feet in each of the main arches, and the gain thereby would in every sense be great. The value of the alternate arches as openings is but small, and they could be so reduced as to give opportunity for the very substantial structural additions necessary for the support of the superstructure of the lantern. I think also as regards the main arcades of the nave and choir that, considering the massiveness of the pillars, greater width might be given to the archways, and the number of bays thereby lessened. As shown upon the drawings, they seem cramped and stilted, and redistribution of solids and voids might, I think, be attended with excellent effect.

There is another point in the plan which requires remark. In the western bay of the nave and aisles there is a flight of steps across the church which would practically shorten the floor of the cathedral to that extent. This, though far from objectionable as regards architectural effect, would be an element of danger to a crowded congregation unless guarded by screens or other kind of barrier, giving warning of the descent, which otherwise might not be noticed.

Irrespective of these points, the structural plan is good, and the means of access, though only about two-thirds of what is provided for by Mr. Brooks, are, I think, fairly sufficient.

The choir is spacious, and the stalls and seats are shown for 106 adults.

The arrangement of the stalls is shown only on the large scale plan, but is quite unobjectionable.

The floor plan provides also for a morning chapel, chapter-house, and vestry for bishop, dean, canons, and choir, but is deficient in respect of lavatories and other conveniences, which are nowhere provided.

In the crypt, which extends only under about one-half of the nave and aisles, provision is made for consistory court, offices, and muniment-rooms; but no special mention is made of a choir school, though ample space is provided for every such requirement.

Owing to the narrowing of the arches of the nave and transepts, the floor space within view of a preacher would be less than that provided by other competitors, but excluding the choir and aisles, there would be convenient room for about 2,500 on the floor, clear of all obstruction, and this, as I have shown, is capable of increase.

As regards architectural character, the great central lantern over the crossing is the principal feature of the design, and this would undoubtedly give a most noble and impressive massiveness to the whole exterior. I cannot, however, but think that if the lantern were crowned by a finely-outlined conical roof, covered with lead, the effect would be grander than that produced by the spire and upper lantern, which are not suitable to the subject, are not necessary, and would detract from the general breadth and power of the whole composition. Even a roof of low pitch would be better than the spire, which seems out of place on such a structure,

The western front, its towers and spires, are not worthy of the subject, and considering the depth and spaciousness of the porches, the approach to them is hardly compatible with the grand character of the structure within. The architects have adopted a somewhat elaborate style of detail, the disadvantage of which in Liverpool was pointed out in the last clause of the instructions to architects. This might be in some measure, but not wholly, modified without inconsistency with the general principles of the design.

The flanks of the cathedral show a noble range of clerestory windows, the effect of which would be undoubtedly beautiful, but would almost demand a large expenditure on painted glass.

Both the transepts and the eastern façade are capable of improvement, and the morning chapel is somewhat insignificant.

As regards the interior, inside as well as out the central lantern is, of course, the principal, and a very noble feature, but the general proportions of structure are good, and the height not excessive; the narrowness of the four main arches and of the arches in the nave arcades in proportion to the piers is, however, very evident when considering the general internal elevation.

As regards acoustic properties, Messrs. Bodley & Garner make no remark, nor do they say anything on the subject of estimate.

As regards materials, they would prefer to use the red sandstone of the district for the interior of the church; but for the exterior "advise Portland, or one of the best hard stones of the North," subject of course to future consideration and investigation, "as to resistance to smoke and weather."

Nothing is said as to the roof coverings.

As regards estimate, although undoubtedly elaboration of details and solidity of structure would in this design enhance the general cost, yet the smaller cubical area, as compared with the much loftier building of Mr. Brooks, would go far to

Messrs. Bodley & Garner.

equalise the estimates, and judging by my own calculations, I see no reason why the expenditure should pass the prescribed limits.

(*To be continued.*)

THE SAXON CHURCH, BRADFORD-ON-AVON.

A PARTY of the Bath Field Club visited, last week, the Saxon church of Bradford-on-Avon, which has been restored under the direction of Mr. Adye, architect. He explained the work to the members. The precincts of the chapel have been cleared from the tumble-down, cumbrous sheds built against the south wall and hiding its features, the roof has been repaired and made watertight, and the walls, which were in a dangerous state and consisted of an outer and inner facing of masonry with the space between hollow, have been filled in with Portland cement, thus binding the whole together in a solid mass. The small round arches have been repaired and completed wherever it was necessary, for structural reasons, to do so, and wherever there was sufficient "springing" left to carry on the design. On clearing away the structure abutting against the south side, the foundations of a south porch were found, and the pitch of a high roof, corresponding with the height of the wall, plainly indicated on the outside, an interesting point, thus showing that the south porch was a facsimile as to height and dimensions of the existing north porch. Two solid buttresses have been carried up, resting upon the base of the east and west walls of this porch, thus marking the site, and acting as a support to the main wall on that side; though in the opinion of the architect such support was not needed. Entering through the arched doorway into the nave, the great height of the chapel at once arrested attention, and when the eye became accustomed to the dim light, the irregularity of the details, the descent instead of ascent into the chapel by a step, the bulging look of the walls, which might have been original, and intended to be out of "plumb line;" the curious "rundlet" or reed-like ornamentation round the chancel arch—the only ornament in the chapel save the two angels high up in the chancel wall—all came out at last into prominence. The chancel appears to have been lit by one deeply-splayed window, high up in the south wall, and the length of the whole building corresponded with the height of the walls, 25 feet. Passing through the north porch, the outside details were inspected, which are equally interesting with those in the interior. The arched panelling, all round under the eaves, evidently cut out of the masonry, the flat pilasters, "stepped" now on one side of the base, now on the other, here and there on both sides, the irregularity of the string courses and the general idiosyncrasy of the structural details were remarkable. The west front has three windows pierced in it, and on the inside beneath them it is stated that they were not found there originally; here, perhaps, utilitarian purposes were a sufficient reason for breaking the otherwise plain western wall face.

EDINBURGH OFFICIALS.

A REPORT has just appeared on the duties and emoluments of the officials employed under the Corporation. The following extracts may be considered to have interest:—

The Superintendent of Works, Mr. R. Morham, is paid 400*l.*, the salary including entire allowances for principal assistants and clerk. He is permitted to take private work; but he states that his official duties now so occupy his attention that he cannot get such business attended to except by working far beyond ordinary office hours. The average salary paid to Mr. Morham for professional work beyond his official salary for the ten years to 1886 is 292*l.*

The City Road Surveyor, Mr. David C. Proudfoot, was appointed in 1879, having previously been Surveyor to the City Road Trust. His salary is 400*l.*, with house valued at 40*l.*, and his assistants cost 712*l.* a year. The outdoor staff of the Road Department costs on an average 138*l.* 17*s.* weekly, or 7,224*l.* per annum.

The Master of Works, Mr. John Russell, appointed in 1880, has a salary of 200*l.* His duties are to examine all plans that come before the Dean of Guild Court, and generally to inspect buildings, &c., as to their stability. The Master of Works says he has all along paid all car and other expenses from his salary connected with his duties. He asks that these may now be allowed to a reasonable amount.

The Burgh Engineer, Mr. Cooper, has a salary of 400*l.* His staff consists of seven ordinary assistants, one assistant surveyor or draughtsman, and one junior assistant, two sanitary engineers or experts, and ten inspectors, some of whom are only temporary. The salaries of the staff range from 175*l.* per annum to 26*s.* per week. The duties of the Burgh Engineer consist chiefly in the preparation for and execution of such of the larger drainage and sewage works as required to be carried out from time to time, and works of general improvement ordered by the Town Council from time to time. He has to attend on committees, to revise the plans before the Dean of Guild Court, attend the weekly meetings of the Court, prepare reports for the Town Council, &c.

Mr. John Paterson, Inspector of Lighting and Cleansing, was appointed in December 1853, at a salary of 200*l.*, with 20*l.* additional for house rent, and 40*l.* for the keep of a horse—equal in all to 260*l.* per annum. In 1859 the salary was raised to 240*l.*, but the allowance for the house-rent was withdrawn; in 1866 the salary was raised to 300*l.*, and the allowance for keep of a horse, &c., was increased to 50*l.*; and in 1872 the salary was raised to 400*l.*, at which it remains. The number of men employed in the different departments is as follows:—In the office, one assistant and one clerk; lighting department, 67 men; cleaning, 171 men; cartage, 115 men; workshop, 14—total, 369.

The assessor under the Lands Valuation Acts, Mr. Paterson, has a salary of 400*l.*, and for the Registration of Voters 150*l.*—total, 550*l.* His duties include the preparation of 140 survey books; a register of proprietors, with an index of all factors and agents; the despatch of 6,950 requisitions to proprietors, agents, and tenants, in connection with which 1,650 letters usually require to be written to parties failing to make their return; a record of returns; an annual survey of every separate subject within the burgh; a comparison of the new and old returns; revised valuation of properties; the issue of 32,000 notices of valuation; receiving and meeting objections and appeals for six weeks; preparing the Valuation Roll, which contains 66,200 entries; making up the register of voters with a separate list of women voters for municipal elections; assessment ledgers, written in wards, for burgh assessments, poor and school rates for six different parishes, land tax, and Government ledgers; polling books; analysis of valuation roll; a supplementary survey; petitions for relief from burgh assessments; and other incidental work, which has been considerably increased by the extension of the municipal boundaries and the Franchise Act. The salary of the assessor's first assistant is 250*l.*; second assistant, 200*l.*; three others from 100*l.* to 105*l.*; four at 95*l.*; four at 80*l.*; and ten at 1*l.* 5*s.* each per week—the salaries of the whole office amounting to 2,655*l.*

The head gardener, Mr. Angus A. M'Leod, was appointed in 1877, at a salary of 260*l.* per annum, which was afterwards increased by 10*l.*, including 30*l.* for house rent. He has on his staff an under gardener at 5*s.* 10*d.* per day, with free house; a propagator and plant grower at 5*s.* per day; other fifteen men as gardeners and park officers at from 2*s.* 4*d.* to 4*s.* 2*d.* per day; a foreman employed at the Meadows and Links at 5*s.* per day; and ten workmen and park officers at 3*s.* to 4*s.* 2*d* per day.

MOSAICS IN CHESTER CATHEDRAL.

THERE has just been completed in Chester Cathedral a series of works in marble mosaic which exceed in importance of aim and extent of area any similar work of modern times. This is the set of mosaics executed by Messrs. Burke & Co., of London, from the designs of Messrs. Clayton & Bell, for the decoration of the north wall of the nave, the cost, which has been very considerable, having been borne by Mrs. Platt, of Durnham Park. In each bay there stands one of the great figures of Old Testament history, Abraham, Moses, David, Elijah, and on either side of these are panel-spaces filled with grouped compositions, which illustrate some leading incidents in the life of the central figure. Thus, Abraham is flanked by pictures of the Sacrifice of Isaac and of the Burial of Sarah; Moses by the Finding of the Cradle in the Nile and by the episode of Aaron and Hur supporting the Lawgiver's hands; David by the scene of David before Saul, and of the King's grief at the news of Absalom's death; and Elijah by the scenes of the Angel appearing to Elijah, and of the Prophet's denunciation of Ahab. Above are canopied niche-like panels containing other Old Testament figures, &c. The special interest of the work consists in the fact that it is in marble mosaic, composed of an infinite number of *tesserulæ*, such as one sees in an old Roman pavement, but such as have very rarely been used in wall decorations either in ancient or modern times. The present age has seen a great revival of the mosaic art, but almost exclusively of the Venetian type, with gorgeous colours and backgrounds of blazing gold. This work is very splendid in its proper place, and, seen from a distance, it is brilliantly decorative. But it may be doubted whether the cool tones of the marble—white, grey, yellow, green, &c.—are not more in harmony with the character of a northern cathedral. The Chester panels are soft and beautiful in tone, and the designs reflect much credit upon the artists. It is impossible to see them without a feeling of deep regret that the late dean, Dr. Howson, to whose careful supervision they owe so much, did not live to see them completed.

NOTES AND COMMENTS.

PROFESSOR KENNEDY, of University College, read a paper at Tuesday's meeting of the Institution of Civil Engineers, upon "Engineering Laboratories." While admitting the necessity of workshop teaching, he said it was incomplete, and that pupils required also to know other things, which could be gained best in an engineering laboratory, in connection with some institution where technical instruction was given. He claimed that, in the matter of engineering laboratories, as a branch of technical education, England had really taken the lead, instead of being, as was too often the case in such matters, in the rear. The principal subjects upon which experiments in an engineering laboratory might be carried out were said to be the following:—(1) Elasticity and the strength of materials. (2) The economy, efficiency, and general working of prime movers, and especially of the steam-engine and boiler. (3) Friction. (4) The accuracy of the apparatus commonly used for experimentation, such as springs, indicators, dynamometers, gauges of various kinds, &c. (5) The discharge over weirs and through orifices, and hydraulic experiments in general. (6) The theory of structures. (7) The form and efficiency of cutting-tools. (8) The efficiency of machines, especially of machine-tools, and of transmission-gearing. (9) The action and efficiency of pumps and valves. (10) The resistance of vessels and of propellers, and experiments in general connected with both.

ONE of the most esteemed of the French painters, M. FRANÇOIS BONVIN, it is feared will become blind, and an appeal is made to his brother artists to co-operate in providing a fund to enable him to live during the remaining years of his life outside a charitable asylum. It may be said that he should have provided for such an emergency, but no one who knows anything of the state of art in France would make that remark. M. BONVIN was always industrious; he considered that every work of his should be finished *ad unguem*, and he never cared to sacrifice his ideal of art to the necessities of the hour. He was willing to be poor so long as he could paint pictures with all the elaboration of the Dutchmen, and it was pain to him to see a work taken from him. M. BONVIN was born among the poor, and it was in the free schools of Paris he received his first lessons in art. The merits of his paintings were not of an obtrusive kind, and dealers and amateurs passed by them in the Salon. Yet he was the recipient of a Salon medal nearly forty years ago. The benevolence of the artists of Paris seems to be inexhaustible, and it is certain that a sale will be shortly held at the Hôtel Drouot of the paintings and medals which they will contribute for the benefit of an artist whose fate has excited general sympathy.

THE Dublin Corporation lately borrowed 100,000*l.* for paving works. It was proposed to use Irish setts, and especially those supplied from Mr. PARNELL's quarries, although the price for them was about 24*s.* a ton, whilst Welsh setts could be had for 4*s.* or 5*s.* less. Tenders were again considered last week for next year's stock. The prices ranged from 21*s.* 6*d.* to 24*s.* 6*d.*, and again the high price was accepted. One of the members of the Town Council said that, according to his calculations, if the 100,000*l.* had been expended on commercial principles, work could be accomplished for which 137,000*l.* will have to be paid. Against that theory, it was argued that the Welsh quarry-owners had lowered their prices in order to overwhelm the infant industry.

THE French sculptors seem to be enduring hard times at present, for scarcely a week passes without a revelation of misery in one form or another. The provinces do not appear to be a better field than Paris. A meeting has been just held in Lille in order to organise a lottery for the benefit of the family of the late ERNEST HIOLLE, who was supposed to be the worthiest representative that Valenciennes gave to sculpture. He was a winner of the Prix de Rome, and received the highest honours in exhibitions; but, after a life of incessant labour, he died lately in a state of poverty, leaving a family of seven young children. Why sculptors should suffer so severely is a question which economists and politicians might well consider. Every one knows that French sculpture is not to be surpassed unless by going back to the ancients. Frenchmen are proud of the art, and yet almost every studio contains models for which no patrons are forthcoming. The exquisite works by M. CARRIER-BELLEUSE, which passed this week through the auction-room, testify that the leading sculptors in France, men whose fame is not confined to their native country, have works lying on hand for years. Any English amateur who cares for French sculpture could hardly find a better time to secure beautiful examples.

ENGLAND is fitly represented in Rome by an ambassador who takes more than an amateur's interest in art and archæology. When Sir SAVILE LUMLEY was in Brussels he described the processes of bronze casting in a manner that would do credit to the superintendent of a foundry. In Rome he not only watches the archæological discoveries that are the results mainly of accidental exploration, but he conducts explorations himself in a systematic way. A few nights since Sir SAVILE LUMLEY described some of the remains which he was fortunate to find on his own ground at Civita Lavinia, and some of which now enrich the Nottingham Museum. The address was given to the members of the Society which represents British and American archæology in Rome. In the course of it the ambassador also spoke of the discoveries which were made in excavating the foundations of the National Bank in Rome, a statue of ANTINOUS being one of the treasures, and of the columns of grey granite lately found in the Via Frattina.

THE election of the Council of the French Society of Water-Colour Painters has taken place. The following appointments were made:—M. BOILVIN, president; M. COURTRY, vice-president; M. HENRI LEFORT, secretary; M. MONGIN, treasurer; M. PENET, archivist.

THE last number of *L'Art* contains the first of a series of papers on the collections of Chantilly, by M. CH. YRIARTE, which will be amply illustrated. In the inventory which the representatives of the Duc D'AUMALE furnished to the Conseil d'Etat, the value of the collections and furniture in the château is stated to be 8,344,000 francs. M. YRIARTE says that the reconstruction of Chantilly has cost six millions of francs, and that the stabling and other outlying buildings are valued at from two to four millions, while the park and grounds are worth twenty-one millions, so that the gift to the French people is worth between thirty and forty millions of francs. M. YRIARTE has no fear of the consequences of suggesting that the gift is a noble return for a decree of exile. He does not hesitate to say that if a representative Frenchman is to be named, the thoughts at once turn to the Duc D'AUMALE. His theory is that the collection is what it is because it was inspired by the thought of one who is essentially a Frenchman, and who felt that in bringing together so many historic heirlooms he was doing something to glorify his country. The number of *L'Art* contains among the illustrations an etching of *Salome*, in which a subject that might be supposed to be exhausted is treated in an original way by M. HENRI DUMONT. The artist imagines that the salver with the Baptist's head was placed on an altar under an idol in a deep recess. SALOME enters, and is scared by the appearance of the head, which is surrounded by a halo and turned towards the dancing girl, who shrinks back. The plate is a compound of mezzotint and etching, and is no less masterly in its chiaro-oscuro than in conception.

THE late M. BALLU tried to persuade M. CABANEL to paint figures that would typify the twelve months of the year for the Salle des Cariatides in the new Hôtel de Ville. In the former building M. CABANEL's figures of the months were greatly admired. But the painter was not eager to compete with the work of his youth, and decoration of another kind had to be found. Fortunately the cartoons of the original figures were not destroyed. They were discovered by M. ARMAND, the architect, and a commission was given at once for engravings of them in the best style. The portfolio will shortly appear. M. CABANEL has increased the interest of the work by designing a figure that will serve for frontispiece.



GRAND THEATRE · BABINGTON LANE · DERB

4th 1886.

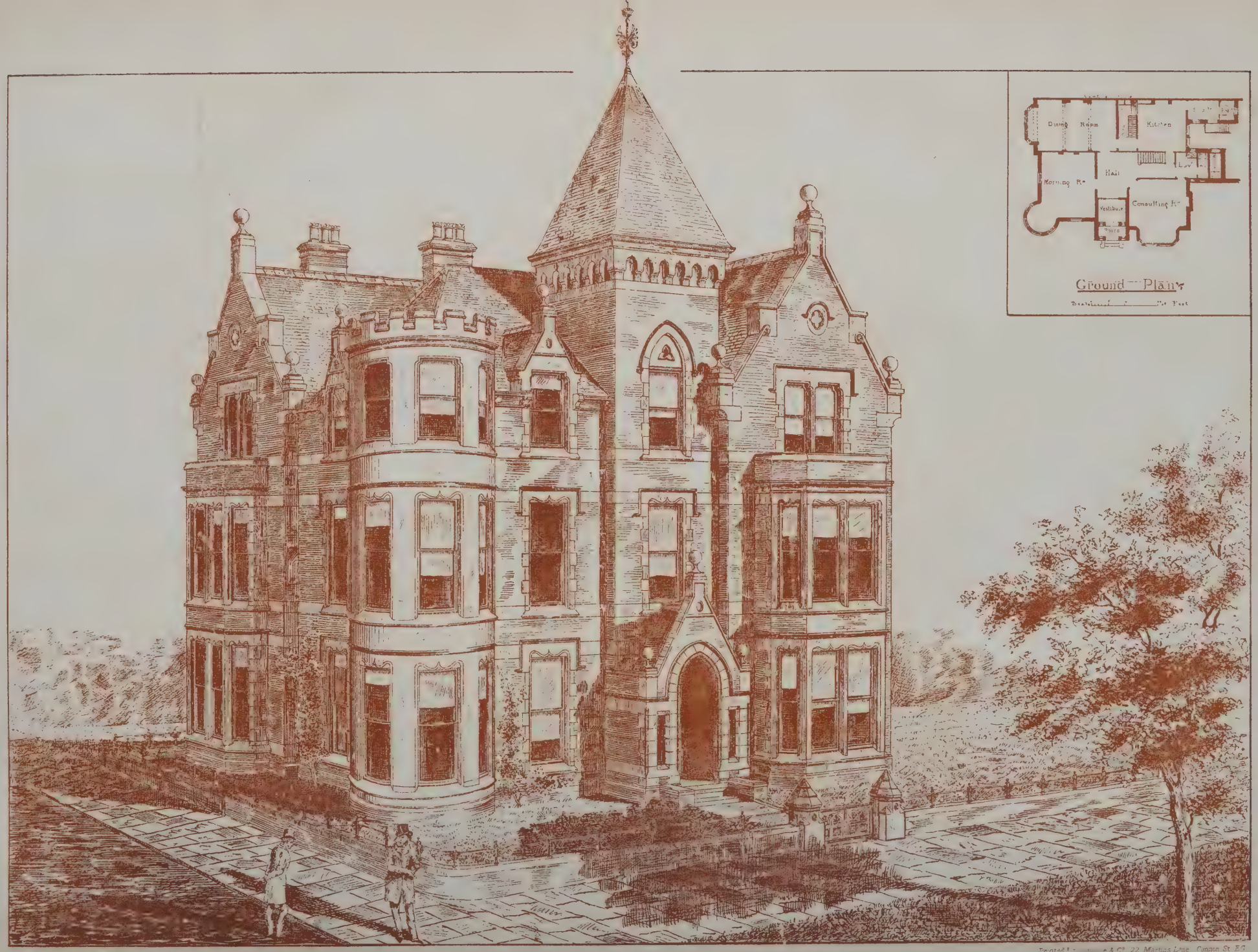


FOR ANDREW MELVILLE ESQRE

OLIVER ESSEX A.R.I.B.A., ARCHITECT
NEWHALL STREET BIRMINGHAM,
& 75. CHANCERY LANE, LONDON. W.C.



MONTACUTE HOUSE, SOMERSET.



A DOCTOR'S RESIDENCE, HARROGATE.

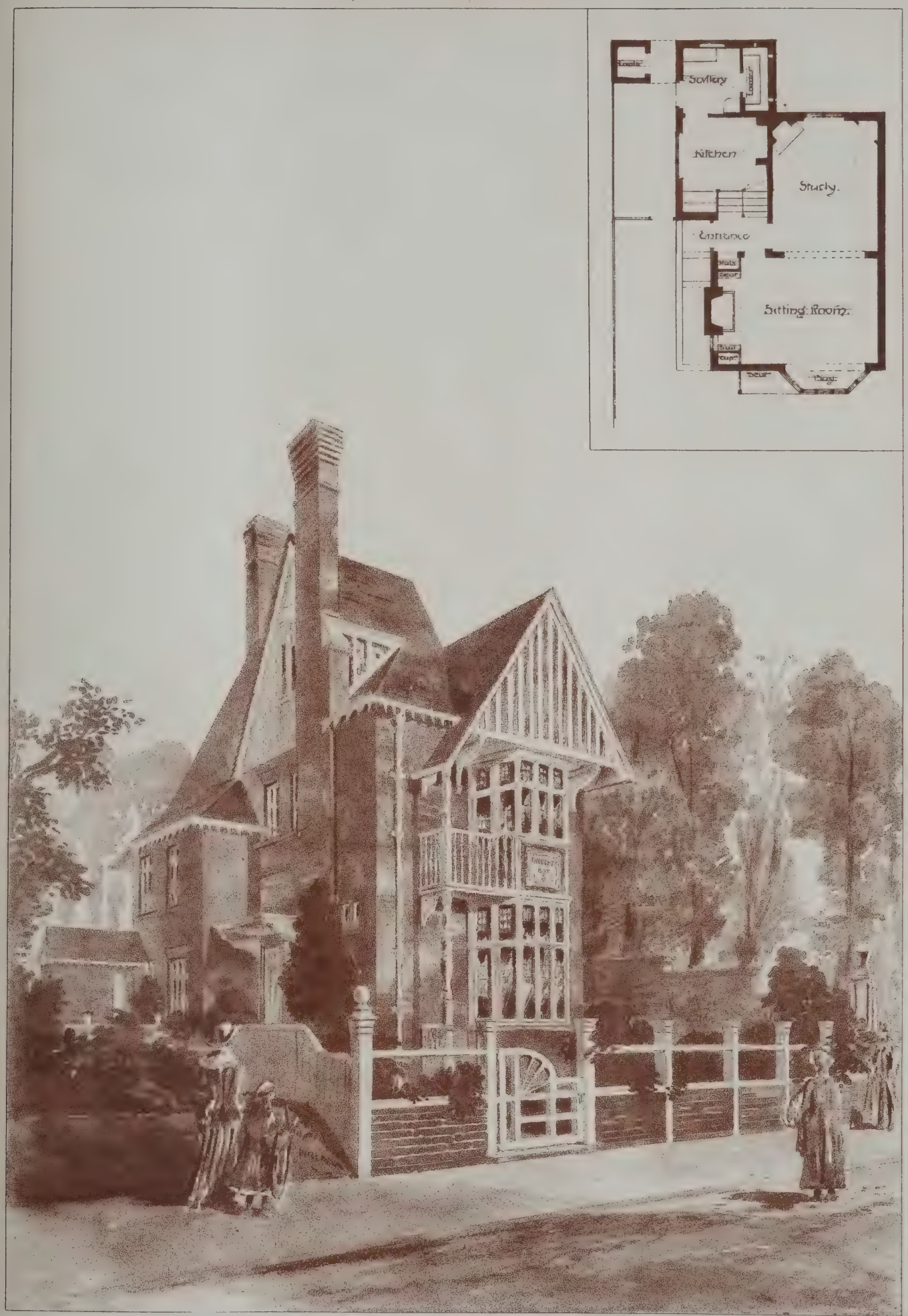
The Architect, Dec. 24th 1886.



HOUSE AT SHORTLANDS, KENT.

G. WARREN COOPER, Architect.

The Architect, Dec.24th 1886.



INK-PHOTO SPRAGUE & Co. LONDON.

"THOUGHT COT", BRENTWOOD.

MESSRS H & E. MARTIN, Archts

ILLUSTRATIONS.

GRAND THEATRE, DERBY.

THIS theatre was originally completed last spring, but was unfortunately burnt to the ground a few weeks after the opening. It has been rebuilt from the original designs by Messrs. BRADNEY & Co., of Wolverhampton, under the direction of Mr. OLIVER ESSEX, A.R.I.B.A., of Birmingham and London, the architect of the former building, and it was reopened to the public last month.

The front block consists of the entrances, staircases, crush-rooms, lavatories, two small shops, &c. The auditorium has two tiers of the customary horse-shoe shape, with the usual accessories in the way of private boxes, refreshment-rooms, lounges, lavatories, &c. From the proscenium to the back of pit is 65 feet, and the width of the pit is 67 feet. The stage is 40 feet in depth by 67 feet in width, the depth below the stage is 23 feet, and the height to the gridiron is 65 feet. There is also a back stage, giving an additional depth of 13 feet by 20 feet in width. There are the usual green-room, dressing-rooms, property-rooms, &c., in connection with the stage.

The whole of the woodwork throughout the building has been coated over twice with the patent liquid cyanite fireproof paint.

DOCTOR'S RESIDENCE, HARROGATE.

THIS house has been built for Mr. HENRY J. HUNT in Victoria Avenue on the Victoria Park Estate, and contains on the ground floor the following accommodation :—Dining-room, 24 feet by 17 feet; morning-room, 20 feet by 16 feet 6 inches; consulting-room, 17 feet 6 inches by 14 feet, with lavatories, watercloset, &c., in connection; hall and principal staircase; kitchen, 17 feet 6 inches by 14 feet 6 inches; scullery, pantry, and butler's pantry. The drawing-room is on the first floor over the morning-room, and has large oriel window and outer balcony. The exterior walls are faced with pitch-faced delph stone from Pateley Bridge in very narrow courses, and the dressings are of local sandstone from the Killinghall quarries.

The contractors for the different trades were—Mr. WILLIAM BERKINSHAW, mason; Mr. R. A. RAWORTH, joiner; Mr. C. FOSTER, plumber; Mr. W. WALKER, plasterer; Mr. J. BAYNES, slater; and Mr. G. DENT, painter. The whole of the works have been carried out under the supervision of Messrs. H. E. & A. BOWN, architects, Harrogate.

HOUSE AT SHORTLANDS.

THIS house is being erected in a prominent position overlooking Shortlands Park. The walling is of red bricks. The roof will be boarded, felted, and covered with Broseley tiles. The barge boarding, balcony, and other outside woodwork is being done in oak. The balcony is designed to overlook the grounds and other very fine views. The architect of the building is Mr. G. WARREN COOPER, M.S.A., of 16 Calthorpe Street, Guilford Street, and at Beckenham, Kent.

THOUGHT COT, BRENTWOOD.

IN this small house, built for Mr. W. NORMAN MARSHALL, Messrs. H. & E. MARTEN have endeavoured to utilise to the best advantage a limited frontage. One spacious room is obtained on the ground floor capable of division by sliding partition; also small kitchen, scullery, and larder. Five bedrooms are obtained on mezzanine, first and second floors, together with bath-room, water-closet, and box-room. A hall with fireplace, and an additional sitting-room over, are now in course of erection. The materials used are red bricks. The roofs are covered with red tiles, which contrast pleasantly with rather more than the usual amount of white paint; the spaces between framing in gables are filled in with dark rough cast in cement.

MONTACUTE HOUSE, SOMERSETSHIRE.

THIS mansion was erected between the years 1580 and 1601, by Sir EDWARD PHILIPS, sergeant-at-arms to Queen ELIZABETH. The cost of its erection is said to have amounted to nearly 20,000*l*. The form of the plan is that of the letter "E," intended, perhaps, by Sir EDWARD as a mark of respect to his royal mistress. The house is built of stone found on the estate, of a rich brown colour, ornamented with gables, a balustrade, pinnacles, and enriched cornices. Between each window of the second storey are niches, occupied by figures in ancient costume; the chimney shafts present columns of the Doric order. On the central compartment are the arms of the family, and over the entrance is the following inscription, dictated by the true spirit of old English hospitality :—"Through this wide-opening gate, none come too early, none return too late." The building, which is 92 feet high, is divided into many and spacious apartments, among which is a magnificent banquet gallery, 189 feet long, and 21 feet wide.

The illustration is from a drawing by Mr. ARTHUR KEEN.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fourth ordinary meeting of the Institute of Architects was held on Monday evening, Mr. E. I'Anson, president, in the chair.

Mr. MACVICAR ANDERSON, honorary secretary, stated that Mr. Ewan Christian had presented to the Institute a copy of his report on the Liverpool competition.

Mr. W. T. Oldreive, the holder of the Godwin Bursary, he said, had submitted a report of his tour in Germany, consisting of about thirty-eight pages, and the Council had considered it of sufficient merit to award Mr. Oldreive the whole sum of 40*l*.

The Special Travelling Studentship offered for one year by Mr. Aldwinckle was gained by Mr. G. G. Oakeshott, who had made a report of a tour of two months spent in Italy, studying and sketching; Florence, Siena, Bologna, Orvieto, Brescia, Mantua, Cremona, and Genoa having been visited.

Mr. A. B. Mitchell, the winner of the Soane medallion, had been absent twenty-seven weeks, and had sent 215 drawings of particular merit, and the Council had awarded him the second sum of 50*l*. The shading off with Indian ink, Mr. Anderson said, he considered particularly happy.

Mr. M. B. ADAMS spoke in high terms of these drawings, and particularly of Mr. Mitchell's new system.

Mr. WHITE, secretary, said that Mr. Mitchell had learned this system from a Russian student he had met with in Milan.

Mr. R. PHENÉ SPIERS, F.S.A., said Mr. Tschagine, the Russian student alluded to, had studied for two years in Rome and picked up the Fortuny system—that was to say, the method of graduating tones of Indian ink or other colours, laid down by the painter Fortuny.

Mr. R. W. EDIS, F.S.A., said he had seen these drawings, and expressed his wish to offer twenty guineas for one month's work, to be spent in making measured drawings and details of the sixteenth, seventeenth, or eighteenth century work, as opposed to mere sketches of English work.

The PRESIDENT said the nomination of candidates for the gold medal would take place on February 14, and those who wished to submit names for nomination must forward them during the next fourteen days.

Mr. W. BRINDLEY then read a paper entitled—

Marble: Its Uses as suggested by the Past.

Mr. Brindley commenced by reminding his audience that the name marble—from the Greek *Marmio*, to gleam, sparkle—well applied to the Grecian white marbles, which differed materially from those of Carrara. The Greeks, judging from their works *in situ*, cared only for white marble, with occasionally a plinth, step, or back of a sculptured frieze, of black, adding to its whiteness. Their temples in Sicily confirmed this, being coated with *marmoratum*, a white stucco made of pounded white marble and lime putty, and rubbed to a fine marble-like surface, examples of which still existed at Girgenti. The Romans had continued this process at Pompeii. The Greek's quarrying was further proof of his love for white, the grandest quarries extant being those of Pentelicus. The ancient marble-pitched slide for lowering the blocks still existed on Mount Pentelicus, and a small groove for the conveyance of water from quarry to quarry could still be traced. The vein of statuary in the great quarry pitched into the mountain where the Greeks had followed it, producing a huge cave from which they seemed to have obtained their best statuary for sculpture. The *débris* of the floor was now concreted together, the stalagmitic cement being of pure crystalline marble. After a description of the quarry and its marbles, the author mentioned the base rock of the Acropolis of Athens, a solid mass of rich coloured marble, which, although on the spot, had been discarded by the Greeks. The Parthenon and other buildings on the Acropolis were of an ivory-white marble, which, under the blue of an Athenian sky, produced a most

grand and impressive effect. Although white marble only had been used by the Greeks it was not from dislike to colour, but the opposite: to enable them to apply whatever colour they chose. Existing remains proved that they used colour and gold freely, and many of the broad Doric mouldings were, he thought, designed specially to receive colour. Whatever his tools and appliances, the Greek had executed as delicate work as could now be accomplished, while he used the drill far more dexterously than any modern workman. The Romans seemed to have introduced coloured marbles in monumental works after their conquest of Egypt, whence they derived the first ideas of monolith columns. The Romans imported from every corner of their vast empire the grandest and choicest materials for temples and palaces, an example we, as a nation, might well follow. The early buildings of Rome contained few varieties of coloured marbles, the number increasing as the colonies matured. The monoliths in St. Peter's and San Sebastien were cut from the quarry of Porta Santa, and also the immense basin discovered by Mr. Wood at Ephesus. In the ancient quarry in Tunis, which supplied the *giallo antico* and varieties of rose and orange *breccias*, the Romans had cut a large portion of the mountain away, and one could distinctly see whence they had cut their monolith columns, and hewn them roughly into shape whilst attached to the rock. These quarries had been specially protected by a massive wall, remains of which still existed, together with ruins of the adjoining Roman city, but *no* marble was used in their construction, it being reserved for Rome, where 172 columns of it were still extant. The pavement in the Basilica Julia was mostly composed of it, and also the columns in St. John Lateran, the Pantheon, and the Arch of Titus. Most of the coloured marbles in Italy had, no doubt, been quarried during the time of the Cæsars. The ancient quarries of Egyptian or purple porphyry had not yet been found, for the statements of modern writers as to their locality were incorrect, Syenite granite being mistaken by most of them for the more valuable material. Nothing could approach the purple porphyry in colour, firmness of grain, or durability, and columns wrought 1,900 years ago still retained their freshness of colour. It had been obtainable in very large sizes, only exceeded by the granites of Egypt and the green *Cipollino* of Carystus, which latter was much appreciated by the Romans, for in Rome alone 500 columns still remained; and good Cipollino was now again obtainable. The Romans, who had learnt it from the Greeks, retained the employment of marble and the methods of working it just the same until the time of Justinian. When Constantine was converted, the Pagan temples which could not be adapted to the Christian religion had been allowed to decay, and then seemed to become the quarries to supply materials for churches for nearly 1,000 years. In the great sea-wall of Constantinople, where it was partly broken down by the sea, columns used for bond could be seen, as well as the upper beds of carved capitals and the lower portions of moulded bases; the carving of the capitals being as beautiful as they were various in design. The Byzantine interiors exhibited most charming examples of marble decoration, and it was instructive to note the small quantity of marble used, it being a thin, yet durable, applied decoration, showing no desire to appear anything different. Several smaller churches in Constantinople, like St. Sophia, showed skill in surface decoration, the walls being covered with oblong panels in tiers of rich marble, framed with narrow white mouldings and bands of a different colour, continuous lines of colour on white being introduced between these panels, while the whole was surmounted by a marble mosaic frieze, with a cornice carved with small sharp triangular shadows. This system applied to St. Mark's, Venice, but at Palermo the marble panels were more elaborately framed with bands of very choice mosaics. The marble balustrade round the gallery at St. Mark's had probably been copied from St. Sophia. At St. Mark's any early carved stone found had been walled in so as to be seen. The marble pavements of Greek temples were probably the earliest, and were usually thick slabs, white, and of large dimensions. The Greeks also perfected the tesselated mosaic pavements; from them the Romans had gained their knowledge, brought to Rome many of the beautiful pavements found in Greece, and, becoming proficient themselves in the art, used it throughout their empire, even in Britain; but here, at their departure, it had fallen into disuse until a few years ago. We had to thank French architects for the revival of this art, but modern pavements, owing to cheapness, were very inferior to the ancient; an old tessera could be chopped into three modern ones. Good concrete foundations were necessary for the success of these pavements. Some of the grandest pavements were the simplest, as those of the Basilica Julia at Rome, St. Sophia, and one under the dome of St. Mark's. The author differed entirely from those who thought St. Mark's pavement was always undulating or bent as at present; these slabs being sawn from a single block, the waste of working them crookedly would have prevented the markings opening out into one connected pattern; if this pavement were ever repaired, he thought the broken slabs would be found level underneath, and if reversed would produce an even surface. After describing the pavement in the Basilica Julia, the author proceeded with an account of the mosaic pavements of *opus Alexandrinum*, so various and plentiful in Italy, and of which we had a good example in Westminster Abbey. They were usually composed of but few colours, red and green porphyries with white palambino for the mosaics. These pavements had always been made out of old materials, and the variety of geometrical design was truly amazing, some of the most beautiful being in Palermo. The white palambino was a limestone of pot-like texture. The great pavement of Sienna Cathedral, one of the finest Italian Renaissance works, consisted of pictorial subjects in dark-green marble and mastic inserted into thick slabs of white marble. Marble pavements in squares of black and white, introduced about the time of Torregiano, had been largely used, as at King's College Chapel, Cambridge, the Beauchamp Chapel, Warwick, and in domestic work generally; the white tiles came from Italy and the black from Belgium. With the Dutch and Belgians these pavements had never fallen into disuse, and the demand was still great for them. Our mediæval builders had used coloured marbles very freely in church architecture, the retiring grey Purbeck, Petworth, or Frosterley being used; and their work taught the value of greys, their colouring—in arcading, for instance—giving distance, but with quiet dignity, holding its own, as something of extra value. The most satisfactory of the altars and monuments of the Italian Renaissance were executed in white marble, with only one colour introduced for the columns, pilasters, frieze, pediments, and the panels of base. Polished marbles and stone rarely went well together in the same work, but some marbles—greys, reds, and Cipollinos—looked very well dull-polished, and in that state would go better with stone. English alabaster was an excellent economical material to work with marble, and though only used for interior work would, if carefully selected, and used where wet would not run over it, be found better than many stones, and keep its colour. It had been used for monumental work from a very early period, and the most delicate work had been executed in it. About the fourteenth century it came into general use in Derbyshire, and during the Elizabethan period was the material most used for important monuments. Memorial slabs of incised marble had preceded brasses, and were far superior to them. The English Renaissance, culminating in the "Adam style," had left us marble work in chimney-pieces equal if not superior to anything on the Continent, the designs being good and suitable to the marble, which was usually of the best quality. The onyx marbles of Algeria, Mexico, and California—of the same nature as Oriental alabaster—could be cut and ground thin enough for window purposes. At Tarragona Cathedral there were some good examples in orange-yellow Oriental alabaster, and also at Orvieto; almost any marble with crystalline statuary ground an inch thick, placed on the sunny side of a church in Italy, would admit enough light for worship, but would not do in England with its variable climate. Great Britain and Ireland contained many varieties of well-known coloured marbles, but they were little used in comparison with foreign marbles, on account of the bad quarrying and high railway rates. If consistent detail were used, Carrara marble might be employed for public buildings. A marble to stand exposure to the weather should be close, hard, and vitreous looking, plenty of which could be selected. The mouldings used in the palaces of the Cæsars and other important buildings in Rome were usually very simple, and looked well in marble, costing less than many modern ones which were designed forgetful of masons' method of work. Mouldings also needed to be drawn specially to suit the colour. Marble linings, when possible, should be fixed hollow at the back, and a few small places left open in the joints until the solid walls were dry, the hollow allowing the slab to keep a little warmer than the wall, thus avoiding condensation. In the British Museum, the South Kensington Museum, and other similar collections, were some fine examples of ancient coloured marbles, but they were seldom distinguished by names, and when they were, the names were generally incorrect. In the University Museum at Oxford was one of the finest collections of specimens known, but they had been for years in a dark corridor where it was next to impossible to see their colours. In France, coloured marbles were appreciated as objects of beauty, the same as fragments of sculpture, the collection in the Museum of the Louvre being, in the author's opinion, the most instructive known. Mr. Brindley concluded by referring to the useful arrangements of the Museum of the French School of Mines, where the wall space was divided to represent each geographical department, thus enabling one to see at a glance everything geological in each Département likely to be of use, viz., its earths, sands, clays, limes, stones, marbles, and granites.

A letter was read from Dr. Freshfield, who regretted being unable to attend, and referring to a photograph he sent, which would be explanatory of others previously sent.

Mr. ALFRED WATERHOUSE, R.A., said that as he had been instrumental in getting Mr. Brindley to read the paper, he should like to express the pleasure he had had in listening to

it, and also to propose that their best thanks should be given to Mr. Brindley for the immense pains he had taken in preparing so instructive a paper, and for illustrating it in so profuse a manner. He congratulated him also on the beauty of his sketches of the quarries, quite a new class of views, and one of peculiar interest to architects. A point of interest mentioned was the flatness of the mouldings in Roman and other ancient buildings, particularly the one shown, which was cut out of so thin a slab of marble.

Mr. GEORGE AITCHISON, A.R.A., seconded the vote of thanks. Mr. Brindley, he said, had got some of the rarest specimens of marbles to be found in Europe. Some specimens he had seen at his works could not, he thought, be seen anywhere else except in the churches of Rome and the East. He had so condensed the subject that it would be difficult to enlarge on it, and he wished more than one lecture had been made out of it. The instances he gave of the use of marble by the Greeks, Romans, and Byzantines would be extremely useful to English architects who were able to use marble. Unfortunately it did not find favour with the English public, though it afforded one of the most beautiful means of decorating or applying colour to interiors of English buildings. Exteriorly there was the danger of corrosion, and it became so covered with dirt, soot, &c., that the finest marbles might be mistaken for common stone, and thus its use for exteriors could not be commended. Mr. Aitchison then said the subject was one that he could speak on for hours, and would therefore conclude with alluding to the beautiful yellow marble used by the Emperor Domitian to line his palace, a marble which took such a splendid polish that it became quite a mirror.

Mr. BURKE said, in regard of mosaic work, that the cost of a large area was increased by the multiplicity of tesseræ laid, and everything here was sacrificed to the question of economy. The use of marble in this climate had been spoken of, and Mr. Aitchison said that it would corrode in the climate here. It was the same in France. The fault was, however, that we did not keep marble clean. If the soot and gaseous products were removed no deleterious action would be set up.

Mr. WOODWARD said he hoped that after what they had read in the *Times*, and after what Mr. Brindley had said, they would hear no more of the sensational waving in the pavement of St. Mark's, Venice.

Mr. BLASHILL hoped the opportunity would be taken of making themselves, especially the younger architects, acquainted with this beautiful material. He could not understand the English reluctance to using marble when its use was so common, not only in Italy but nearer home, in Holland, Belgium, &c.

Mr. J. P. SEDDON, on the question of cleansing marble, said more damage had been done by washing it than by leaving it alone. He knew cases where it had been cleaned out of existence. He thought the English objection was to the coldness of marble, which the polish in some respects added to. He himself was making use of the warm Devonshire marbles for his churches.

Mr. SPIERS said marble would not suffer unless moisture penetrated it, and that soot was rather a preservative. He did not think they should let it go forth that washing was a preservative, for he thought it had the contrary effect.

Mr. RALPH NEVILL, F.S.A., said in countries where marble was most used the climate was hot. Nothing would be more unpleasant here than the cold marble surfaces. To enter the reproduction of the Corsini Chapel at Gatton Hall was like going into a tomb. Marble, he thought, would be used where great cleanliness was required, and where thoroughly efficient heating could be employed; but for domestic work to any extent the fatal objection he had alluded to existed.

Mr. M. B. ADAMS said that in Ireland, though desirous to use the native marble, the carriage was too expensive. The Belgian marble was cheaper.

Mr. R. W. EDIS, F.S.A., said he differed from Mr. Nevill. He had used marble considerably in various houses, finding it neither cold nor unpleasant. Criticism was freely passed on other parts of his buildings, but no one said a word against the marble. With proper marble masons, he found marble as cheap to use as tile work.

Mr. Heathman, Mr. Hansard, and Mr. Woodthorpe also made some remarks; after which the President put the vote of thanks to the meeting, and it was carried unanimously.

Mr. BRINDLEY replied, and in the course of his remarks said that the so-called jasper columns of the Grosvenor Gallery, which had been spoken of as deteriorating, were not jasper at all. He also referred to a most injurious act of the Metropolitan Board of Works in using muriatic acid to clean the Shakespeare statue in Leicester Square.

The Southampton Town Council have appointed a special committee to report on the best means of celebrating the jubilee year. Among others a suggestion has been made to uild a town hall.

THE FITZWILLIAM MUSEUM, CAMBRIDGE.

THE Director of the Fitzwilliam Museum (Dr. Waldstein) announces that among the new acquisitions to the Museum the following are now exhibited in the galleries and library :—

Picture Galleries.—In the North Gallery the oil painting of *St. Sebastian* attributed to Lorenzo di Credi, presented to the University by Dr. Ford, executor to the late Dr. Munro, of Trinity College, as well as the oil painting of a lioness by James Ward, R.A., presented by Mr. R. E. Lofft, and a portrait by B. Van der Helst, bequeathed by the late Dr. Thompson, Master of Trinity, have all been hung on one side of the south wall.

On the other side of the wall in the same gallery five water-colour drawings by Prout and David Cox, presented some time ago by the late Mr. A. A. Vansittart, M.A., of Trinity College, but not until now exhibited, have been hung covered by curtains which can be removed by visitors desiring to examine them.

In the centre of the same gallery the first series of Braun's permanent photographs of the pictures in the gallery of the Hermitage of St. Petersburg has been replaced by a second series.

The drawings and sketches by James Ward, R.A., in the exhibition stands in the North and South Dome Galleries, are replaced by selections from Albrecht Dürer's engravings on copper, special attention being drawn to the proof of the *Adam and Eve* recently purchased from Lord Chichester, one of the finest proofs in existence.

It is proposed to deposit temporarily in one of the galleries the portrait of the late Professor H. Fawcett, by Mr. Hubert Herkomer, A.R.A., which will be exhibited immediately upon its arrival.

Library.—A collection of water-colour, pencil, and pen-and-ink drawings and sketches by the late Richard Doyle, as well as a manuscript of Byron's "Corsair," illustrated by the artist before his sixteenth year, together with four pen-and-ink drawings by the late Randolph Caldecott, all recent purchases, may be seen in the library upon application to the assistant in charge.

ORNAMENTAL ART.

THE subject of the third lecture delivered at the Yorkshire College by Mr. Lewis F. Day was "The Fitness of Ornamental Form." He said one could scarcely conceive of ornament which was not in a manner more or less modified by considerations altogether apart from the natural forms on which it might have been founded. Even the human form, which is our highest type, and with which less liberty may be taken than with any other of nature's works, is not ready-made to the hand of the sculptor, and the works of the great masters to which we accord the title of "monumental" are so in virtue of a something which was not in the model of the sculptor but in his art. The very position and purpose of ornament, the method of its execution, and even its construction, insisted upon some treatment of natural forms. The mere repetition, which was inevitable, would of itself render such treatment necessary, and even without the inducement of economy we should still resort to repetition if only because the human brain could not go on inventing without intermission, but needed the comparative rest of repeating itself even in hand work. The only question was where and to what extent they should avail themselves of it? In proportion to the naturalism of a design, and the point of realism to which it was carried, it became unsuited to multiplication. To put it the other way about, the oftener it was proposed to repeat a form the more imperative it was that it should be removed from the imitation of nature. It needed, in short, adaptation to the purpose of repetition, and it was adapted only in proportion to what he might call its reticence. A highly elaborate and attractive feature, anything that is in the least self-assertive, would not bear so much as reduplication, whereas any insignificant device might be multiplied *ad infinitum*. The presumable reason for introducing figures into ornamental design was for the sake of some added interest or suggestion there might be in them. But they could not get up any absorbing interest in a series of figures all identically of one pattern. They suggested only the mechanical means employed in producing them. The multiplication of the figure, far from multiplying its interest, diminished it in exact proportion to the number of times it was repeated. The only safety was in toning down the repeated form until its recurrence ceased to be very obvious. This might be effected in various ways. In certain leather, paper, and such like designs, it was brought about partly by the low relief of the stamping, partly by the softness of the colouring, and partly by a more or less cunning complication of the cupids (or whatever they might be) with the rest of the design, so that they did not thrust themselves into notice. The consideration which occurred in such a case was whether it was then worth doing? Useful as an outline was in decoration, it was not

inevitable. Nor was it so easy to say just where the outline should be used. In very many cases the material and its workmanlike employment necessitated an outline, and even determined its colour. It was seldom, however, that an artist would resort of his own free will to an even and rigid outline all round every form. Excepting at a great distance from the eye, where its mechanical equality was not seen, that was almost certain to result in hardness, a defect which was very commonly looked upon as a merit of execution. Mechanical precision was too often the manufacturer's ideal of finish. It was one, unfortunately, which he could all too easily realise, at a cost of what beauty of feeling and colour he could probably never be brought to know. The instinct of art was rather to lose an outline, more or less, in places; and only to insist upon it where its value was sufficient to justify the risk its use entailed. The only rule which could be laid down as to the use of outline was so extremely simple as not to satisfy the doctrinaire. If the need of an outline was urgent, then adopt it; but if no such want was felt, why insist upon its use? The insistence upon outline for the sake of outline, as though decoration was not decoration without this official stamp of pedantry—this trade-mark of the decorating shop—was pure nonsense. Outline was frequently a matter of trade expediency, and no more; and a very wise and fit expedient it was if only in view of that process of reproduction which was one of the necessities of modern decoration, and particularly of modern ornament. The vaguer forms, which depended so much upon the touch and feeling of the artist, did not lend themselves to this necessity. Now, an outline did; and if in outlining his drawing the designer could not help in some degree hardening it, the evil was infinitely less than if the more undefined and delicate forms had been left to the tender mercies of another. Decorative art was a kind of short-hand. Its very existence seemed to depend upon its being done with readiness, quickness, and certainty. That which asked for careful scrutiny to be appreciated would for the most part fail to win appreciation. It might have all manner of merits; but if it hid them, it had no right to complain that men passed them by. Poetry itself that was over subtle was not popular, and decorative art was essentially popular art.

The subject chosen for the final address was "The Study of Design." He said he would have a student of design well grounded to begin with in practical geometry. He would set him to work somewhat on the kindergarten principle, making up geometric patterns. As he grew beyond this, he would let him draw freer and more flowing forms, until he could produce with the brush ornaments such as the Greek pot-painters drew on their vases. Simultaneously with this he might be making intelligent studies of leaves, flowers, and the growth of plants, as well as of the best examples of applied design. His studies should be studies, not pictures. Show drawings were so much waste of energy that might be much better employed. Ornament once mastered, he might pass on, if so inclined, to the study of animal form, and even the human figure. A pupil should never be allowed to make a design without having a distinct idea as to how it was to be carried out. He should be taught to understand that design was one continual solving of problems, a series of perpetual adjustments of the claims of art and of necessity. In all designs for reproduction there should be the utmost simplicity and directness of execution; nothing should be slurred over; every line should be clear and firm. The decorator should readily accept the conditions to which his design was subject, not only adapting himself to them, but taking to them kindly. Training in practical work could not begin too soon. It might sound feasible enough that one should first learn the theory of design and then be taught to apply what he had learnt. But the aim of education was not to cram so much theory into the student which he might make use of in his craft. The most profitable lesson we learnt at school was how to learn. And so he would teach the student how to study and design, and the better way of doing that would be to take him to the workshop and show him what there was to learn there and what to avoid. It was far better to take the sturdy workshop faculty and cultivate that than to rear a kind of exotic or over-cultivated art upon which the atmosphere of the workshop acted only as a chill. It was the fashion to declare that the basis of all art was figure-drawing, that the best preparation for a design of ornament was to acquire a knowledge of human form and a facility of representing it. History and experience went to prove that this assumption was unfounded. The great painters who tried their hand at ornament mostly failed. He did not mean to say that the study of the figure might not be valuable to the designer. What he doubted was whether his time might not be employed to better purpose. As far as the supplementary studies were concerned, he fancied that of the sciences botany would be to more purpose than anatomy, and of the arts flower-painting more to the purpose than figure-painting. The familiar argument was that the study of figure was necessary, because in it the student must be exact. They might take liberties, it was said, with plant form and the like, and no one would be any the wiser, the proportions being more or less variable. It was partly for that reason that the study of vegetable rather than animal anatomy recommended itself to the ornamental designer. He could not accustom himself too soon to accept natural form as something not to be copied, but to be turned to ornamental account, to be used inasmuch as it lent itself to ornament, and in the manner most conformable to ornament, or to be rejected if it would not so accommodate itself. And just in so far as the human form would not permit of modification and adaptation was it unfit for use in ornament. Granted that the habit of working from the human model developed more than anything the faculty of exact and accurate reproduction of nature. But that was not the faculty which needed most encouragement in the designer. On the contrary, the habit of adhering rigorously to natural fact was a positive hindrance to design. It was of infinitely more importance in ornament that the opposite habit of adapting and modifying always should be encouraged. The designer must first think of a design. And, indeed, it was better that he should not even refer too much to actual studies from nature. Their thoughts must be concentrated always upon the lines and masses of their ornament. The consideration of natural proportions only hampered the free development of design. Something like exact study from nature might be necessary, but even plant form was not such a lawless thing as figure-painters might think. The proportions of the parts of plants varied happily, but the construction of vegetable forms were scarcely less scientifically certain than the order of bones and muscles. He did not mean that figure-drawing was superfluous; in some branches of design it was perhaps indispensable, and it was useful in many others; but it was a supplementary or subsidiary branch of training in ornament, and certainly not the basis of it all. On the other hand, there were limits to merely technical teaching. In France a designer of textile fabrics had to go through an elaborate course of technical instruction. He had to master the technique of weaving and to know how every shade of colour in his design could be produced in threads. It was more than doubtful whether quite so much as this was necessary or desirable at all. The designer of textiles did well to analyse the best examples of weaving; only by such means could he quite fully realise what might be done without waste of labour and material. But that he should be a practical weaver, or even an expert in putting the pattern on to ruled paper did not seem to him of the least use in the world. The problem we had to solve was how to infuse into modern manufacture something in the nature of artistic interest. The choice is no longer open to us whether we will divide our labour or not, and he did not think it was at all worth while that the designer should spend a very large proportion of his time in the mere mechanical part of pattern draughting. It was quite enough for the designer to make himself master of what could be done in weaving without knowing exactly thread for thread how it was done. There should be co-operation of the various skilled workers employed. The weaver should explain to the designer the conditions under which he must work, and he in turn should explain to the weaver the effect he wanted to produce, leaving something to him in the way of texture at least, and the method of producing it. A design need not be draughted by the artist; but it must be draughtable. It must be quite clear how many tints were meant to be employed, and where one ended and the next began. There must be no vagueness; there must be no feeling and fudging up to an effect. Every shade and every line must be clear, precise, and workmanlike. The designer who would do anything worth doing must be very much in earnest.

THE UNITED STATES CUSTOMS AND WORKS OF ART.

THE following correspondence has lately appeared in the American papers:—

"New York: October 29, 1886.

"Sir,—I beg to say that I have just bought in Europe some 'old masters,' with the intent of making a collection. The opinion of the department formerly as to what constitutes 'modern work' seemed to differ much from the view current in other countries.

"In my estimation, and according to artists' testimony universally, pictures painted 200 years ago and prior to that are called old masters. It is only those painted within 150 years at most which are termed the 'modern school.' This classification is accepted by all the nations of Europe.

"The old masters form a very important part of the art education of this as well as other countries, and every encouragement should be given for their introduction. These works in foreign galleries are the ones which draw our students abroad to study art, and had we a sufficient number here there would be no temptation for students to go abroad, and a great saving of money would accrue to our country.

"Scarcely any old pictures have been brought to this country since the raising of the duty on paintings. Many are left abroad

to await the day when ignorance and injustice shall be dispelled. At present the discrimination against foreign painters is unjust and much to our discredit.

"I beg to state that I have two cases now entered by me as antiquities, being antique pictures or 'old masters,' and not coming in the least under the name of modern works. They are in two cases, marked C. S., 1126, 1127, per *La Bretagne*. I have entered them as antiquities, being a collection of antique pictures, because Heyl's 'Digest of the Statute' comprises under the free list 'all other collections of antiquities.' Three of the pictures, Ruysdael, Netscher, and Hoogstraaten, are fully 250 years old, and one, Van Eyck, is 450 years old. I have left in London, awaiting the decision of the department, a Masaccio, who died in 1443; an L. Van Leyden, who died in 1533; a Rubens, who died in 1640; and a Vandyke, who died in 1641—the last two pictures being fully 250 years old, the Leyden 350, and the Masaccio more than 450 years old.

"It seems that an intelligent and liberal rendering of the law should be had, as it could not have been the intent of anybody to shut out objects which are not of any commercial benefit to the country as importations, while as works of historical and educational character they are invaluable, and the more we have of them the more the country will be enriched in many ways. I look confidently to your liberal decision in the matter, and remain,

"Your obedient servant,

"HENRY G. MARQUAND.

"The Hon. Daniel Manning, Secretary, &c."

The answer of Mr. Fairchild, Assistant-Secretary of State, is as follows:—

"In reply to your letter of the 29th ult. in relation to the free entry of certain paintings executed in the fifteenth, sixteenth, and seventeenth centuries, and imported by you per *La Bretagne*, I have to inform you that the collector and appraiser at New York report that paintings executed prior to the eighteenth century will be classified as 'antiquities' under the department decisions of June 7, 1882 (not published), April 3, 1885, October 23, 1885, and August 18, 1886. In view of these reports no special instructions as to the paintings in question appear to be required."

The letter of the Under Secretary is taken as an authoritative statement of the principle that is to be observed in future. It was necessary that such a decision should be given, for, as Mr. Marquand points out in a subsequent letter, the precedents quoted have been systematically ignored, and the full duty charged.

TIMBER BUILDINGS IN CHESHIRE.

AT the last meeting of the Chester Archæological and Historic Society, Mr. Alfred Rimmer read a paper on "The Black and White Half-Timber Architecture of England, with a special reference to Chester and its Neighbourhood." Drawings by Mr. John Douglas, Mr. Hodkinson, and other architects had been lent for the occasion. In the course of his paper Mr. Rimmer said that the Early English lasted from 1100 to 1200 roughly speaking, and the domestic largely corresponded with the ecclesiastical architecture of the times. At that period there was very little black and white architecture going, but there was a great deal of wooden architecture. The houses of the peasants were built of solid oak logs, not unlike the log huts built by settlers in the wilds of North America. The feudal nobles, on the other hand, lived separately from the people in their great castles, with their retainers who were their descendants and relations about them. One baron who came to an untimely end at Shrewsbury was said to have had 2,000 of his relatives about him. The Earl of Warwick had even more. They lived quite apart and did not mix with the people at large. The common use of timber in building at that period was attributed for one reason to this, that the country was then densely wooded in many parts. There was an old saying—

From Birkenhead to Hilbre,
The squirrel can go from tree to tree.

And nowadays the squirrel would have a difficulty in finding a tree to go upon. Delamere Forest would no doubt then extend over a large part of Cheshire, and favour the survival of the wild cat in this part of the country, to whose lynx-like grin he attributed the old saying—"he grins like a Cheshire cat." The timber houses in Cheshire were strongly timbered; in fact, one beam in a Cheshire house he had seen at Baddiley would have been sufficient to timber a moderate sized dwelling-house in any other part of the kingdom. In Elizabeth's time there were some magnificent timbered houses in Cheshire and England generally, as well as other houses erected in the Elizabethan style. This style was brought from the Continent in the earlier days of the "Grand Tour." It was, however, the Renaissance style which came in with the architects Vanbrugh and Adam, which was really responsible for the destruction of our timbered houses. Examples of this Renaissance style were seen in the earlier Eaton Hall, Blenheim, Bank Hall, Warrington, and Hooton Hall. He compared the English black and white structures with those of the Continent very much to the advantage of our own, which were of much more solid construction, and alluded to numerous fine examples of timbered work, such as Stokesay, the earliest example extant, the old Town Hall at Hereford, Poulton Old Hall, &c. The Falcon Cocoa-house he described as a beautiful example, dating from Henry VIII.'s time. In conclusion, he recommended for the purposes of timbering the black walnut of America, a wood which deserved to be better known in this country. By getting it ready cut and morticed from the United States they would be able to erect timbered houses very cheaply, and perhaps see a revival of this beautiful, irregular, and picturesque style in England.

Correspondence

Colour in External Architectural Construction.

SIR,—This subject having been made somewhat prominent lately, a brief notice of actual examples may be acceptable to those who may agree with the writer that no architecture can be perfect without the aid of colour.

Two principles are observable. The first, and best, where coloured materials formed part of the substance of the walls; the second, where marble veneers and mosaics and tiles were attached to the surface of the walls. The examples in this country and the north of Europe belong to the first class. Among them are the churches of Strixton, Northampton (St. Peter's), and Irchester. In these the walls are decorated with alternate bands of red and white stone. In Kent alternate courses of stone and flints are common. In Norfolk, Essex, and Suffolk flat tracery and other patterns are cut out of stone, and the spaces filled in with flints of small size. At Westminster Abbey there is groining of light stone, with the cells filled in with stripes of dark and light stone of equal width; and throughout the thirteenth century the use of polished marble columns was a marked feature in most buildings.

In France the examples of constructional colour are very numerous. At Vezelay the noble Romanesque church is banded without and within with dark and light stones. At Clermont Ferrand the windows have voussoirs of alternate dark and light stone, with a mosaic diaper above. Between the bold corbels of the cornice are stars, chevrons, &c., in various colours. A splendid frieze, of geometrical pattern, surrounds the apse. The architects were evidently well pleased to take advantage of the variety of coloured materials which the volcanic district afforded. Eight centuries of exposure prove their durability. At Cologne, at Lubeck, the same mode of building may be seen.

It is in Italy, however, that the use of coloured materials in external architecture was most common—indeed, it may be said to have been universal, and there appears to have been no hesitation in destroying classical remains to obtain rich marbles for this purpose. But quarries of the richest materials abound—breccias, serpentines, jaspers, and rosso, verde, giallo, porfido-nero, and white marbles. At Bergamo, the church of St. M. Maggiore is constructed with grey, white, and red marbles. The architectural effect depends entirely upon the counter-changing of the three primary colours. The groining of the porch is of black, red, and white marble in equal bands. The columns are of red marble. In general treatment the upper part of the porch is entirely grey, the lower red, relieved with black and white, which time has converted into yellow. At Aquila, Pepoli, and Salmona the churches and other buildings have quite an Eastern character, the plain parts of these walls being built in diaper patterns of two or more colours—generally red, yellow, and black. At Venice, Sansovino's exquisite loggia at the foot of the great campanile was not considered complete, though liberally adorned with mouldings, carvings, and statues, without the additional charm of colour. Thus the columns are of Greek breccia, the pedestals and cornices of the *rosso* of Verona, and the remainder of Carrara marble. The Scuola di San Marco, the Palazzo Dario, and the church of Sta. Maria de' Miracoli are richly encrusted with coloured marbles. The last is considered a perfect gem of the best Renaissance time. The basilica of St. Mark illustrates both the principles of application mentioned above.

These brief notes would be very imperfect without some reference to Giotto's campanile at Florence. Quatremère de Quincy says:—"Its chief beauty consists in the casing from top to bottom of compartments in marble—black, red, and white." The black is really a green serpentine.

Mr. Quilter says of it:—"From my window, *au troisième*, . . . one building alone refuses to succumb to the influences of

cloud and rain, refuses to be deprived of its colours; its delicate traceries, and its shades of red, yellow, black, white, and green marble still standing out clear and perceptible through the heavy atmosphere. . . . In the course of many years travel in every quarter of the globe I have come upon but one building which had at all the same sort of power over the imagination . . . that structure was the Taj at Agra."

Mr. Ruskin says:—"The tower of Giotto is the loveliest of those raised on earth. . . . Of living work there is none so perfect."

Yours obediently,

H. T.

CHURCH BUILDING AND RESTORATION.

Carlisle.—Work in connection with remodelling the whole of the interior of Warwick Road church has been commenced this week from plans prepared by Mr. T. Taylor Scott, architect, of Carlisle. Among the works the old plastered ceilings and interior shell of the large span roof will be removed, and temporarily supported during the erection of a new stained and varnished roof on the clerestory principle, with two arcades of stained glass lights. A complete system of ventilation will be carried out, as well as new seating for the gallery and ground floor of the church. The contract has been let to Mr. William Latimer, joiner, Sheffield Street, Carlisle, with sub-contractors for the various trades.

NEW BUILDINGS.

Hawick Municipal Buildings.—The new buildings for the police and municipal departments, which were commenced about two years ago, will soon be completed. They stand on the site of the old town hall. Mr. J. C. Walker, the architect, selected the Scottish baronial style as best suited to the peculiarities of the situation. The following accommodation is provided:—Burgh surveyor's rooms, council chamber and committee-room, town hall (seated for a thousand persons), public library and reading-room, police court, police offices and cells (ten in number), an apartment for fire hose and reels, and a keeper's house. Most of the work was executed by local contractors. The total cost will be about 11,000*l.*

SCHOOL BUILDINGS.

Bradford.—The Board schools at Great Horton have been opened by Sir Henry Holland, M.P. The buildings, which consist of three blocks—the mixed school, the infants' school, and the caretaker's house—are designed in the Queen Anne style. The infants' and mixed schools have gables to the front, and carved pediments and terminals at the angles. Below the pediments are panels, lettered with names of the schools and the date of erection. Separate playgrounds are provided for girls, infants, and boys respectively, and three covered playsheds of ample dimensions have also been constructed. The out-offices are fitted with Wilcock's patent automatic closets. Ample cellaring is also provided for heating apparatus and for storage purposes. The mixed school consists of a large assembly hall, 88 feet by 45 feet, well lighted at both ends and at the sides, above the roofs of the adjoining classrooms. The height to the ceiling is 29 feet. The roof is of open timber-work, and the ceiling is panelled in wood moulds in a simple manner. Around the assembly-hall are grouped twelve classrooms, about 25 feet square, and capable of accommodating from fifty-six to sixty-four children each. Each classroom has glass partitions from the assembly-hall, and all are arranged so as to have left-hand light. Two entrances are provided, 9 feet wide, for boys and girls respectively, and cloak-rooms, 30 feet by 24 feet, and 24 feet by 20 feet, are provided for children of each sex. Exits are also arranged for those of each sex to playgrounds 7 feet wide. There are also three teachers' rooms, with private lavatory accommodation to each. Great care has been taken to obtain ample light and simplicity of arrangement, and to avoid dark corners. The infants' school has an assembly-hall similar to the mixed school, but 53 feet by 36 feet, and 26 feet high. Five classrooms are arranged around it, with glass partitions, as in the mixed school, the classrooms being 23 feet by 21 feet. Some of these rooms are arranged for desks, whilst others have galleries. Special provision is made in the galleries in the shape of back-rests and comfortable desks. There are two entrances, two cloak-rooms, and two teachers' rooms to this department, all well lighted. The heating is by means of hot-water pipes round the classrooms and coils in the assembly-halls. Ventilation is provided by inlets into the assembly-hall in the dado framing, and to the classrooms by Ellison's radiating bricks. The outlets are provided by means of Hill & Hey's ventilators in the roofs—one to each classroom—and larger ones to the assembly-halls. The windows of the classrooms are also hung to open. The architects are Messrs. Morley & Woodhouse, of Bradford and Bolton (who were appointed after competition).

GENERAL.

The Manchester Art Gallery was opened on Sunday last free of charge. The visitors numbered:—From two to three o'clock, 1,392; three to four, 2,350; four to five, 1,799; five to six, 767; six to seven, 1,924; seven to eight, 2,110; total, 10,322.

"The Smoker," a small painting by M. Meissonier, was sold by auction last week, in Stratton Street, for 1,002*l.* 15*s.* As it measured 8 inches by 5¼ inches, the price was about 24*l.* per square inch.

An Exhibition of woodcut reproductions from drawings by Japanese artists may now be seen in the King's Library of the British Museum. An exhibition of original drawings will shortly be held.

The General Council of the Glasgow International Exhibition, 1888, have agreed that any surplus is to be handed over to the Corporation of Glasgow, to be applied towards erecting and maintaining a gallery of art, or museum of science and art, or otherwise to promote science and art in the city.

The Report of the Edinburgh Architectural Association states that during last year thirty-seven new members have been added to the roll, and twenty-seven had for various reasons resigned, leaving a total membership of 303. The financial statement shows a balance in hand of 154*l.*, and the balance to the credit of the Sketch Book Committee is 21*l.*

The Mayor of Lancaster has announced that, in addition to his gift of a school of art and art gallery as a memento of the Queen's jubilee, he intends to make provision for technical education in the town, and will provide a laboratory, classrooms, and small lecture theatre, the latter being also adapted for the teaching of the science of music.

The Architectural Association held the usual fortnightly meeting on Friday evening last, Mr. J. A. Gotch, president, in the chair, when a paper on "Decorative Metal Work" was read by Mr. H. Longdin. The report of the meeting will appear next week.

Mr. John Ruskin has presented the Catholic church at Coniston with a stained glass window representing St. John in the Isle of Patmos.

Mr. A. Carnegie has informed the Lord Provost of Edinburgh that before leaving for the south of France he had deposited 50,000*l.* in a bank, subject to the draft of the Lord Provost or any officer designated by him. The money is for the erection of a public library.

Sir P. Cunliffe Owen was on Saturday presented with a testimonial, in recognition of his services as secretary to the executive of the Colonial and Indian Exhibition. It consisted of a silver-gilt tea service, including a large tray, tea urn, tea and coffee pots, sugar basin and ewer, with a salver and water or claret jug, and the centre of the tray bore a suitable inscription.

The Fountain presented to the University of Edinburgh by Dr. W. F. Cumming was unveiled on Saturday. It was designed by Mr. Sydney Mitchell, architect.

Colonel Haywood, the engineer to the Commissioners of Sewers, is seriously ill, and has been ordered to proceed to a warmer climate.

Okehampton Town Hall is in so unsafe a condition that people are warned about the peril of attending the Sessions Court.

A General Hospital, to be called the Victoria Hospital, is proposed to be erected at Bournemouth.

Mr. H. Holtom, of Dewsbury, has prepared plans for the proposed erection of a large public hall and public offices.

The Dean and Chapter of Hereford Cathedral have formed a committee to consider the practicability of rebuilding the west end of the building as a memorial of the Queen's jubilee. The cost is estimated at 80,000*l.*

The St. Martin-in-the-Fields Vestry are considering the question of erecting a new vestry hall.

The Old Runic Cross at Rushwell, in Annandale, is to be preserved in a recess which is to be formed in the church wall.

The Duke of Westminster has given a site in Buckingham Palace Road and 3,000*l.* towards the erection of a church, which is to be erected from the designs of Messrs. Demaine & Brierley, of York.

St. James's Church, Birkdale, was reopened on Sunday last, after having been enlarged and decorated from the designs of Mr. J. Francis Doyle, architect, of Liverpool and Birkdale.

Plans have been prepared by Mr. Fairbank, C.E., for a proposed steam tramway at Flamborough, from Marton to the North Landing.

New Filter Beds, designed by Mr. J. Hepworth, C.E., of Carlisle, in connection with the water supply of that town, have just been opened.

The Architect.

THE WEEK.

THE new year's number of *L'Art* opens with an article that must appeal to Englishmen, since it is a comparison between "Don Quixote" and "Hamlet," which is translated from an unpublished fragment by the Russian novelist TOURGUENEFF. He says that the two works appeared in the same year, and that the two authors died on the same day, April 26, 1616. SHAKESPEARE died on April 23, and, as was pointed out by CARLYLE, the brave MIGUEL was smoothed right nobly into his long rest ten days earlier. But coincidences of date are of no importance when the works of the two literary giants are being considered. M. TOURGUENEFF is right when he says that the simultaneous appearance of "Hamlet" and "Don Quixote" is significant, since they represent two aspects of humanity, one or other of which is exemplified by most men. *L'Art* will henceforth follow the example of other periodicals by introducing articles of that class, and stories by the leading French novelists, among the essays on art by experts which have given it character. The illustrations are of a wide range, since they comprise ancient statuary, Mediæval sculpture, and caricatures by RANDOLPH CALDECOTT. There is also a very effective etching after N. MAES by M. MORDANT, a sketch by M. BONVIN, and a facsimile of an architectural drawing by DU CERCEAU. The new volume commences auspiciously.

THE three vacant professorships in the Ecole des Beaux-Arts have been filled up. M. MONDUIT, architect, is appointed professor of construction, in place of the late M. BRUNE. M. JULLIEN, another architect, succeeds the late M. CHEVILLARD as professor of perspective. M. DELAPLANCHE, the sculptor, takes M. HIOLLE's place as professor of modelling.

THE house at the corner of William and Dalrymple Streets, Greenock, in which JAMES WATT was born, in 1736, was taken down towards the close of the century, and another erected on the site. The second house is now doomed to demolition by the Improvement Trust, and some of the inhabitants are of opinion that the site should be utilised for the erection of a national memorial of the great improver of the steam-engine. It so happens that up to the present Greenock has not done much for its distinguished townsman. Shortly after his death it was resolved to erect a bronze statue, and a large sum was collected. Before any arrangements for the work could be made, a son of JAMES WATT came on the scene and offered a replica of the statue in Westminster Abbey by CHANTREY. The replica is now in the Watt Library, and is the only monument in Greenock to JAMES WATT. It is very little known to the general public or to visitors. Cartsdyke has wisely taken advantage of the indifference of Greenock, and has gained credit by claiming to be the birthplace of the engineer. At one time it was proposed to erect a Watt Memorial Hall on the site of the house, but the notion that finds favour now is to have an open space with some kind of memorial in the centre.

M. EDOUARD RENAUD, who died a few days ago in Paris, was one of the oldest members of the profession in the city. He was born about 1810 at Gravelines. In 1848 he attained sufficient importance to be nominated Commissary for the Palace of St. Cloud, and he was able to keep it from devastation by the insurgents. It was, however, preserved to meet with as bad a fate afterwards. The next year M. RENAUD obtained his first medal from the Salon, and he was also awarded medals in 1857 and 1878. He was nominated to the Legion of Honour in 1858. M. RENAUD was the architect of the Hôtel de Ville of Cambrai, and among his numerous Paris buildings was the Gaîté Théâtre, on the Boulevard du Temple.

A CURIOUS question cropped up in the Edinburgh Small Debt Court on Monday. A man was summoned to pay his proportion of the cost of repairing a stack of chimneys in the building of which he occupied a part. The claim was only 1*l.* 10*s.* 4*d.*, but it was resisted on the ground that by the conditions of the lease the defendant was exempted from all repairs of the roof, and he argued that as a chimney formed part of the roof there was no case against him. This ingenious point was opposed on behalf of the claimant, and it was said that the gable wall might with as much reason be supposed to form a part of the roof. The Court held with the claimant, and henceforth there is a precedent for at least one side of the Border.

THE Académie Julien is one of the great non-official schools of Paris, where the highest instruction is obtainable at an almost nominal price. When it is said that the professors are MM. BOUGUEREAU, BOULANGER, LEFEBVRE, and T. ROBERT FLEURY, the painters; M. CHAPU, the sculptor; and M. CUYER, the anatomist, there is little need to speak of the character of the teaching. The artists do not suppose that their duty is fulfilled by an occasional promenade through the ateliers; they all work hard, and practically explain the shortcomings of the individual students. Anyone who has seen a single one of the chalk studies on which M. BOULANGER has operated will understand the extent of the teaching. It is no wonder so many English and American students find their way to the Académie, and that among the prize-winners in the competition which has just been decided we find such names as MATHEWS, CRESSWELL, SMALL, MAJOR, GOODMAN, COLLINS, MARQUIS, TROTTER, CAUSLAND, DILLON, and BLOOD. A banquet was lately given to the professors by the students, who were able to congratulate M. LEFEBVRE on his receipt of the Medal of Honour of this year's Salon. M. BOULANGER in the course of his speech gratified the students by the announcement that at the last competition in the Ecole des Beaux-Arts, out of the eight prizes awarded seven had been carried off by the Académie Julien.

ONE of the recent commissions of the City of Paris was an equestrian statue of ETIENNE MARCEL, the provost, who was the most noted man in the city for a part of the fourteenth century. It was designed by the late M. IDRAC, but on the death of the sculptor the work was entrusted to M. MARQUESTE, who had been a holder of the Prix de Rome. It was specified to cast the man and horse in a single piece, and from their size and arrangement the undertaking was considered to be of great importance. When the sculptor examined the bronze casting he was surprised to find that it consisted not of one but of eleven pieces. The municipal authorities are inquiring into the affair, which M. MARQUESTE declares is prejudicial to his work, and he ascribes much of the adverse criticism with which the group was received to the circumstances under which his model was reproduced. The work costs the City of Paris about 6,000*l.*, and is to be placed in front of the Hôtel de Ville.

THE Glasgow Town Council have resolved to expend 9,000*l.* in erecting workmen's dwellings and shops on the vacant ground belonging to the Corporation on the east side of Salt Market. It is calculated that tenements can be provided which will return 1,120*l.* a year, that is, 640*l.* from fifty dwellings, and 480*l.* from eleven shops, or, deducting 25 per cent., 825*l.* The value of the land at 5*l.* a square yard is 9,630*l.*, on which the interest at 5 per cent. is 481*l.* 10*s.*, and calculating the interest on 9,000*l.* at 3½ per cent., it amounts to 315*l.*, or in all 796*l.* 10*s.* In this way the income appears to just balance the interest. It is argued by the opponents that so large an income is not to be assumed, since, if such rents were paid regularly, speculators would have made the experiment long ago. But, looking at the condition of things in Glasgow, the laws of political economy may be a little strained if, by doing so, some of the misery of the humbler inhabitants of the city can be abated. Builders are always rather shy of undertaking workmen's dwellings unless in cases where they can go very near breaking the by-laws. That course is difficult when many tenements have to be provided in one building, for the scale insures solidity if constructed. It is, therefore, far easier for a workman to find a fairly commodious dwelling at a cheap rate within the metropolis than in Glasgow or Edinburgh.

LA TOUR, THE PASTELLIST.*

ANYONE who has read a book by M. CHAMPFLEURY will always be glad to meet with a new one from his pen. In an age which seems to have set up a machine as an ideal, and when the highest life is supposed to be led by those who form part of a crowd formed on the same pattern, he is an advocate for freedom. He was the first writer who rallied to the aid of COURBET when connoisseurs, courtiers, and critics united to condemn the painter, and would have sent him to New Caledonia or to the guillotine. M. CHAMPFLEURY was in consequence supposed to be the champion of realism in its worst forms; indeed, M. LOUIS VEUILLOT considered him to be pre-eminently the "apôtre du réalisme." But M. CHAMPFLEURY might with as much reason be called the apostle of Academicism. He is an opponent of all isms, and he knows that if the realists were possessed of power they would be as tyrannical as any of the old fogies of the Institut under a monarchy. The principle he advocated was "sincerity in art," and every artist was left to decide with his own conscience what meaning he was bound to give to the words. All that M. CHAMPFLEURY desired was that a work of art should correspond with the individuality of the artist who produced it. He rejected all the recipes for making a work in the Grand Style with as much indifference as if they were excerpts from primitive cookery-books. M. CHAMPFLEURY, in holding opinions like these, was only, as he acknowledged, re-echoing the words of JOHN CONSTABLE, whom he reverences as the father of the modern school of France. The English landscape painter did not ask himself, as became a student of the Royal Academy, how CLAUDE or GASPAR POUSSIN would arrange the subject if they had to represent a mill or a lock or a canal, and his revolt against routine inspired DELACROIX, and through him a host of painters in Paris studios. CONSTABLE was an iconoclast, and he found pupils more apt on the east side of the Channel than on the west. The new idea passed from the artists to the writers, and when THÉOPHILE GAUTIER implored the art student to burn his books, to tear up his engravings, to break his casts, and to forget RAPHAEL, HOMER, and PHIDIAS, he was only supposed to be freely translating CONSTABLE'S thoughts.

M. CHAMPFLEURY was not satisfied with expounding the doctrine of CONSTABLE for the benefit of painters: he applied it to himself. In his writing he does not bow down before the models of literature that the Academy set up, nor follow the approved rules for the composition of an essay. He admires SHAKESPEARE, and, unless we are mistaken, finds a kindred spirit to his own in STERNE. Scotsmen will not readily pardon M. CHAMPFLEURY for supposing that BURNS was an Irishman, but he may have believed that the proposal of MOORE was carried out, and that OSSIAN was made over to the North for ever in exchange for the Ayrshire ploughman.

MAURICE QUENTIN DE LA TOUR, the pastellist of portraits, is a subject that is well adapted to be treated by M. CHAMPFLEURY. It cannot be said that the artist's name is well known in England; and although he was the King's painter, a councillor of the Academy of Painting and Sculpture, and the founder of one of the provincial schools, it must be admitted that in France he is no longer as famous as some of his contemporaries. It is not, however, M. CHAMPFLEURY'S intention to advocate a reversion of opinion in respect of the artist. Like all biographers, he is bound to take some interest in his subject; but LA TOUR has rather less importance in the book than the people who sat to him for their portraits, and they are of a class that affords sport to a writer who is apt to think that the world is a stage, and life a comedy for the amusement of a philosopher.

As LA TOUR lived between 1704 and 1788, he belonged to the time when the Fates were preparing the great Revolution. He was a friend of many of the men whose words helped to bring about that event. He drew the portraits of D'ALEMBERT and ROUSSEAU, and it was his privilege to be made the subject of an analytical study by DIDEROT. Like many others in that time he talked a little of the philosophic jargon that was in vogue, but he had no objection to be patronised by any of the hangers-on of the Court, however immoral, and he never seems to have had a scruple about the way in which the money was obtained that was paid over to him for the paintings. According to his own account, his highest ambition was to soar above all human weakness, to despise riches, and to love philosophy; but the pupil of the Stoics was the portraitist-in-chief of the demi-monde, and was proud of his office. His note-book reveals that he was enamoured of virtue, and his letters show that he was so overwhelmed with the honour of painting a portrait of Madame DE POMPADOUR, that he feared a fever must ensue. It is this contradiction of theory and practice which gives an interest to LA TOUR. We are told by SCHILLER that the artist is the child of his time, and the French eighteenth century would appear incomplete if the pastellist were absent. It was not only that he was favoured by one class of patrons, and was so endowed as to be competent to represent

> Quips and cranks and wanton wiles,
> Nods and becks and wreathéd smiles,
> Such as hang on Hebe's cheek,
> And love to live in dimple sleek;

but the very medium he employed was a fit symbol of a state of things that was doomed to be cut short by the invention of the benevolent Dr. J. I. GUILLOTIN. It is quite true, as M. CHAMPFLEURY points out, that crayon drawings and pastels do contrive to subsist, and portraits of some of the men and women who lived in the time of HENRI IV. and LOUIS XIII. are preserved for us in that way; but it must be allowed that pastel paintings and crayon drawings need the greatest care, or they will succumb before many years elapse. They are for an age, and not for all time like paintings in oils. As the author of "Manon Lescaut" wisely said, "They will not stand unless they are covered with glass."

The question will naturally be asked why any clever man (and LA TOUR was one) should select a medium for painting that is so evanescent, when he might use one that was more enduring? In LA TOURS' case the answer must be that he was driven to employ it through necessity. He was obliged to quit his native place, Saint-Quentin, in his eighteenth year, and to make a living by means of such instruction as he had received from the local drawing-master. It is said that one of the first places where he tried his fortune was London, and that a great influence was exercised upon him by VANDYKE'S and LELY'S portraits, which he saw in England. But this part of the artist's life lies in obscurity and might reward investigation. After a time LA TOUR found his way to Paris, where he received instruction from one DA POUCHE. At that time the crayon portraits of a Venetian lady named ROSALBA CARRIERA were the fashion, and the artist held a position that corresponded with ANGELICA KAUFFMANN'S a few years afterwards in London. LA TOUR must have seen ROSALBA'S pastels, but to what extent he practised the art remains unknown, for not until 1737 did his name appear in the catalogues of the Salon. In that year he made his *début* with a portrait of Madame BOUCHER. It is worth noting that among the five portraits he exhibited in the year following was one of "M. MANSARDE, architecte du Roi." He was not, however, one of the great architects of that family. But, although he kept aloof from the Salon, LA TOUR must have possessed a great reputation in Paris. The high compliment of imitation was paid to him. A pamphleteer in 1740 charges him with having created a crowd of worthless imitators, and a champion was found in a dilettante abbé who maintained that the imitators were able men, although they were far from approaching the ability of LA TOUR, who was inimitable. In 1743 we find a critic saying that the artist's works were so exalted that no praise could do them justice, and the best policy was to be silent before such masterpieces. Two years afterwards another critic is found declaring that LA TOUR was the king of pastellists, and exclaiming, "What expression! What Nature! Look at the way he has rendered the Procureur-Général and M. DUVAL! In these works he surpasses himself—LA TOUR is vanquished by LA TOUR." The vocabulary of eulogy was so early exhausted it was difficult for the critics who came afterwards to find nouns and adjectives to

* *Artistes Célèbres—La Tour.* Par Champfleury. Paris: J. Rouam. London: Gilbert Wood & Co.

apply to the drawings which continued to be exhibited up to 1773. At last it could only be said that his works were not imitations, but Nature itself. LA TOUR was held to be in art what PASCAL was in literature—a reflection of the truth, without any of the contortions that are common in man's work.

It was not surprising that DIDEROT, who had sat beside weavers at their looms, and wormed out the experience of workmen in order to get at reality before writing his technical articles, should be eager to study the manner of an artist who had gained so wide a reputation as LA TOUR. The two men met, and DIDEROT acted the part of a modern interviewer. By a series of able questions he discovered that the artist was not of those who believe in the advantage of painting the lily, and that he held by a theory which in our time is called realism. It was not merely LA TOUR'S theory of æsthetics, but his mode of working that DIDEROT wished to understand. Apparently he imagined that a painter, like a poet, ought to have an eye in a fine frenzy rolling while standing at his easel, and he found that LA TOUR was as cool as a tragedian in what seems a whirlwind of passion. His verdict was that the painter was "un machiniste merveilleux"—a master of technique, but wanting in "go." This decision is not quite satisfactory to M. CHAMPFLEURY, but it was confirmed by the critic of 1763, who said that LA TOUR was of a cold and limited nature, and could neither express passion nor excite enthusiasm.

The Paris of those days was not a place for enthusiastic painters. If we may judge from the portraits which are reproduced in M. CHAMPFLEURY'S book, it was then necessary for everybody to have a constant smirk on their faces, and that expression is not suggestive of passion or enthusiasm. RESTOUT, the Rector and Chancellor of the King's Academy, smiles as he gazes at the invisible model which he is about to draw; the Abbé DE BLANC, the art-critic, smiles while his eyes expand in roguery; the ballet-girls and opera-singers smile, as in duty bound; and dowagers, whether lean or bloated, contort their faces to ape the mode. LA TOUR himself sets the example to his sitters, and seems to say, "See how happy I appear to be, after so many rehearsals before a looking-glass." The only sober face in the collection is that of a harlequin. Looking at this everlasting grimacing, one is almost compelled to swear against DA VINCI, who painted and drew so often that kind of smile which, as old MENENIUS said, "ne'er came from the lungs," and of whose practice in that respect LA TOUR was an imitator.

LA TOUR was, however, able to hit the taste of his day by his portraits, and he took care to demand very high prices for them. Judging by the letters which have survived from that time, ladies fancied that their reputation was insured if he would condescend to make them subjects. Sometimes the man who had to pay for the work did rebel against the price; but what chance was there in the courts against an artist who was one of the tenants of the Louvre? He made money, and at his death a part was left to the Académie Royale to found a prize of 12*l.* a year, which is now vested in the Ecole des Beaux-Arts.

LA TOUR was, as we have seen, a fashionable portrait-painter, and as such had much in common with artists of that species in all days. But from the time in which he lived, and his peculiar environment, he acquires an interest which his works may not entirely merit. M. CHAMPFLEURY is the kind of writer who can play with characters as if they were Dresden or Sèvres figures, and the eighteenth century affords opportunities for his way of treating history. LA TOUR, with his philosophism and his imbroglios, was a sample of the products of that age. He was a hero to grand dames and *figurantes*, and he was so assured of their power that he could dare to be rude to the King himself, the Bien-Aimé. He is a difficult subject to write about, and in all France there is no writer better fitted for the task than the Conservator of the Sèvres Museum.

Mr. John Taylor has presented the Northampton Museum with some fragments of ancient ecclesiastical buildings which were unearthed in St. Katherine's, consisting of a well cut label termination carved as a female head, and one arch stone, probably forming part of a rich Norman doorway, both in Ketton stone.

NORTHERN ARCHITECTURAL ASSOCIATION.

ON Wednesday, the 22nd inst., an ordinary sessional meeting of the Northern Architectural Association was held in the Old Castle, Newcastle. Mr. E. Shewbrooks presided. The hon. secretary (Mr. F. W. Rich) intimated that a communication had been received from the Royal Institute of British Architects, stating that a general conference of British architects would be held in London during the week commencing May 2, 1887, and asking that the Northern Association should nominate a member to sit as representative on the special committee. Mr. Hoskins was appointed to represent the Association. The hon. secretary also read a communication from the Manchester Society of Architects, pointing out that preparations were being made for a Jubilee Exhibition at Manchester, and stating that the primary object of the Exhibition was to illustrate the art progress of the nation during the Queen's reign. The committee of the Exhibition were willing to allot a space as an architectural court in proximity to the fine art section, in which might be exhibited designs for or drawings and photographs of buildings erected since Her Majesty's accession to the throne. The secretary was instructed to say in reply that the communication had been laid before the members, and also that the Exhibition about to be held at Newcastle would perhaps claim the attention of the members first. It was also intimated that the Association would offer a prize of 1*l.* 1*s.* for the best drawing of an oriel window, of Elizabethan or any subsequent English style, for a room 12 feet high, and that the hon. secretary would give a prize of 3*l.* 3*s.* for the best drawing of a doorway in the style of the fourteenth-century English Gothic, the drawings to be sent in on Monday, March 21. The hon. secretary then read a paper on "Architectural Pupilage, and its Bearings on Federation." After a short discussion on the paper, the meeting terminated.

CHRIST CHURCH CATHEDRAL, DUBLIN.

THE new life of Christ Church Cathedral dates from the day when it entered the mind of Mr. Henry Roe to invoke the genius of Mr. Street to recover from the fragment of a church, "so mutilated and degraded as almost to have dropped out of the category of cathedral," the whole design of a church of such unique and characteristic beauty as exists nowhere else in Great Britain and Ireland. It was a remarkable restoration, and it stood when reopened in 1878 as it stood in 1230. Then it might have been supposed new interest was exhausted, but year by year, even month by month, the unworked mine of archæological interest in Christ Church continues to develop itself. This past year has been specially signalised by the discovery of the cloistral buildings. So far back as 1881 the architect in charge of the cathedral, Mr. Drew, in the course of one of those minute examinations of the old substructure of the crypt of 1170 which are periodically required, noted a few worn stones—footworn, apparently. The question arose, if so, when, and by what feet? At once a clue was suggested. There was an old archway built up, leading, perhaps, into a cloister walk, and, if so, worn, among the fall of many feet, by those of St. Lawrence O'Toole himself. If leading into the western cloister walk, then this cloister was 8 feet below the present porch level, far deeper below the sward outside than had been ever surmised. Pursuing his investigations among old documents in the Cathedral, Mr. Drew propounded a probable plan of the ancient cloisters, and went further in prophesying that beneath the soil remains of those cloisters might yet be found. Beyond the most sanguine expectations this dream was realised when, in the spring of this year, the Open Spaces Committee of the Mansion House Relief Fund were permitted to undertake extensive excavations in the "precinct." Exactly on the lines laid down by Mr. Drew the remains of the ancient chapter-house were disinterred, and have been repaired, and are maintained in view; and there were also traced the cloister garth, the cloister walks, the day-room of the monks, and the great hall of the monastery.

The last discoveries—if the revival of knowledge which was possessed by some antiquarian scholars a century ago can be so called—are among the literary remains. Christ Church Cathedral, in all its vicissitudes and neglect, in its burnings and pillages, has preserved safely a vast body of documents, upwards of 1,000 in number—MSS. dating from the time of Henry II.—still well kept, and even yet a mine of unexplored antiquarian interest. There is some interest attaching to the incident which lately led to an exploration of these possessions. It has been but lately pointed out to the Dean and Chapter of St. Patrick's Cathedral, hitherto proud in the possession of a grand symbolic capitular seal, dated 1584, that their seal was a spurious one, and, in fact, the stolen trade-mark of one Estienne or Stephanus, a noted printer of Paris in the sixteenth century. The shock was a severe one to antiquarian susceptibilities, but a reference to Estienne's famous work, the

"Prædium Rusticum," in Trinity College Library, and other books in Marsh's Library, Dublin, conclusively proved the fact. A question then arose as to whether the original ancient seal of St. Patrick's might yet be found, and a search was set on foot by the Rev. Canon Leeper, Prebendary of St. Audoens, the learned author of the "Handbook of St. Patrick's Cathedral." The "Novum Registrum" of Christ Church Cathedral is a very remarkable work, being a splendid transcript by Dr. John Lyon, made about 1780, of many of the then decaying MSS. in the Cathedral collection. It is contained in three fine folio volumes of good clerkly penmanship. A search in the first folio revealed a drawing of a very rude seal of the Chapter of St. Patrick's. St. Patrick is represented as a mitred bishop and holding a crozier, and the date about 1280. In the second folio, however, were found delineations of three splendid seals attached to one document—the seal of the Prior and Convent of the Holy Trinity, of the Cathedral of St. Patrick, and of Archbishop Talbot, date 1480. Still more surprising, there was found, on referring to the Deputy Keeper of the Records, that in his custody, among the rolls of Christ Church Cathedral, was the original deed of Archbishop Talbot, with its magnificent seals still attached. This is the more surprising, as in most earlier and later documents the seals have disappeared, and in even old catalogues of them the record "Sigilla jam avulsa" is the normal entry. These seals are of great size, and in high and bold relief and of great interest, and steps are being taken to produce carefully-restored models of them.

This notice may conclude with calling to mind some of the antiquarian treasures which the Christ Church Cathedral collection contains, irrespective of a vast number of miscellaneous documents, such as Papal bulls, charters, wills, and ecclesiastical deeds, &c. First among them stands the "Liber Niger," a MS. in fine preservation of no less than 550 pages, containing a most miscellaneous collection of curious old monkish documents, written in what is known as courthand by a convent scribe in 1340. As but little of the contents are known, it is to be hoped that an effort will be made to transcribe and translate the whole. This MS. and its fellow, the "Liber Albus," contain nearly all of vague or traditional information from which the annals of early Dublin are derived, and it is questioned that they have been correctly read therefrom by even such scholars as Ware. The White Book, or Liber Albus, dates from 1490, and is the work of a scribe by name Thomas Fyche, and contains chiefly old statutes and grants, most of which have been transcribed by Dr. John Lyon in the "Novum Registrum." There are also the "Repertorium Viride," a volume of the contents of which we have no present information, two parchment-bound volumes containing a list of benefactions, and some curious old leaseholds, held under the Prior and Convent and subsequent Deans. In the Cathedral, also, is stored a series of Chapter Acts, dating back to the Commonwealth, and containing, no doubt, much of historic interest in times in which the old Cathedral played an historic part. Nor is the rich list of literature of Christ Church closed with that of the documents in the Cathedral strong-rooms and the public Record Office. In the library of Trinity College, Dublin, is preserved the "Book of the Obits of Christ Church," which was edited and published by the late Dr. Todd, F.T.C.D., many years ago. In the Bodleian Library are to be found the magnificent illuminated Service Books of the Church, which once stood upon the old brazen eagle of the fifteenth century, and which, in justice to Ireland, ought to be restored to Dublin, from which they were at some time dishonestly abstracted.

CONSTANTINOPLE.

CONSTANTINOPLE, indeed, is a veritable whited sepulchre, says a correspondent of the *Times*; seen from a little distance it is a dream of unapproachable beauty, which a nearer approach shows to have been only a dream. What sight can compare with the view of the Seraglio Point from the Golden Horn about sunset? Can anyone ever forget it who has gently descended the Bosphorus in a caïque—the most perfect mode of progression yet discovered—and has seen the seven hills of Stamboul standing out against the red of the western sky, and presently witnessed the marvellous transformation as the tall gleaming minarets cast back the rays of the moon? Distance, indeed, lends a potent enchantment to such a scene—a spell that holds one breathless till one comes too close, and then it is broken. It is a pity, but one ought not, in consideration for one's finer sensibilities, to become too closely acquainted with the buildings which form so picturesque a whole when seen in due perspective. The truth is that the mosques of Constantinople will hardly stand the test of detailed and separate examination. They certainly will not bear comparison with those of Cairo. We shall find no such variety as exists in two such different buildings as the mosques of Tulun and Kait Bey. All the mosques of Stamboul are constructed after one pattern, and that pattern is the church of Santa Sophia. There are architects who see in this noble edifice the perfection of every canon of artistic construction. And, from within, there can be no doubt that the splendid proportions of the arched sides, and the dome, and the shell-like apse must impress the most ignorant visitor. It is true that the Turks have not improved the aspect of the interior with their great flaring medallions inscribed with the names of God and the Prophet and the four orthodox Caliphs, or by the inappropriate private box which they erected for the accommodation of the Sultan when he happens to come to prayers. These are sins of commission of an unpleasantly glaring kind, but the sins of omission are even more distressing. The medallions and the Sultan's box might be removed, and leave no fatal vacancy behind, but who can replace the mosaics that are daily falling out upon the floor, and are even picked out by the attendants to be sold to western tourists? Who can restore the obliterated portions of the four seraphim who spread their wings beneath the spring of the dome, or the countenances of saints and martyrs on the walls which Moslem iconoclasm has partly effaced? Santa Sophia is becoming a ruin; everything that is movable is suffered gradually to fall to pieces, and is even wantonly destroyed by the "caretakers"—save the mark!—of the mosque-church.

But all the ruined beauty of this great church cannot reconcile us to its exterior. Hemmed in by other and insignificant buildings, one has difficulty in getting a good view of the outside, and is compelled to see it too near for advantageous effect. It is doubtless a prejudice, but those who know a true Cairo dome can never accommodate their taste to the dumpy cupolas, or agglomeration of cupolas, like an elaborate wedding-cake, of all Constantinople mosques. However, for good or ill, the external features of Santa Sophia have impressed themselves to such an extent on the Turkish imagination that the architects can devise no other form of building. We pass from mosque to mosque, and every one of them is more or less a copy of Santa Sophia; the domes are too corpulent, the minarets too pointed, and the whole exterior lacks light and shade. The Suleimaniya, or mosque of Suleiman the Great, is, indeed, internally a splendid building, that will bear comparison, some think favourably, with Santa Sophia itself. Another fine mosque is that of Sultan Ahmed, with its six minarets, which help the stranger to distinguish it externally from its two resembling rivals. As your eye runs along the line of domes and minarets that extends from Eyoub to the green gardens of the old Seraglio, almost identical external features meet you in every case. The crown of the city of the seven hills is composed of jewels of identical size and shape. There is no invention or originality about Turkish architecture, and, however good a model may be, it is monotonous to find even Santa Sophia repeated *ad infinitum*.

The chief characteristic thing in Turkish decoration is the general employment of mural tiles. The idea, of course, came from Persia, but the Turks, while they were as a rule wonderfully deficient in the arts, seem to have succeeded in bringing the technique of pottery to perfection, and the theory which ascribes almost all the best Damascus and Cairo and the so-called Rhodian tiles to the period of Turkish supremacy in the sixteenth century rests upon more evidence than many people think. At all events, we hear little or nothing of tiles in Egypt before the Turkish conquest. There are no tiles to compare in fabric with those of Constantinople. Everyone knows their general appearance, the large designs of flowers and leaves in blue of two shades, with a large proportion of brilliant red decoration in relief. They are commonly known as Rhodian, but there is a difference between the two which is easily recognised. The duller colours and less skilful baking, blurred outlines, and imperfect glaze of the true Rhodian tiles and vessels, almost as dear to the artist as the soft Damascus hues, are easily distinguished from the clear hard outlines, brilliant colours, and transparent glaze of the Constantinople tiles. The theory seems to be that while Persian prisoners taught the people of Rhodes to manufacture the raised red tiles known by their name, other Persians did a similar service to the Turks of Broussa and Constantinople. The designs were not unlike one another, and the raised red is common to both, but the Turkish variety was developed to greater chemical perfection than the Rhodian, possibly by reason of more suitable earths. Some very fine examples of the true Turkish tile are to be seen in the walls of the Ahmediya Mosque, where the mistake has been made of trying to enlarge the area covered by the tiles by imitating them in paint—a disastrous failure. The little mosque of Rustem Pasha, Suleiman's vizier and son-in-law, has perhaps the best tiles in any mosque in Stamboul, but most of them possess some remnants of this beautiful style of mural decoration. There are also good specimens in private collections, and Mr. Wrench, the British Consul, possesses some which are probably unrivalled. Many examples may be seen in the British and South Kensington Museums, as well as in private houses in London, and at South Kensington is a large lamp of the same manufacture, added to the collection a year or so ago.

These lamps, and, indeed, all kinds of Turkish and Rhodian pottery, except tiles *in situ* (separate tiles are hard to find), are very rare in Constantinople; but I have seen a few exceedingly fine specimens in the little museum close to the Seraglio, which is now being put into excellent order by Hamdi Bey. This, by the way, is the "Imperial Museum" of Constantinople, though it could be put bodily inside the Elgin Room of the British Museum. Nevertheless it possesses not a few good things of a miscellaneous order. The fruits of Schliemann's and Cesnola's excavations are represented in some degree of completeness here; the collection of terra-cottas is interesting; and few objects can excel in historical associations the bronze serpent's head from the famous tripod which was taken from the Persians at the battle of Platæa, was seen by Pausanias at Delphi, and finally set up by Constantine in the hippodrome of his new capital. The contents of this little kiosk consist almost entirely of Greek, Cypriote, Assyrian, Egyptian, and other antiquities; there is little that is Turkish or Mediæval, with the exception of the earthenware lamps I have mentioned, and possibly some of the coins, which are not yet displayed.

MR. CHRISTIAN'S REPORT ON THE DESIGNS FOR THE LIVERPOOL CATHEDRAL.

(*Concluded from page* 363.)

General Observations.

HAVING now described in detail the general features, merits, and defects of the respective designs, I will say a few words on the general subject, and afterwards endeavour to sum up, as nearly as I can, the balance of the whole.

I would first observe that, notwithstanding the remarkable care and elaboration with which the respective designs have been worked out, it must be considered, and doubtless their authors would agree, that they can only be properly taken as preliminary studies of a great subject, on which much more thought must necessarily be expended before the goal of perfection can possibly be attained.

That any one design in its present state is entirely satisfactory I cannot say, and I think the detailed criticisms given already will sufficiently show; but there is a further and larger question which must be faced, and that is, whether in any one of the designs can be found the church of the future most suitable for the cathedral of Liverpool. That it should be a church of grand proportions and noble form would, I imagine, be the general verdict of all good citizens; that it should have a spacious interior, well suited for the worship and teaching of multitudes, most would desire; and that it should be, like the church of Sta. Croce at Florence, at once a place for grand religious teaching and for beautiful memorials of truly worthy citizens, might be a dream well worthy of realisation, but of which none of the designs can be said to have completely solved the difficulties.

Mr. Emerson has evidently attached much importance to the embellishment of the city, by the striking and massive external proportions of his building, and it can hardly be questioned but that if translated into stone, notwithstanding the proximity of St. George's Hall, his building would hold its own, and be a substantial addition to its architectural beauty.

In designing the central dome, Mr. Emerson seems to have studied the great example at Florence; but has avoided its errors as regards the interior of the church, by the abundance of light which he everywhere proposes to admit.

Domes on churches, designed on Gothic principles as practised in England, have been heretofore unknown, but further south they are by no means uncommon, and there are notable examples in churches of Mediæval type, and I see no reason why one should be deemed out of place in a case like this at Liverpool. I believe that the late Sir Gilbert Scott, notwithstanding his intense love of English architecture, would gladly have built one had opportunity offered in his later days.

Mr. Brooks has put before you a powerful, and in many respects very beautiful, design, in the style of which he is an acknowledged master; but as a whole, not so striking externally as it would be beautiful within. It is not free from faults, which, though easy of correction, almost make one mourn their existence, compensated though they may be by so many excellences; but I cannot avoid the conviction that this building, as a whole, would be too lofty for its position. The height of the general mass is really great even for an ordinary site, but for one so circumstanced as yours it would, in my judgment, be too overpowering for its surroundings.

On the lowest part of the site the subsidiary building placed on the southern boundary would in some measure conceal this defect, but from other positions it could hardly fail to be felt that, in respect of general outline, the bulk of building was excessive.

The respective heights from the floor of the nave to the ridge of the roof are as follows:—

In Mr. Brooks's design	164 feet
In Messrs. Bodley & Garner's . .	139 feet
In Mr. Emerson's	121 feet

It must not, however, be overlooked that, excepting in the transepts, the loftiest portion of the building recedes considerably, but still the aisle walls are high, and the general mass very great. The central feature is, nevertheless, far less bulky than in other designs, and as a whole this design deserves very careful attention.

The design of Messrs. Bodley & Garner may be said to be more thoroughly English in character than either of the other two, and would on the whole produce a very fine church, of which the central lantern would be a notable and magnificent feature.

There is much to commend, and probably further study would ameliorate many of the faults, as I read them, and on which I have freely commented.

The design has serious weaknesses, but has also much strength, and is certainly worthy of most careful consideration.

Messrs. Bodley & Garner have also sent a drawing showing the original design by Sir Christopher Wren for rebuilding St. Paul's adapted to this site. Notwithstanding the great intrinsic beauty of that design as exhibited in the model, the plan was not one adapted to the requirements of worship as now understood; and although, as recorded, he was very reluctant to adopt the existing arrangement, one cannot but rejoice at the final determination which has given to posterity in the existing cathedral so glorious a monument of his unrivalled skill.

That was a preliminary study, and we see the final result. May one equally good proceed out of the studies submitted for your cathedral at Liverpool!

Conclusions.

You have now before you, I think, a sufficient description of the designs, their merits, and the contrary, as from careful study I have been able to read them. I have avoided as far as possible for the purposes of this report any allusion to minor discrepancies of drawings, &c., not affecting the general question, and all unnecessary technical details, giving only the results of repeated examinations of the drawings and reports submitted by the respective architects, and need not further trouble you on these points, but will add a few remarks on the general subject.

You will have gathered from what has preceded that I cannot speak of any one design as perfect in itself; each must be considered as a study, and each has both excellences and defects, and, bearing that in mind, I would say that for careful study of the whole scheme, and for adaptation of the design to meet all necessary arrangements for convenience and construction, Mr. Emerson's is in my opinion, on the whole, the best. Mr. Brooks's plan is very good, but must, I think, yield to that of Messrs. Bodley & Garner in respect of its principal feature and adaptation to modern requirements.

As regards elevation, and in respect of style, much must depend on individual preference.

There are three types of architectural treatment exhibited, which may be broadly classed as pure English, Franco-English, and Franco-Italian, but each equally claiming to be described under the general designation of "Gothic."

As regards the two first, and with the limitation I have in each case named, I cannot but on the whole prefer the design of Messrs. Bodley & Garner. In the last Mr. Emerson has taken a new and bold departure from ordinary forms, and has produced a striking design, which though distinctly differing, would more nearly harmonise with surrounding buildings than those more in accordance with ordinary Mediæval practice. Liverpool is a modern city, and it may therefore be questioned what is the right style in which to build its chief ecclesiastical edifice. Opinions on such a point will probably widely differ; but there is at least some consistency in taking as a guide the traditions of worship of the ancient National Church, and English forms would therefore seem to be most in accordance with the general national sentiment. But while taking this as a basis, I see no reason why there should not be considerable freedom allowed in the treatment of the subject.

Personally I should prefer a purely English design, if there were one entirely satisfactory; but that I cannot see to be the case, and though Mr. Emerson's is not perfect, it requires less of important alteration than either of the others.

I see no objection to his adoption of the dome, and concur in his view that in the dominating church of a considerable city such a feature would be of no little importance; but this effect of mass would also be obtained by the great lantern designed by Messrs. Bodley & Garner.

That I do not agree with Mr. Emerson in his preference for foreign detail I think I have made sufficiently clear, but his forms and outlines are capable of more purely English treatment if he desired to give it. That his design in respect of architectural features is capable of improvement no one can

doubt; but I am nevertheless of opinion that, taken as a whole, it is of those submitted the most suitable for the site, and one that if carefully and judiciously revised, and thoroughly well carried out, might be expected to produce a satisfactory result.

With these observations I must leave the matter in your hands; it demands, and I feel sure it will receive, very earnest and careful consideration; but while I have not withheld my own opinion, I think that to yourselves must be left the final decision.

That each of these gentlemen has done his best to treat the subject worthily cannot be denied; it behoves you therefore to ponder the matter well, and I trust you may be guided to a happy solution of what is without doubt a difficult question.

I have the honour to be, my lord and gentlemen, your faithful servant, EWAN CHRISTIAN.

8A Whitehall Place, London: December 2, 1886.

VENTILATION OF THE NEW REICHSTAG BUILDING AT BERLIN.

THE following letter to the *Standard* from Sir H. W. Tyler, M.P., gives an account of the arrangements adopted for ventilation in the Berlin Reichstag:—

During a recent visit to Berlin I had an opportunity of going in excellent company over the new German House of Parliament (Reichstag), now in course of erection in that city, and of noticing the forethought and accuracy displayed by the Germans in carrying out, not only their building arrangements, but also more especially a system for providing pure air with suitable temperature in the most careful manner. I was the more interested in the subject from having suffered, with others, in past years, from the defective drainage and villanous ventilation of our own House of Commons; and you may, perhaps, consider that the following brief description will be of interest to your readers. Architectural plans for the erection of this Reichstag building were obtained by a competition open to the whole of Germany; and the successful competitor—Herr Architect Wallot, of Frankfort-on-Main—was entrusted with the carrying out of the work. The jury selected to decide in this competition consisted of distinguished statesmen, experienced Government officials, and eminent architects. Before the building was commenced plans were further obtained, also by a competition open to the whole of Germany, for a system of heating apparatus and ventilation. The jury in this instance was composed of engineers, architects, and eminent scientific men from various parts of the Empire; and out of thirty-five schemes tendered, the prize was unanimously awarded to that of "David Grove" (a Berlin firm), for heating and ventilating. Mr. Grove is now, accordingly, superintending the necessary arrangements and the proper carrying out of the works during the erection of the building. If the building had been first erected it would have been impossible afterwards to add the numerous pipes, conduits, and air passages of large dimensions which are now being built into the walls, from the foundation upwards, for conveniently ventilating and warming or cooling the House, the lobbies, and the numerous rooms, all of which are carefully provided for. For the better conveyance of coal and the removal of ashes, as well as to prevent the entrance of smoke and the contamination of the air by these impurities, the boilers for generating steam are outside of the building, being placed at a distance of some 100 feet from it on the banks of the river Spree. The quantity of fresh air required to be supplied is calculated at 8,000,000 cubic feet per hour, and this is to be driven into as well as extracted from the building in proper proportions, so as to prevent any suction from ground gases, sewers, &c. The Grand Hall, or Parliament Chamber, is built to accommodate 399 members and 600 visitors, or in round numbers 1,000 persons, each person being supplied with 1,420 cubic feet of air per hour. Into this chamber the air is admitted near the ceiling, and drawn out through the floor, by which means it is hoped to obviate all unpleasant draughts. The fresh air required for the ventilating apparatus is, in order to obtain it as pure as possible, all taken in at the highest point of the edifice, about 250 feet above the ground, and is thence conducted into a special chamber of very large area, in which it is prepared for distribution into the different parts of the building. The preparation consists of cooling in summer, warming in winter, and drying or moistening according to the requirements of the season, so that throughout the whole year the air may be circulated through the building at an equable temperature, and in suitable condition as regards moisture. The heating surface required to warm the air for ventilating purposes is about 43,000 square feet, and consists of inoxydised wrought-iron tubing 2 inches in diameter. The same apparatus will be employed for cooling during the summer months, a liquid near freezing point being then made to pass through the coils. The quantity of warm or cold air is controlled by valves worked from the engineer's room. These regulating valves are constructed in the most simple manner, close-shutting, balanced, with bronze framing and adjusting apparatus. The desired maxima and minima of the temperature are signalled both in the heating chamber and the office of the superintending officials. For indications of the temperature, electrical and telephonic connections with signals from the maxima and minima thermometers to the necessary points are provided, as well as a pneumatic tube from the mixing chamber to the office for testing the condition of the air; and as regards moistening the air, the degree of saturation is raised in one chamber to the required percentage, and controlled by means of fixed hygrometers. The air thus carefully prepared flows into the various rooms and localities at a suitable height from the floor, and provision is made for the exact control of the temperature, and for regulating it quickly and surely during changes in the sitting of the House during divisions and other changes of circumstances. The sizes of the principal air channels are adapted to the constructional arrangements, and are large enough to insure the full effect of the ventilation at the same time through all the rooms, so that the velocity of the flow of air through the principal channels will not exceed 6 feet per second. The same principles are applied in the arrangement of the channels for carrying off the air as in those for drawing it in. There will be two expiration shafts of about 115 feet in height, at which height the air will be rejected, and the full effect can be reached with safety at all times, independently of external influences, and without raising the pressure of the air in the rooms. The principal air channel is about 270 square feet in section. By the complete separation of the air-inlets and air-outlets for the lavatories and closets from those of the other parts of the building, perfect security against the entrance of foul air into the rooms, passages, and corridors will be attained. The air is carried off as well under the seats as at the ceilings, assisted by gas-burners and exhausters worked by the water used for flushing. For moving the air for ventilating purposes an engine of 50 horse-power will be employed. In addition to the heating surface of 43,000 square feet for ventilating purposes, there will be about 15,100 square feet placed in and used for imparting the necessary warmth to the rooms; and it is also calculated that 21,000 lbs. of steam per hour will be required for the whole apparatus. The general working of the apparatus is extremely simple. It will be operated by one engineer and four attendants, one of which latter will be educated as a substitute, and will act in reserve and in case of any changes in the attendant staff taking place, and the management of the complete practical service will be in the hands of the chief engineer. He will give his instructions to the three attendants appointed to look after the separate parts of the building (middle, north, and south) respectively, and these will change places from time to time, so that each will be thoroughly acquainted with the working of all parts of the building. They will record and report continually on the thermometer, hygrometer, and anemometer indications, and will attend to the cleaning and maintenance of all the apparatus; and, when the whole is in full working order, a regular system of inspection will be organised, especially through the principal air galleries and heating chambers. You will see from the above description how carefully the whole system has been organised, how every detail has been thought out, and every contingency contemplated, and I am much mistaken if, when it has all been completed and set to work, it does not prove to be one of the most instructive lessons in this branch of sanitary science that has been yet afforded. I understand that the first cost is estimated at about 25,000*l.* for the whole of this ventilating, warming, cooling, and moistening apparatus.

THE LATE MR. WARRINGTON WOOD.

ON Sunday last Mr. John Warrington Wood, the sculptor died, in his forty-fifth year, at Warrington, his birthplace, after a short illness. He was son of Mr. James Wood, who was for many years deputy borough surveyor of the town. In early life he was apprenticed to a stonemason in the town, and his first effort in carving that brought him into notice was when the Manchester and Liverpool District Bank was being erected in Sankey Street. The stonemason who was engaged to carve the pillars for the front neglected his work through drink, and the foreman in his difficulty asked young Wood, who was a pupil of the Warrington School of Art, to complete the carving. This he did to the satisfaction of his master, and subsequently Mr. Wood, by hard study, rose rapidly, and executed the works which brought him reputation. For several years he lived in Rome, and only returned to Warrington a few months ago. Among Mr. Wood's more important works were *The Sisters of Bethany*, purchased by Mr. S. Rigby; *Eve*, now in the possession of Sir A. B. Walker; the heroic statues of *Michel Angelo* and *Raphael* in front of the Walker Art Gallery, Liverpool; the statue of *Sir A. B. Walker*, placed in the Gallery by the Liverpool Corporation; and *St. Michael over coming Satan*, in the Warrington Art Gallery.



GORDON MEMORIAL

DAVID WALE



INK-PHOTO SPRAGUE & Co 22, MA

ITITUTE, LIVERPOOL.

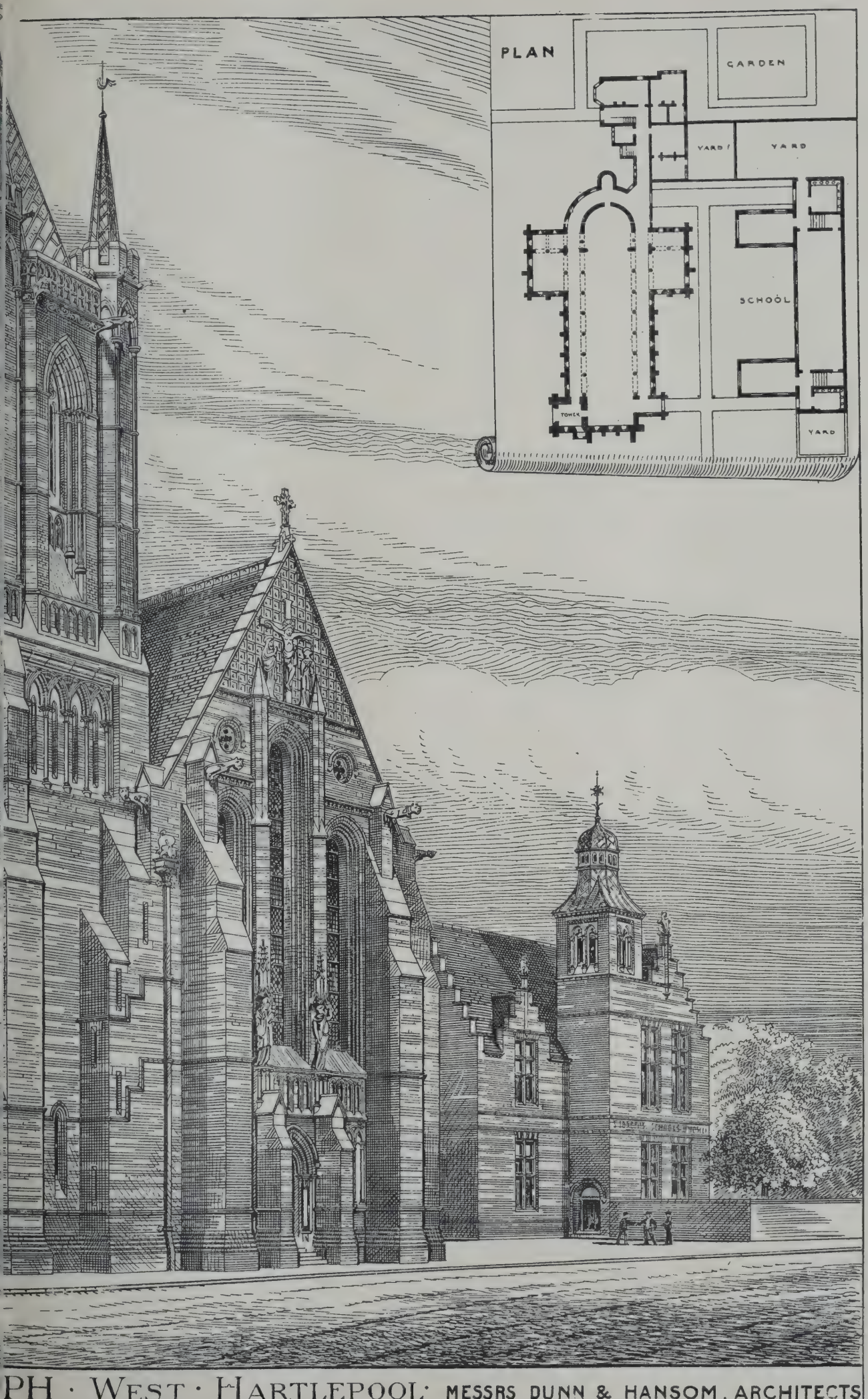
rchitect.



CHURCH · SCHOOLS · AND · PRESBYTERY · OF · S · IO

Spottiswoode & Co Lith London

r 31st 1886.



PH · WEST · HARTLEPOOL · MESSRS DUNN & HANSOM, ARCHITECTS



Model Cottages, Long Ditton; for R.J. Bates Esqre. J. Nixon Horsfield, Archt.; Surbiton Hill. S.W.



Spottiswoode & Co Lith London

Proposed House at Feltham.

H. P. BURKE DOWNING, Architect.



Spottiswoode & Co Lith London

Design for Assize Courts, Birmingham.

By FREDK. R. FARROW.

The Architect Dec.r 31.st 1886.

ILLUSTRATIONS.

GORDON MEMORIAL INSTITUTE, LIVERPOOL.

THE building shown in the illustration was opened on December 11 by the Mayor of Liverpool. It was erected at the sole cost of Mr. William Cliff, of Claremont, West Derby, and is intended to benefit the working lads of the north end of the city. The site is on the east side of Stanley Road. In the arrangement of the several apartments within the building the aim has been to insure economy of management, absolute supervision, and such a facility of working as will permit of the fullest use being made of the entire Institution at all times. The Institution is approached from Stanley Road, and also from Primrose and Briar Streets. The main entrance leads into a spacious vestibule and hall, from which on either side corridors lead to the office, tailoring, plumbing, painting, and engineering apartments, also to the social room, classroom, and kitchen, and to the gymnasium, and the lavatories and bathrooms. From the main hall access is obtained to the large concert-hall, upon the first floor, by means of a spacious stone staircase. This concert-hall has seating for 800 persons, and has in addition an orchestra capable of accommodating 80 performers. In connection with the orchestra, ladies' and gentlemen's retiring-rooms are arranged, and the caretaker's apartments are upon the next floor above these. Two additional stone staircases have been provided at either end of the concert-hall, to afford ready means of egress in case of fire. The heating, ventilation, lighting, and sanitary arrangements of the Institute have all received careful consideration. The exterior of the building is a brick and terra-cotta treatment, with freestone dressings, and the general design is an adaptation of the style peculiar to Holland. In the main front a series of bas-reliefs have been introduced, illustrative of technical instruction, arts and sciences, music and painting, and literature and physical instruction. A further series of panels depict the arms of Mr. William Cliff and the title of the building, the arms of Lancaster and Liverpool, and above the doorway a medallion portrait of Her Majesty, the patroness of the Institution. Within the entrance-hall a marble tablet gives a short sketch of the history and objects of the edifice. The entire works have been executed at a cost of about 5,000*l.* from the designs and under the superintendence of Colonel David Walker, architect, of Liverpool, by Messrs. Morrison & Sons, contractors, Wavertree. The heating, lighting, and ventilation are by Messrs. J. R. Cooper & Sons, the decorative carving by Mr. Joseph Rogerson, and the gymnastic apparatus by Mr. Alexander, all of Liverpool.

CHURCH, SCHOOLS AND PRESBYTERY, WEST HARTLEPOOL.

THIS illustration is from a drawing that was exhibited this year in the Royal Academy. The design was prepared by Messrs. Dunn & Hansom, of Newcastle-on-Tyne, for the late Rev. Fr. Crolly, but owing to his death the work remains in abeyance. As is evident from the view, it was intended to build the church of brick.

DESIGN FOR ASSIZE COURTS, BIRMINGHAM.

MODEL COTTAGES, LONG DITTON.

PROPOSED HOUSE AT FELTHAM.

THIS house, designed for Mr. R. H. Smith, contains dining, drawing, and morning-rooms, and four bedrooms, with bath-room and water-closet. The materials are red bricks and tile hanging, with stone dressings to entrance doorway. The estimated cost is below 700*l.*, and the architect is Mr. H. P. Burke Downing.

THE ARCHITECTURAL ASSOCIATION.

THE fifth ordinary meeting of the Association was held on the 17th inst., Mr. J. A. Gotch, president, in the chair.

Mr. H. D. Appleton requested members to remove their class drawings before January 7.

The Société Centrale d'Architecture de Belgique, Mr. Appleton announced, had elected the Association Honorary Corresponding Society. The president, M. Jules Brunfant, of the Belgian Society, writing to the President of the Association, said :—"We had the pleasure of communicating to our Society at the last general meeting your favour of November last. The title of Corresponding Society that you offer us honours us much, and our Society confers with equal unanimity the same title on your Society. We willingly agree with you, Mr. President, in the wish that the correspondence which will be established between us may develop sentiments of affectionate sympathy and good comradeship between the members of the two Societies."

The following were elected members :—Messrs. R. A. J. Bidwell, J. Linton, C. D. Rutter, H. E. Napier, W. Goodwin, R. G. Borland, G. Horsley, F. L. J. Barrow, E. Banks, G. W. Sollan, E. A. Crooke, P. M. Roberts, E. A. Benstead, A. G. Turner, F. A. Kirby, P. Clark, H. Harris, and F. V. Stokes.

Mr. H. Longden read the following paper on

Decorative Metal Work.

Mr. Longden said :—In dealing with the subject I have chosen for to-night's paper, I wish to restrict the metals of which I shall treat by omitting gold and silver, as, though they have been used decoratively, as in the Pala d'Oro at St. Mark's, in Venice, and various shrines of gold and silver which have perished, such as St. Cuthbert's, in Durham ; St. Albans, in St. Albans Abbey ; St. Thomas's, in Canterbury ; and St. Edward's, in Westminster Abbey, their use has not been extensive, compared with the use of other metals, and I have no experience of this.

The use of metal work in decoration, both as fixed in buildings and in useful movable articles, is most ancient, and we have records of the use of bronze very extensively in Ancient Greece and Rome. In the total destruction of the civilisation of the Ancient World the bronze so used was mostly melted, and we have few remains of it. This is much to be regretted, as, except gold, this is the most enduring metal, and is susceptible of the finest work which the modeller or sculptor can bestow upon it, besides being capable of treatment by the chaser's art. It has the great virtue of tenacity, so that cast work in this metal may have thick and thin places, such as cast iron, and, to some extent, cast brass, will not allow without cracking. By the process of "coring," by which is meant making the casting hollow by putting inside the sand mould a reduced and generalised copy of the figure, vase, candelabrum, capital of a column, or whatever may be the subject of the casting, leaving a thin space between the "core," or reduced copy of the article, and the outer envelope of sand, called the sand mould, the whole casting may be made of about equal thickness all over, so using less metal and saving expense, which is an object not to be lost sight of, besides other advantages. Some very fine examples of bronze work are shown among the drawings ; the statue of Colleoni, by Verocchio, is by that great man who was architect, sculptor, bronze-founder and finisher (which in those times were the same thing), and painter. The band of bronze ornament round the pedestal shows what might be done by sculptors now if they called in architects to help them with the pedestals of their statues. Another example is an interesting triangular pedestal for a statue, with a band near the top and another near the base, of bronze. This is all Italian work.

The best example I can refer to of this work in England is the gates and the enclosure of the tomb of Henry VII.'s Chapel in Westminster Abbey.

The construction of the great gates of the chapel is curious. There has been made a frame of wood forming large squares which is covered at the front and back with cast bronze mouldings, and the interiors of these squares, so to speak, are made of thin open-work castings, with devices of the rose, portcullis, &c., suitable to the place and founder. The screen round the tomb is differently made, not having the wood internal construction, and the gates of the screen are made of bronze castings only, ingeniously fitted together, as it was evidently not convenient to make very large castings. The work on the tomb is very fine, and shows the change in style from the latest Gothic in the gates and screens to the Renaissance in the tomb in a most interesting way. There is some other fine bronze work in the Abbey, but I must not dwell upon it.

I do not attempt to speak of bronze statue founding, as that is a subject in itself. Mr. Simonds, the sculptor, lately read a learned and instructive paper upon this subject before another society, and it requires some one with skill such as his, which I do not possess, to treat this subject. I wish to plead for the use of this metal more in architectural work. I have seen it used with marble in recent work with the happiest effect. It is a metal which is beautiful if left in its own golden tone, and which in changing from this tone never becomes ugly. It will take gilding perfectly, and will take various patinas, the green, the brown, the black, and, when used with marble of fine contrasting colours, produces effects which cannot be had so well in any other way. It lends itself best to decoration of the finest and most monumental work, and, if the tendency to greater refinement in style which I seem to observe in the works of the best architects continues, I have no doubt that this metal, with

its mellow and grave tones, will be more used and valued. Our neighbours the French have been skilled in the use of this metal for many years; indeed, they may be said never to have ceased using it since the time of Cellini. We have scarcely used bronze for many years, but there is no reason why we should not, and there is every reason why we should, I venture to think. I am happy to say that in our great cathedral, St. Paul's, in this city, some bronze work gilded is to be used in the new reredos which is being put up, and I hope this will only be the prelude to the more extensive use of this metal for which I have pleaded.

Brass is a metal for which no pleading is necessary. It has been adopted very widely in the last thirty years. I can remember when brass was thought rather vulgar. It was used for door and other knobs, for very every-day candlesticks, window-fastenings, and things little thought of. Among the many changes made by Pugin, whose name must ever be honoured by us, it was discovered that brass was a metal which had a beauty of its own, and that it could be applied in many ways to decoration in public buildings, churches, and houses. We have all seen the "Mediæval gas-fittings" which, if they became painful and at last almost odious, began in the fine work of Pugin, and, as he used the metal, were beautiful and useful. At the same time I must confess that the feeling of softness which the special smoothness and polish which brass will take seems to me to call for in design, was not so thoroughly studied when it was first reintroduced among us as it ought to have been. I have the pleasure of showing you some examples of this metal in very happy treatment, some of them kindly lent to me and some belonging to myself. As exemplifying the great beauty of softness and rounded contours with great delicacy in curves and the very fine detail, some of it almost imperceptible, which the skilled turner knows how to give to his work, I have here a thick low candlestick, probably Dutch, which is one of the finest examples of this kind of work I have seen. A small candlestick here, too, of a not uncommon Dutch type, but very good in its profiles, is a good example of the softness. The Italian candlestick shows fine contours, and turning with bold chasing of a good Renaissance type, and an interesting tripod foot, with the arms of the donor or owner of it let in in silver. Two brass dishes here are examples, one of Venetian engraved work, full of subjects, and the other of hammered raised work, showing a coat of arms, with mantling, probably of German work. The Persian jug has fine form, and delicate engraving covering the jug with diaper. The handle of a serpent is well designed. The brass fire-irons of old Dutch make are in bold Renaissance style, and the warming-pan and the simple English brass dog of a very traditional form, applied both to iron and brass, with variations suitable to the material, show various uses for brass, all good and characteristic.

The double-branched candlestick is a good example of what I take to be Flemish beaten work. It cleverly treats a design which almost suggests solid cast work, without attempting what sheet brass will not do, and it has an advantage in its lightness for its purpose of hanging on a wall. The oval basin or dish is good Italian work, and it excels in the specially Italian way of getting good effects with broad and simple means. The brass plate, with a figure of William of Orange, is Dutch work, and dates itself 1696. It has a bust of William, with the orange branches, and Fame blowing her trumpet over his head. The form of it is like that of the firebacks in cast iron, which were put behind the wood-fires down upon the hearths, and my idea is that the Dutch housewife, who was very patriotic and very tidy (two great Dutch characteristics), had this made to cover up the iron fire-back in the summer when no fire was wanted, and it would look very resplendent, as you may see, when standing down on the hearth of a wide, open, and lofty fireplace, and surrounded with clean, fresh-looking Dutch tiles in a spotless room.

I have not much here to show the brass balustrades, which are a special feature in screens to choirs and chapels in churches in Belgium and Holland. They have a very rich and beautiful effect, whether used with wood or with marble, and they agree well with buildings and fittings of the fifteenth century, or any later style. A modern example of this is in the chapel of Castle Howard, where an oak screen has a balustrade and panels of brass work in it, and the effect is sumptuous. Mr. Norman Shaw has used a brass balustrade in a house in Cheshire as part of a screen between a saloon and a corridor, with shutters behind the balustrade, so that the screen may be an open or a closed one at will. At Hal, in Belgium, where is a very interesting church, there are a brass font and lectern of very good fifteenth-century work. There are casts of these in the South Kensington Museum. The lecterns in brass are so common that I should not name them further, but that I wish to mention that in King's College Chapel, in Cambridge, which is exceptionally fine; and that the candlesticks in brass, of great height, which Mr. Gilbert Scott designed, and Mr. Barkentin made within the last twenty years, are in perfect agreement with the style of the lectern, and are, I make bold to say, quite as fine as the old work in both design and execution. In Germany the Lutherans spared much of the work in the churches which was destroyed in Holland and in England, and in St. Mary's, Lubeck, there is a brass sacrament house on the north side of the high altar of the most elaborate fifteenth-century work, with a spire—the whole thing being about 25 feet high, if I remember rightly.

The monumental brasses in some of the German churches of the fifteenth century are very fine. They are not simply engraved and filled in with black or colours, or with the ground left in strong hatching, but they are modelled in low relief, and are well chased and finished with a dull polish. Such brasses as these let into walls, not into floors, are, unless they are torn away in some revolution, more enduring than marble or stone, and are capable, either as cast and chased work, or as work hammered out of plate, of being made very handsome memorials. I have seen some of these lately in which brass, or brass and copper, have been used with marble as wall tablets with excellent effect. I cannot plead for the use of brass very extensively in town churches where there is smoke in the air, and often chemical vapours too, as the colour of the brass goes and it turns absolutely black, especially in cheap common things, which are made of inferior brass; but in country places, and where the rubbing of the brass is not considered too troublesome, I would plead for its being used in the various ways I have described, as the more it is rubbed the better it looks, and the satiny polish of old, well-rubbed work is specially delightful. In work connected with the household there is no need to say a word for brass. It is now used most extensively, almost too extensively, about fireplaces, in arrangements for lighting, whether by gas, electricity, or by candles or lamps—in grilles, in dishes, in ornaments, and even in such things as flower-pots and jardinières, where the use of it becomes meaningless. It has almost come to this, that if you look into many windows where household articles are shown you are repelled by the gaudy display of polished brass everywhere, and you are tempted by this extravagant over-use of what is a good and useful thing in moderation to forswear the use of it. It is the bane of everything in these days of "fashion" that a thing, pretty and good in itself, is seized upon after it has been introduced and used for a time with reticence and good taste, and everybody must have this good thing everywhere until one becomes tired of seeing it, and almost wishes it were banished from use. I fear lest the use of brass should be passing through this phase now, but it will always have its special use and beauty if care and good taste are exercised in the application of it.

Copper is a metal too soft to use very much in decoration, but it has a fine colour; and used in mixture with brass (with which it has a natural affinity in colour, being the mother-metal, so to speak) it enriches the composition. If the main structure of anything be in brass, and the copper be applied in inlay, in incrustation, in bands, or in many other ways, an admirable effect may be had. Mr. Benson has lately made lamps and many household things, in which this mixture of metals is treated with great originality of design. I have here an old tinned copper bowl of Persian work, which has good engraving upon it, and is of a good form. I do not know the use of this; but the ornament is quite characteristically Persian, and it is a good example of engraving where the ground is cut away and the pattern is left.

Steel was much used in the latter part of the eighteenth century, when the metal had newly come into general manufacture. It has rather a cold and severe tone, but in things which can be cleaned it may be used with excellent effect in a room. I have here a fine example of the work of the end of the eighteenth century in an old grate which is made of steel, engraved and enriched with bosses and beading of the refined kind which began to be used about that time. I find that our English work of this time was better than in any country in steel.

We now come to iron, the metal which is most used in decorative metal work. Cast iron has not the same qualities of tenacity as wrought iron; but there are many good qualities of this metal, and for resisting fire in fireplaces good strong cast iron is the best. I have seen castings of iron called "rolls," for rolling steel, which, by careful selection of metals, and a special mode of melting, were so strong that a shaving has been turned in a lathe from one of these rolls (say 2 feet in diameter), which shaving was long and curling (say 1 foot long) when measured in its spiral form, not straightened out, and it could be pulled out and would return to its shape like a steel spring. This was, of course, quite an exceptional quality of cast iron, but it shows what that metal may be. I can remember the time when wrought-iron ornamental work was not thought of; everything was made of cast iron, and very badly made too, as design, but that need not be so. I have a small plate here of a design by Alexander Thomson (called Greek Thomson), of Glasgow, which shows what may be done in a railing in this material; and Mr. Butterfield has shown in the screen which closes the court of All Saints Church, Margaret Street how a

master can treat this metal. The quality of breadth of design can be got by cast work better than by wrought work (this applies to bronze as well as to cast iron), and in the screen I have mentioned Mr. Butterfield has done what he could only have done in cast metal. Mr. Philip Webb has treated cast iron in an original way too, covering it with fine delicate ornament, so arranged that it does not become monotonous, and yet is an enriching of the surface which cast work will specially allow.

The old backs of fireplaces which I have named before are good examples of the right use of cast iron. I have here the finest I have seen of its type, the back, which I will call the trophy back, from the trophies of arms upon it. This has what I believe to be the lion of Flanders on a shield, and dates itself by style as of the sixteenth century. The back of the *Woman of Samaria* is interesting from the costume and architecture. Our Lord sits on one side of the well of Samaria with His disciples behind Him, and the woman of Samaria stands on the other side listening to Him, with her friends and neighbours trooping out of the gate of the city. The well is of a fine early Renaissance type, with sculptured stone margin, and a canopy over it with tiled roof, into which the bucket rises. The brass water-pot is of fine design. The towers of Samaria are in the distance. The Fairfax back is, of course, English, and I believe it is a Sussex back. It belongs to the time of the Commonwealth, and is of a shape commoner in England than abroad. There are very fine backs of a later date in Sir Christopher Wren's part of Hampton Court Palace, and in the Hôtel de Cluny in Paris there are good French ones. The design of these, about the time of Francis I. and Henry II. of France, was perfectly fine. They are larger and higher than the English backs usually were. The cast-iron fire-dogs which one may still find in Surrey, mostly broken, I fear, are very interesting. The dog I have here I take to be from an old French one, but I am not confident about this. It has a good, sturdy, cast-iron character, and succeeds in getting as much variety of shape and surface as can be expected in a material like this, while it is remembered that it must be exposed to many blows, and these often when the dog is heated, and would therefore crack the more readily under a blow.

Wrought iron, which has special qualities of strength, tenacity, durability, and relative cheapness, is coming more and more into use daily. For some time, as I have said, it fell out of use, but the Gothic movement in England brought wrought iron into vogue again, and after the use of it being almost confined to ecclesiastical work in hinges and screens, it has now come into houses. Outside railings, grilles to protect windows and fanlights, knockers, door-handles, internal grilles to cover pipes, dogs, fenders, and iron fittings for lights are made in wrought-iron. There is some reason to fear in this, as in the case of brass, fashion may overdo a good thing, but the extravagant use of iron cannot be gaudy at least. Polished iron is not suitable for use in our damp climate, or I should recommend this, as the fine grey polish which it will take is very harmonious with rooms which are furnished richly. When labour can be found without too much inconvenience, polished iron should certainly be used. For external work black or painted wrought iron must be used. I fear that the manufacture of iron now is not favourable to such durability as some of the specimens I have here shown. The old mode of smelting with charcoal made a finer, closer, and more ductile iron, less liable to rust than the modern iron. Perhaps, also, the atmosphere in our great cities and towns was not so unfavourable to the duration of wrought-iron work. In making fine wrought-iron work, it is important that the best iron now obtainable be used; indeed, when the work is intricate and needs many welds, none but good iron can produce the effects aimed at.

I have been favoured with drawings of iron work from Italy and from England principally. The French have been very clever smiths always, and there is a little of their work shown in sketches from St. Maclou at Rouen. They have in this, as in nearly everything else of an artistic or ideal kind, carried their boldness to the extent of temerity. Their iron work of Louis XIV.'s time is very stately, rich, and well balanced in design, with firm leading lines and graceful foliage and garlands. In Louis XV.'s time the curves became bolder and looser, as in all art of that time, and anyone who has seen the Grande Place of Nancy, which was built in this reign, will not forget the wonderful profusion and richness of the iron screens which come in, I think, eight times in the regular composition of buildings and screens. In Louis XVI.'s time the work became elegant and rather stiff, and soon the fine iron work died out. The German work is comparatively clumsy, and the endless scrolls with sprays going out at strange tangents, and passing through the scrolls in gratuitously difficult ways, the scrolls ending in flowers of the shape of silkworm cocoons, and with antennæ springing from them so as to remind one of great insects, which seem among the most characteristic Mediæval German work, are not very beautiful, if they are very clever from the ironworker's point of view. In later times the iron work throughout Europe seems to have been greatly affected by the French taste of the time. There are great quantities of fine rococo iron work in Vienna, I believe, and I have seen in Zurich a house with extremely good balconies and balustrades in this style.

In England we have always had rather a different way of doing work to that of other countries, even when the same wave of feeling as to style passed over us. The very noble screen of Huntington Shaw, which we have preserved from Hampton Court, in the South Kensington Museum, is different from any other work, though it has its points of resemblance with French iron work. This and the gates and grilles in St. Paul's are some of our best iron work in England. I have here some sketches from the Hampton Court screens, and I think this kind of work is very much to be studied and followed by us. The construction is good, and the ornament is so applied as to enrich the construction without hiding it, and to make a good composition of open and solid work, well contrasted and varied in the screens almost infinitely. There is a largeness of style in these screens and in the St. Paul's work which must have been impressed on it by Sir Christopher Wren, who was such a great architect and engineer, and who impressed his feeling of grand style on all the people who worked for him. The later English work, of which I have a small example here (a bracket), and some interesting drawings, is simple and direct in style. One example from the Adelphi, which is now taken away, has a very good contrast of free and rigid lines, and I have noticed in the recent work of many of our architects that the best characteristics of the old examples have been followed.

I have here some good pieces of iron work also. The churchyard cross comes (as far as I am concerned) from Basle, and was, doubtless, taken from some neighbouring churchyard. It seems to be a piece of work of the middle of last century, but the date has been partly obliterated. There is a small crucifix painted on the back of the box, of which some traces remain. The freedom and luxuriance of the iron work go quite as far as such qualities may reasonably go, I think. The projecting hook is to hang either a lamp or a holy-water pot upon.

The grille is a fine piece of lattice work, and the finishing of the cross bars with roses on the frame is very pretty and simple. This has evidently been a door to an aumbrey, and has had two locks, so that something precious was kept behind it. The panel of scroll work is a good example of pure smith's work in getting ornament out of the flat bar, and then returning to the flat bar shape. The *landier*, as the French call it, is good as smith's work, and is an illustration of how meat could be roasted before a wood fire, and small stew pans could be heated on braziers of charcoal in the small dishes on the swinging arms of the *landier*. The old English iron dog, of great simplicity of style, has a dish at the top for the same purpose, and is prepared with hooks for spits to rest on. On the board are good examples of a knocker, a handle, some flowers, and some scrolls of rococo work, with very clever treatment of thin iron foliage. The two Italian dogs of iron and brass have good points in regard of the treatment of both metals. There is on the board a naïve and interesting piece of engraved work on polished iron sheet, with the openings cut out very irregularly with a chisel after the engraving has been done. The lock and key of Louis XIV. style are very good. The two high wrought-iron candlesticks and the gridiron are pieces of old work, showing how interesting a thing, made almost without design, may be made by the workman setting about in a simple direct way to his work. There are many fine drawings here from Italian iron work. The screens at Orvieto, which have in the finials some of the best work in the naturalistic way that exists, I believe. There are also other screens, fireirons, brackets, and well work, all of that surpassing beauty which Italian work had until recently, and which they have now quite lost apparently.

In a paper like this I am only able to touch the fringe of so large a subject as the decorative use of metal work, but I have slightly described some uses of the metals most used in connection with buildings. I have endeavoured to speak as much as possible only of what I have seen and known myself, and to illustrate my paper by actual examples.

It has been my great pleasure and privilege to witness much of the great revival in architecture, and I may say all of the revival in the arts as applied to architecture. I saw the Exhibition of 1851, and though I was too young to be able to understand the difference between our design and that of other countries—and, let it be remembered, no country then exhibited very fine decorative work—yet I know that at that time gasfittings made in imitation of convolvulus, with thin stamped brass leaves and opaque white glass flowers, out of which the gas-pipe came, were thought elegant, and that these things would now be scouted. I do not mean to say that I think the general level of taste is high, but it is better than it was then. In that Exhibition some work directed by Pugin was shown, and from that Exhibition we began to learn that the state of things in England as regards design might be improved. Many

currents have run towards the improvement. Among these are the increased study of all kinds of old work by architects and craftsmen, the direction of work by Pugin, by Alfred Stevens, by Godfrey Sykes, and by numerous living architects and designers. The teaching of drawing now so widely diffused, and, in consequence, the new spirit that is put into work by the men who execute it, are such things as I scarcely could have expected to see. Let it be always remembered that the same people, as to race, live in these islands as those who did some of the beautiful work which we have collected here, and of which we have drawings here. There is no reason why these men now living amongst us should not do work as good as the old men did. There is skill and patience and dexterity in our own people, and as we need not be ashamed to compare English work from the twelfth to the eighteenth century with work of other countries, so I am convinced, and that by experience, we need not be ashamed to compare that of the nineteenth century. The design, by whoever made, must be suitable to the material, and I will answer for it that there are people now who will carry it out in metal work in the spirit of the design. We may leave our record for future times in these accessories of architecture, as we shall in architecture, that there were good men now, who studied their work, took account of modern conditions and requirements, and, at the same time, studied how to treat the new things in the spirit of art, of loving study, and patient endeavour which characterised the work of former times.

The PRESIDENT said they would all share his regret that the paper was not longer. Mr. Longdin, from personal experience, was well qualified to speak on the subject, and, moreover, the numerous examples he had brought to show them were equally instructive with his paper. They saw the way in which metal should be treated, and that good effect could only be got by a treatment harmonious to a particular metal, a principle which was becoming now more and more recognised, instead of as formerly adopting a treatment foreign to the nature of the metal. Speaking of iron work, more especially cast-iron work, many examples of singular beauty, dating from the end of last century existed. A stove at Knowle House, perhaps, was more of an example of ornament than of use, but the casting showed a work of extreme excellence and delicacy. One objection to cast work was that you might see miles of it; and though you had most beautiful work, your neighbour might have exactly the same, and that took away from the individuality in design which all art ought to have. At another place, in Northamptonshire, there was such an abundance of wrought iron in railings, palisades, gates, &c., about the grounds, that the estimate for repair alone amounted to 800*l*. The President concluded by referring to an example in Lisieux, in Normandy, of a spit worked by weights on fire-dogs, still in use, and also to the beautiful gates at Carshalton, which had never yet been figured. They were well worthy of it, and he hoped some of their members would find time to do so.

Mr. J. D. SEDDING, who proposed a vote of thanks to Mr. Longdin, called attention to the presence of Mr. Krall by his side. He also admired the programme of lectures for the present session as being the opening of a new vein of practical subjects.

Mr. SHUFFREY seconded the vote of thanks, and inquired whether the metal plaques were made from wood or clay models.

Mr. KRALL referred to gratings or door panels, which were now being frequently used.

Mr. FELLOWS PRYNNE considered that iron work was one of the most difficult things architects had to deal with. In its natural state it was most beautiful, but that was often lost in the grey of the distance. Whether it were right to apply colour to iron in imitation of brass or other metal work he would not venture to say.

Mr. J. M. MACLAREN said redundancy of design should be avoided in iron work. Skilful treatment was wanted in spacing out and filling in the detail, whereas want of scale was often too noticeable in modern work; the result was pettifogging, and denoted the absence of any guiding principle in the design.

Mr. W. H. PRATT observed that a peculiarly pleasing effect was to be seen in one of the old Sussex towns, where hardly a lamp post was to be seen, bracket lamps being used instead.

Mr. LEONARD STOKES referred to the well-designed lamp standards on the Thames Embankment, to old church-door hinges, and an ancient candelabrum at a church of St. Nicholas, Thanet.

Mr. MAX CLARK and another member also spoke.

The vote of thanks was then passed by acclamation.

Mr. LONGDEN, replying, said that he had been trained as a founder, and naturally might be supposed to have his ideas about iron work. No doubt some architects might think there was a difficulty in applying design to iron work, and one indeed had said he would as soon be asked to design in melted butter as in iron. He agreed that Mr. Sellars, of Glasgow, was a magnificent designer of the greatest fertility and comprehension both in cast and wrought-iron work. Lately Mr. Sellars also had turned his hand to terra-cotta, the results showing extraordinary skill and elegance. Speaking as a founder, he would say that cast iron was capable of receiving most beautiful decoration; if it was ugly it was not the fault of the material but of the designer. The stove at Knowle was a monumental work, but it was covered with a mass of beautiful and delicate ornament. Iron when gilded did not become an imitation of brass or other metals. Speaking of the endurance of iron, he pointed to an example one hundred years old, and said if one wished it to last one must insist on having iron of the very best. The use of gilding bronze was this, that the gilding, which was dead, brought out the chasing on bronze. In no other way could the exceedingly fine chasing be seen. As to patterns for plaques, he had never seen any models; but they were often made from wax or plaster models, which were destroyed or perished as soon as they had served their purpose.

Bygones.

"*Antiquity after a time has the grace of novelty.*"—HAZLITT.

THE GOLD MEDAL OF THE INSTITUTE.

THE announcement at the last meeting of the Royal Institute of British Architects of an opportunity to nominate candidates for the Gold Medal recalls the origin of that reward. Since 1848 the well-known form of notification has been in use, according to which the medal "is annually conferred on such distinguished architect or man of science, of any country, as may have designed or executed a building of high merit, or produced a work tending to promote or facilitate the knowledge of architecture, or the various branches of science connected therewith." But the object for which the medal was originally granted could not be described in that way.

The earliest public announcement of a Royal Medal for the encouragement of architecture was in 1846. There can be no doubt that what Earl de Grey sought when he undertook the negotiations was a reward for a competition among the junior members of the profession or students, and among them alone. This fact is evident from the following instructions for the first competition, which were issued by the Council of the Institute:—

Her Majesty the Queen having been graciously pleased to grant to the Institute an annual medal for the promotion of architecture, it has been resolved that it shall be applied to the encouragement of the junior members of the profession by a competition in designs, composed in a style calculated to promote the study of Grecian, Roman, and Italian architecture, and further, that the designs shall be judged of, not only with reference to their merits as works of art, but likewise as to the knowledge of construction they may exhibit.

In order to secure, as far as possible, uniformity in the conditions under which the designs are submitted in competition for the Royal Medal, it has been determined that the age of the competitor shall be limited to twenty-five years, and that with this limitation the competition shall be open to the profession in general.

The successful competitor will be further entitled to draw upon the treasurer of the Institute for the sum of 50*l*. after his arrival in Rome in the pursuit of his professional studies, at any period within five years from the time of the medal having been awarded to him, upon sending to the Institute a satisfactory study of some existing building, either ancient or modern.

The Royal Gold Medal for the year 1846 will be awarded to the best design for a building suitable to the purposes of the Royal Institute of British Architects, comprising a room for general meetings and lectures, with seats for 350 persons, arranged with a view to the reading of papers, the exhibition of drawings and diagrams explanatory thereof, and for facility of discussion; a council-room for 25 members; a library for 10,000 volumes, with suitable depositories for drawings, prints, medals, &c.; a gallery for models, casts, fragments, &c.; an exhibition-room for architectural subjects, and suitable residences for a secretary and a curator.

The cost of the building not to exceed 20,000*l*.

The design to comprise not less than one plan of each storey—two elevations, two sections, and a perspective view.

The scale of the drawings to be one-eighth of an inch to the foot, and to be tinted with Indian ink or sepia only.

The Council will not consider themselves called upon to adjudge the medal, unless the designs and drawings be of sufficient merit to deserve that distinction.

It will be seen that the competitors were not restricted to the junior members of the Institute, for the contest was "open to the profession in general." Although here were no limitations,

and a junior member in Glasgow, Dublin, or Bristol could compete, only eleven designs were received. It is now impossible to describe their character. The test that was applied by the Council was the practical one of cost, and as is not uncommon in such cases, none of the designs could sustain it. They were all incontinently rejected. It was not in respect of artistic merit or planning that the competition became a fiasco. The following report was issued to explain the action of the Council :—

In detailing minutely the accommodation to be provided in the building to render it suitable for the purposes specified, and by fixing a limit to the proposed expenditure, it was obviously intended by the Institute to impress the candidates with a feeling that in forming their designs they were expected to treat the subject practically, and direct their efforts to the production of a design adapted to the requirements of an existing working Institution.

They observe, with much regret, that the well-considered and clearly-expressed conditions of the Institute have been almost entirely disregarded, and that in consequence of the uncalled-for magnitude of the rooms, halls, staircases, and other approaches, together with the lavish and injudicious introduction of columnar and other extraneous decoration (in some instances actually unfitting the rooms for the purposes demanded), not more than one of the designs possessing the slightest pretension to consideration as an architectural composition, could be properly executed for less than double the sum specified.

When the Council reflect on the enormous amount of injury occasioned to the public and to the profession, from competitors so frequently disregarding the conditions given with respect to the proposed expense of an intended structure, and consequently presenting designs of much higher pretension than could be produced with an honest and conscientious adherence thereto; and when they likewise reflect on the strong reprobation the Institute has had occasion more than once to express on this most irregular and improper practice, they feel that it would ill become the Council to recommend to their fellow members of the Institute to countenance such dereliction from honourable professional practice, even in a competition like the present one, where the public interests are not directly affected. The fact being so apparent entirely precludes the Council from recommending to the members of the Institute the awarding of the Royal Medal to either of the designs presented this year.

They regret to be compelled, on grounds which they consider too important to be disregarded, to come to this decision, especially on the first occasion of a competition for so high a distinction as the Royal Medal, and the more so since the design marked "Quanto rectius hic qui nil molitur inepte" possesses a high degree of merit, and displays much taste and artistic talent.

The concluding words of the third paragraph suggest that if the Council withheld the Gold Medal in 1847 they hoped to be able to bestow it in the year following. There is nothing implied in the report about the Council having a desire to use the Royal Gift for a very different purpose. However, in the course of the year it was considered advisable to utilise the medal for the distinction to which it is now applied. It was announced afterwards that the Council of the Institute were prepared to receive nominations and foreigners were as eligible as natives.

The names of eight foreign and eight English architects were submitted, and after considering the claims of the candidates it was found that most votes were given for Professor Cockerell, R.A., and the medal was rightly awarded to him in testimony of his distinguished merits as an architect. The decision was given in February, but as the dies of the medal were not prepared the medal was not presented to the professor until the opening meeting of the following session, on November 20, 1848.

Correspondence

Colour in External Architectural Construction.

SIR,—In my letter of December 24 on this subject, I said nothing of the examples furnished by the imperial city of Rome—the source of all modern architecture: good, bad, and indifferent. Altogether, I find, upon a not very diligent reference to modern authorities, no less than sixty-two notices of the application of fifteen different sorts of coloured marbles, porphyries, granites, serpentines, and diorites.

Agrippa's portico of the Pantheon has its front rank of eight columns of grey, and its rear ranks of red granite, with capitals and bases of white marble. The walls of the great rotunda behind are adorned with yellow Numidian and green Karystian. Its pavement with porphyry, granite, and different marbles. The columns of the Temple of Antoninus and Faustina are of pavonazetta (banded layers of blue, grey, and green alternating with white). The arch of S. Severus is enriched with Proconnesian green marble. In Trajan's Forum an abundance of yellow Numidian and red Egyptian syenite was used, and the beautiful Pentellic white marble of the Flavian palace was heightened in effect by the liberal use of giallo-antico, cippolino, green diorite, and with Phengite marble, said to have had the property of reflecting like a mirror. Specimens of all the marbles may be seen in the little museum in the Farnese Gardens.

In conclusion, I need only remark that in Mediæval Rome the love of colour in architectural details was as strong as in Classical times. Popes and princes converted the noblest remains of antiquity into quarries for the supply of the choicest materials of their palaces and churches. The numerous examples of the use of coloured materials in the external architecture of different countries seem to me to urge one lesson upon future designers, viz., that colour should be conspicuous in every façade. I have already shown that within the limits of the United Kingdom the most splendid and everlasting materials exist for this purpose.

Yours obediently,
T.

NEW BUILDINGS.

Innholders' Hall.—This hall, which was erected after the great fire of London, of late years fell into a dangerous condition, and the court adopted the recommendation of the architect to preserve the old court-room and the livery hall, the parts having most interest, and to rebuild the remainder of the premises. The old doorway in Little College Street, E.C., is reproduced in moulded brick, and the old door and frame, with canopy and arms, refixed. The entrance hall, which is panelled in oak, has an angle fireplace, and an ornamental oak screen to the staircase. On the right is the old court-room, which is unaltered. The paint from the wainscoting has been removed. A new panelled ceiling has been placed in the livery hall. The ugly window at the west end has been improved in appearance by pilasters, dividing it into three lights with trusses supporting the head. Under this window is an oak buffet, with silvered panelled back and carved head, with a pediment in the centre, surmounted by a figure of St. Julian, the patron of the company. The other windows have been improved in appearance, and filled with ornamental glass. The minstrels' gallery in the angle is retained, and an entrance formed direct from the staircase. The screen across the hall is also removed, and a part of the space under the gallery enclosed to form a lobby to the serving-room. On the north side of the entrance hall lavatory accommodation is provided, and an oak staircase at the back of the screen gives access to the upper floors. On the first floor, at the top of the stairs, is a small anteroom, with a carved chimneypiece, executed in deal, removed from one of the houses adjoining; also a strong room for deeds and plate. A new court-room is planned on this floor over the old court-room, with an elaborate modelled ceiling, effectually decorated. The walls have a panelled dado, and these, with the fittings, are in American walnut; also an ornamental wood chimneypiece, surmounted by the arms of the company. The upper floor contains some excellent rooms as a residence for the beadle. The basement is devoted to the cooking department. The works have been executed by Messrs. Brass & Son, and the gasfittings by Messrs. Strode, of St. Paul's Churchyard. The whole has been executed from the designs and under the immediate superintendence of the architect, Mr. J. Douglass Mathews.

Silloth.—The new mill for Messrs. Carr & Co., of Silloth has been erected from the plans of Mr. T. Taylor Scott, architect, of Carlisle, by Messrs. Beaty Bros., builders, Carlisle. The buildings are fireproof, every portion, down to the smallest detail, being of incombustible materials. The walls are of a specially hard brick, manufactured by the Birkby Brick Company, near Maryport, and were tested before use by one of Tangye's hydraulic machines to stand a crushing strain of over seventy tons to the superficial foot. The fireproof floor and roofs, which have been carried out by Messrs. Homan & Rodgers, engineers, Dawson Street, Manchester, are formed with their patent section rolled iron girders and joists, manufactured at their Belgian works, and filled in, on the flat-arch system, with concrete of a special kind. The surfaces are faced in quartz finish, and the roofs are laid with Seyssel rock asphalte obtained from France. The floors have been tested with a compact dead-weight of 32 tons to an area of 162 feet. The ceilings have been done by the same contractors with Robinson's patent cement. The large engine bed, of special construction as regards strength, has also been made in

concrete, finished with quartz, by Messrs. Homan & Rodgers, and weighs 260 tons. The contract for all the iron work has been carried out by Messrs. Cairns & Co., and Messrs. Tweedy & Co., of Carlisle. All the windows are constructed with Lindsey's patent wrought-iron sashes, and are of malleable iron with stamped boss intersections, and hinged to run between side keepers with enclosed cord. The doors are of strong plate iron strengthened with cross rolled ribs, and hung to run on specially constructed rollers and heads. A large fireproof iron staircase and three fireproof gangways connect the mill and the warehouse on every floor for the required communication between them. A strong iron roof nearly 40 feet span, designed by the architect to suit the numerous iron worms over the silo bins, has been erected at a height of 56 feet above the ground by the same firm, and covered with Vieille Montagne zinc Italian rolls supplied by Messrs. Braby, of Liverpool. The engine and electric light houses, 50 feet by 35 feet, are adjoining buildings to the front, and are very elaborately decorated with glazed bricks and Burmantofts faience ware, manufactured by Messrs. Wilcocks & Co., of Leeds. The engines are compound and of 300 horse-power, being manufactured by Messrs. Douglas & Grant, Kirkaldy.

London.—A billiard-room for the Constitutional Club, Poplar, is in course of erection, from the designs of Mr. Brett A. Elphicke, of 7 Great Queen Street, Westminster, and Tunbridge Wells. The room will be 42 feet in length by 20 feet wide, and will be lighted by a leaded lantern over each table. Mr. Riddle, of Poplar, has been entrusted with the execution of the work.

London.—The newly-constructed wash-houses in connection with the St. Marylebone Baths, in the Marylebone Road, have been reopened. Mr. J. Waldram, C.E., of Craven Street, Charing Cross, designed the new buildings, and superintended the construction. In the basement is a new main room, where the various mains, also new, are painted of different colours, according to their uses, the manipulation of them being thus rendered more easy and certain. Also in the basement are four boilers for supplying water and steam, a new engine of 6 horse-power nominal, for driving the machinery, and furnaces to heat the drying closets. Over the basement is a fireproof roof, on which rests the floor of the laundry, which is paved with slates, and adequately supplied with drainage, so that it cannot be sloppy. The laundry is of the same size as before, but the roof, now of iron and glass, has been carried to a height of 30 feet, and is well ventilated.

Whitby.—The memorial-stones of a Temperance hall have been laid. The hall will be Renaissance in style, and will seat about 1,100 people. The cost is estimated at about 3,000*l.* Mr. R. Lennard is the architect, and Mr. J. Gladstone the builder.

Walsall.—The new church-house for St. Matthew's, Walsall, has been opened. Ample means are provided for heating and ventilation, and attached to the building is a caretaker's house, with suitable offices. The architect is Mr. James Davis, Walsall, and the builder, Mr. T. Taylor, Hall Lane, Walsall.

CHURCH BUILDING AND RESTORATION.

Birkdale.—The church of St. James has been reopened after considerable enlargement by the addition of new transepts, and improvement of the heating and ventilating system, along with general repairs and decoration of the interior, carried out from the designs of Mr. J. Francis Doyle, of Liverpool and Birkdale. The contractors were, for the building, Mr. Wilkinson, of Southport; masonry, Mr. Luke Rimmer; slating and plastering, Messrs. Tanner & Sons; plumbing, Mr. Lawton; lead waste heads, Mr. S. R. Henshaw; heating, Messrs. J. R. Cooper & Sons, of Liverpool. Mr. Reuben Bennett, of Manchester, did the decoration; Messrs. Jones & Willis provided the upholstery and fittings; Messrs. Freeman & Collier, of Manchester, coronæ for transepts. Mr. Richard Routledge acted as clerk of works.

Haughton.—The church of St. Giles, an edifice originally built of rough stone with a campanile and oriel windows, part of which still remain, is to be restored. The present tower and side chapel were built in 1527. The windows on the north side are all Tudor, and the rest of the church was probably built at that period. Mr. J. L. Pearson, R.A., is the architect.

Alrewas.—The completion of the restoration of the tower of Alrewas Church has just been celebrated. The work has been carried out under the direction of Mr. Basil Champneys, architect, by Messrs. Lowe & Son, Burton; Mr. Stephen Kemp acting as clerk of works. New pinnacles were supplied by Mr. R. Bridgeman, of Lichfield.

M. Alfred André has completed the restoration of the celebrated coffer in the Escurial, which dates from the sixteenth century.

ARCHÆOLOGY.

Mediæval Episcopal Costume.—The German papers give an account of the discovery, in the cathedral of Worms, of the body of a Mediæval bishop, who has been identified as Conrad de Sternberg, who died in 1154, being a contemporary of our Henry II., and of the great German Emperor Frederick Barbarossa. During the progress of some restorations which are being carried out in the cathedral, a stone coffin was found deep under the floor of the choir. It was closely cemented, and on its being opened in presence of a special commission, the body was found in perfect preservation, and arrayed in vestments denoting episcopal rank. On the head is a low mitre, the lower border of which is formed by a band of thick gold embroidery, of a lozenge-shaped pattern; the fillets of the mitre are composed of the same sort of work, with deep, heavy gold fringes. The peaks of the mitre have their edges adorned by similar embroidery. The alb and amice are made of thin linen, very openly woven. The chasuble, of the old bell shape, is made of very thick twilled silk, and falls in long folds around the body, forming a sort of pad round the neck. In the usual way, a richly-embroidered band runs perpendicularly down the front; it has no special design. The edges of the chasuble are simply hemmed. The tunics under the chasuble are also of silk. The upper one is of lighter texture; it shows a pattern consisting of lozenges connected by rays. The under-tunic shows a very fine interlacing pattern of geometrical design. The stole is worn crossed on the breast, the lower portions being broader than the upper. Its ornamentation is a pattern of scale-like design, which shows alternately figures of lions and birds set in a pattern of finely-traced leaves. The girdle is of silk, but only long untwisted strands remain. The feet and legs up to the knees are covered with silk stockings, which seem to be of a fine network texture. Three broad parallel bands and as many smaller ones are wound round in spiral fashion, and fasten them. The shoes, which come up above the ankle, and have two deep slits, are made of gold brocade; they are ornamented by circular embroideries sewed on. The soles of the shoes are of leather. The pastoral staff lies in the arms, from the right shoulder to the left foot. It is of soft wood, ending with a ferrule and spike; at top there is a spherical ball of hammered bronze, out of which issues a crook of soft wood, which ends in a bronze lily set in a square socket. At the feet stands the chalice, also of soft wood, very finely turned; the cup is a hemisphere, and on it rests the patina.

GENERAL.

M. Waltner has completed his large etching of the *Night Watch*, and proofs are to be seen at the publishers, Messrs. Boussod, Valadon & Co., in London and Paris.

A Fine Art Exhibition has been opened in Elgin, to which many Scottish artists have contributed works. Pictures are also lent from the collections of the district.

Mr. H. E. Rensberg has presented a complete set of reproductions of Rembrandt's paintings and etchings to University College, Liverpool.

An Art and Industrial Exhibition is to be opened at Toulouse on May 15 next.

A Free Library and Museum has been decided on for the town of Newbury as the jubilee memorial.

The Old Tower at the corner of Silver Street, Norwich, is to be restored at a cost that is not to exceed 70*l.*

The Collection of works of art and furniture belonging to the Château Langeais lately sold in Paris realised 427,562 frs.

A Competition restricted to Italian sculptors will shortly be arranged in order to obtain a design for a memorial of Signor Minghetti, for which 4,000*l.* will be assigned by the State.

Mr. William Dove, who at one time was known as a leading marine artist in the North of England, has died in the Whitby Workhouse.

Mr. Swinnerton, of Manchester, has obtained the commission for the statue of the late Hugh Mason, to be placed in the town of Ashton-under-Lyne.

Mr. J. M. Keiller has undertaken to pay off the debt, amounting to 10,500*l.*, on the Albert Institute Buildings, Dundee, which were designed by the late Sir Gilbert Scott.

Mr. Alfred Conder, F.R.I.B.A., architect, of Palace Chambers, Westminster, district surveyor for Woolwich, has been appointed by the Metropolitan Board of Works to act as temporary substitute in the district of Charlton, Lee, and Kidbrooke, rendered vacant by the decease of Mr. J. Collis, the late district surveyor.

Mr. W. F. Maitland has contributed 1,000*l.* to the restoration fund of Stansted Mountfichet parish church.

The Centenary of the birth of the Rev. Richard Harris Barham, the author of the "Ingoldsby Legends," is proposed to be celebrated by the erection in Canterbury of a new museum and public library.

INDEX.

Archæology :—
28, 102, 145, 244, 318, 330, 382

Articles :—
Abbeys of England, Preservation of, 143
Academicians, Early Trials of, 354
Acropolis of Athens, 162
Air of Schools and Dwellings, 156
America, Architects' Fees, 214
American Sanitation, 187, 200
Applied Art, Thoughts on, 325
Archæological Institute, Royal, 35
Archæology in Italy, 66
——— Lincolnshire, 55, 68
——— Shropshire, 5
Architectural Association—
Annual Conversazione, 219
Decorative Metalwork, 377
Fireplaces, 339
Notes on Church Planning, 311
Practical Class of Masonry, 197, 247, 355
President's Address, Beginners' Prospects, 251
Pupilage, 279
Architectural Federation and the Charter, 239
——— School, Royal Academy, 39
Architecture and Sculpture in France, 177
Architects' Certificates, 95
Architects, Royal Institute of British—
Ca' d'Oro, Venice, and its External Colour, 333
Devey, the late G., 295
Marble, its Uses as Suggested by the Past, 365
Polychromy, 295
President's Address, 266
Street, Bust of the late G. E., 266
Vulliamy, the late G., 295
Art, Origins of Ornamental, 197
Athens, British School of Archæology, 236
Barclay, R.S.A., the late J. M., 340
Barony Church Competition, Glasgow, 269
Berlin Exhibition, 269
—— Ventilation of the Reichstag Building, 376
Birmingham Architectural Association, 269
——— Art Gallery, 23, 235
——— Assize Courts, 54, 67
——— School Board, 228
Bradford-on-Avon, Saxon Church, 363
British Archæological Association, 65, 79
—— Association Meeting, 120, 136
—— Museum, 10
Burges, the late W., Work of at Worcester College, 325
Cambridge, Fitzwilliam Museum, 367
——— University Library, 285
Carlisle Town Hall Cupola, 209
Cast Taking, Pleasure of, 342
Castle Acre Abbey, 121
Chantilly, Treasures of, 233
Cheshire, Archæology of, 96
Chester Cathedral Mosaics, 363
——— Hypocaust, 126
——— Museum, 100
——— Walls of, 115
Church Broughton Church, 14
——— House, 299
——— Restoration, 178
Classical Archæology, 282
Cockburn Association, Edinburgh, 39
Colour, Paul Bert on, 290
Competitions in France, 221
Constantinople, 374
Co-operative Building Societies, 202
Cyprus, Exploration in, 329
Design, Distribution in, 343
Domesday Book, 25
Dublin, Christ Church Cathedral, 373
Durham Cathedral, 80
Dursley Church, Gloucestershire, 95
Edinburgh Architectural Association, 299, 341
——— Exhibition Buildings, 274, 313
——— Harrison Memorial, 54
——— in 1561, 143
——— Municipal Buildings, 111, 249, 265, 299, 335, 342
——— Officials, 363
Egyptian Exploration Fund, 20
Electric Lighting, Select Committee on, 90
Elland Town Hall Competition, 315
Examination of Local Surveyors, 315
Exhibitions, Financial Results of, 328
Fernihurst Castle, Roxburghshire, 193
Fireproof Construction, 127
Florence, Restoration in, 298
French Architects and Workmen, 192
Frescoes Rediscovered at Amsterdam, 77
Gallery of Messrs. Knoedler, 282
German Criticism on English Painting, 353
Glasgow Archæological Society, 170, 317
——— Architectural Association, 169, 212, 355
——— Building in, 215
——— House Rents, 356
——— Institute of Measurers, 210
——— Master of Works' Office, 212
Halifax Parish Church, 201
Haughmond Abbey, 240
Hibernian Royal Academy, 341
Hebburn Hall, 75
Hellenic Society, 11
Hospital for Children, Chelsea, 12
——— Huts *v.* Brick Buildings, 23
Houghton Hall, 9
Hythe Church, 81
Ideal City, 291
Ideals, Succession of, 208
Imperial Institute, Proposed, 183, 314
Industrial Art, 184
Institute and the Society of Architects, 261
Institution of Civil Engineers, 84
Ireland, Royal Archæological Association, 11
——— Royal Institute of Architects, 307
Jerusalem, Excavations at, 126
Jones, Inigo, 226
Jubilee Church House, 254
Landscape Painting, Open Air, 225
Lead Pipes, 157
Leeds and Yorks Architectural Society, 75, 234, 317
—— Art Gallery Competition, 75, 179, 327, 343
Lincoln Schools of Art and Science, 210
Liverpool Architectural Society, 268, 313, 354
——— Art Workers' Guild, 99
——— St. George's Hall Reliefs, 209
——— University College, 342
Lumley, Sir Savile, Gifts to Nottingham, 168, 184
Lutetia, Amphitheatre of, 269
Manchester Architectural Association, 12, 21, 239, 268
——— Art Museum, 334
—— ——— Artists and the Annual Exhibitions, 282
——— Exhibition, 20, 69
—— ——— Jubilee Exhibition, 328
Maltese Stonework, 212
Manorial Records, Preservation of, 170
Masonry Class, Practical, 247, 355
Mediæval Guilds, 314
Moore, A.R.A., Mr. Henry, on Art, 235
Morris, Mr. William, on Education in Art, 170
Nether Hall, 4
Northern Architectural Association, 81, 283, 373
Ordnance Survey, 275
Ornamental Art, 367
Palace of the King of Bavaria, 37
Penshurst Place, 61
Perrin, the late Emile, 46
Photography, Amateur, 321
Pompeiian Excavations, 26
Prehistoric Boat, 25
Preservation of Ruined Buildings, 227
Quantity Taking and Measuring Up, Methods of, 155, 171, 186
Report on the Liverpool Cathedral Designs, 347, 361, 375
Rhind Lectures on Archæology, 237
Richmond, Buccleuch Estate, 141
Rochester Castle, 84
Roman Wall and its Bridges, 163
Royal Academy, 112, 167, 353
——— and Architecture, 140, 162
——— Architectural School, 39
—— Archæological Institute, 234
—— Hibernian Academy of Arts, 249
Rude, François, Sculptor, 260
Runic Crosses, Ornamentation of, 157, 221
Ruskin, Mr., Museum at Sheffield, 239
Sanitary Engineers and Surveyors, 237
Saxon Remains in the Bath District, 355
Science and Art Department Schools, 114
Scottish Paintings, Value of, 340
——— Royal Academy, 297
——— Society of Antiquaries, 356
——— Water-Colour Society, 248
Shrewsbury Battlefield, 193
Siena Cathedral, 169
St. Albans, 150, 167
St. Petersburg, Historical, 95
St. Saviour's, Southwark, 329
Statue, Story of, 340
Stevenson, C.E., the late David, 53
Stonehenge, 91, 106, 356
Story of a Sculptor, M. Etcheto, 119
Street, the late G. E., as a Restorer, 51, 81
Subsidences of Buildings in Mining Districts, 156
Surveyors' Institution, 285
Susa, King's Palace, 199
Swansea District, Archæology of, 142
Swynnerton Church, 141
Technical Education Congress, 200
Timber Building in Cheshire, 369
Tiryns, 23
Turkey, Public Works in, 69
United States, Duties on Works of Art, 368
Usk Church, Monmouthshire, 229
Venice Exhibition, 20, 254
—— Foundations of, 130
—— Restoration of Churches, 125
——— St. Mark's, 89, 183, 237
——— the Ducal Palace, 111
—— Restorations, 193
Verocchio, Andrea, 153
Versailles, Degradation of, 134
Vienna, Hofburg Theatre, 266
Water-Colour Drawings, Permanence of, 51, 149, 163
Wellington Memorial, Hyde Park Corner, 327
Westminster Hall, Restoration of, 179
Wire Netting, 229
Yarmouth Town Hall, 185, 241
York Architectural Association, 207

Bygones :—
Act for the Rebuilding of London after the Great Fire, 300
Balance of Painters, de Piles's, 316
Competition for St. George's Hall, Liverpool, 12
Dilapidations in 1807, 128
Gerbier's Counsel to Builders, 39
Gold Medal of the Institute of Architects, 380
Gothic Architecture, Samuel Beazley on, 97
Haydon on Wilkie, 172
Liverpool Cathedral Project in 1827, 357
London Architectural Society, 84

Church Building and Restoration :—
16, 27, 42, 56, 70, 86, 116, 146, 158, 188, 216, 244, 256, 270, 286, 302, 318, 330, 344, 357, 370, 382

Contract Reporter :—
Aberdeen, Building in, Dec. 31
Altar Construction in Kildare Church, Oct. 22
Apprenticeship, Mr. Herkomer, A.R.A., on, Dec. 24
Arbitration between Employers and Workmen in France, Nov. 19
Art in Textile Design, Dec. 3
Belgrade Contracts for Lighting and Waterworks, Dec. 10
Birmingham Engineering Students, Dec. 24
——— Masons and Terra-cotta, Oct. 8
Builders and Workmen in Boston, U.S., Oct. 29
Builders' Sheds Nuisance in Glasgow, Sept. 3
Building and Paving in Nottingham, Sept. 17
——— in Bradford, Aug. 20
——— Organisation in France, Sept. 3
——— Trade in America, July 30
——— Trade in Glasgow, Dec. 31
Canals *v.* Railways, Sept. 3
Carnegie, the late Thomas, Nov. 12
Cast-iron and Wrought-iron Columns in Fires, Dec. 31
Co-operative Workshops in France, Sept. 24
Commercial Museum for Wolverhampton, Nov. 26
Commercial Museums in France, Aug. 27
Contract for Joiner's Work at the Glasgow Municipal Buildings, Sept. 10
Coved Ceilings, Risks of, Dec. 17
Crerae Quarry Disaster, Oct. 1
Drain Pipes, Nov. 12
Duomo, Florence, Nov. 19
Edinburgh, Condition of the Princess Theatre, Oct. 1
Edinburgh Dean of Guild Court, Nov. 26
Employers' Liability Act, Select Committee Report, Aug. 20
Employers' Liability in Germany, Oct. 8
English Competition Abroad, Oct. 22
Examination Questions in General Construction, Aug. 27, Sept. 3
Finland Timber, Export Duties, Dec. 3
Fire Insurance and Building, Nov. 5
Fireproof Cement, Dec. 3
Foundations Compressible, July 30
German and British Trade in Brazil, Dec. 17

Contract Reporter—*continued.*
German Export Trade, Aug. 20
——— Iron Industry, Nov. 26, Dec. 10
Girder Bridges, Sept. 10
Glasgow Cathedral, Nov. 5
——— Lighting of, Dec. 31
House of Commons Arrangements, Mr. Barry's Evidence, July 2
Hydraulic Machinery, Dec 31
Institution of Civil Engineers, Sept. 24
Leeds, Building in, Dec. 10
Lighthouse Illumination, Oct. 15
Liverpool Exhibition, Dec. 3
——— Awards, Nov. 26
Maintenance of Streets, Dec. 10
Manchester Technical School, Nov. 19
Marble Quarries, Carrara, Aug. 27
Mersey Docks' Warehouses, Aug. 6
Messina Tunnel, Aug. 20
Monks' Park Stone, July 23, Aug. 6
Numidian Marble, Dec. 3
Ornamental Smith's Work, Nov. 12
Palermo Contract, English, July 30
Port Said British Hospital, Nov. 5
Portland Cement, Export to America, July 9
Proportions of Joints and Connections in Framed Structures, Dec. 31
Railway Extension, Indian and Colonial, July 30
Reafforesting Ireland, Sept. 3
Roads in Northamptonshire, July 9
——— Construction of, Nov. 19
Robson, the late R., Builder, Dec. 17
Roofing Slate for India, Sept. 10
Saccharine Mortar, Oct. 15, 22
Sand Wastes of Gascony, Reclamation of, Oct. 22, 29
Sanitary Progress in Liverpool, Oct. 8
——— Registration of Buildings, Nov. 26
Sea Encroachments, Nov. 12
—— Water for Roads and Sewers, Sept. 17
Single Rail Railways, Oct. 15
St. Mary Magdalen Church, Nov. 12
Suburbs of St. Petersburg, Sept. 17
Swedish Timber Trade, Nov. 19
Technical Education, Sept. 10
——— in India, Sept. 24
Terra-cotta *v.* Stone, Sept. 10, Oct. 8
Theatre Accident, Birmingham, July 30
Vyrnwy Masonry Dam, Aug. 13
Wages in New York, July 9
White Lead Poisoning, Oct. 15
Wood Paving in Edinburgh, Nov. 26

Correspondence :—
Æolus Waterspray Company, 27
Architectural Federation, 204, 254, 269
——— Restorations and Modern Practice, 301
Barony Church Competition, Glasgow, 243, 255, 269
Carisbrooke Castle, 157
Colour in External Architectural Construction, 369, 381
Corporation Art Gallery, Nottingham, 157
Damp Spots in Water-Colour Drawings, 230, 244, 256
Edinburgh Municipal Buildings Competition, 256
Elland Town Hall Competition, 243
French Architects and their Responsibility, 241
Godwin, the late E. W., 243
Institute Charter, 285
Manchester Stove and Smoke Washing, 204
National Art Exhibition, 174
Registration of Architects, 285
Royal Academy and Education, 203, 215, 230
Sédille, M. Paul, and the Architecture of the Future, 317
Society of Architects at the Colonial Exhibition, 157
Venice, Pavement of St. Mark's, 244

General :—
16, 28, 42, 56, 70, 86, 102, 116, 130, 143, 158, 174, 188, 204, 216, 230, 244, 256, 270, 286, 302, 318, 330, 344, 358, 370, 382

Leading Articles :—
Academy Reform, 88
Baptismal Fonts of England, Mediæval, 105, 118, 133
Barony Church Competition, 232
Chicago Convention of Architects, 360
Consulting Architect, The, 320
Délacroix, Eugène, Critics of, 206
Derbyshire, History of, 104
England's Chronicle in Stone, 346
Faliscans, Country of, 45
Federation of Architects, 246
Fifteenth-Century Windows, 148
Furniture of Louis XIV., 218
Institute of Architects, Opening Meeting, 253
Interdepartmental Collision, 72
Irish Industrial Resources, 30
La Tour, Pastellist, 372
Lamour, Jean, Blacksmith, 59
Life of Fra Bartolommeo della Porta, 160
Lithography in France, 3
Mosaic Pavements, Romano-British, 44
National Competition Prize Works, 58
Office of Supervising Architect, 206
Phidias, 73
Polychrome Decoration, 304
Regnault, Henri, 32
Romanesque as a Modern Style, 89
Royal Academy and Education, 176
Sanitary Institute, 190
Scottish Castles, 332
Sketches by an Architect, 132
Streatham, History of, 273
Trade and Finance, 259
Tragedy of Art, 18
Ventilation of the House of Commons, 2
Wagner, Richard, 272, 288, 305

Legal :—
Builder's Armorial Bearings,* Oct. 22
Burke & Co., Marble Working Machinery, Dec. 10
Crouch *v.* Beesley & Co., Architects' Fees, 101
Derwin & Others *v.* Drumcondra, Clontiffe and Glasnevin Commissioners, Contractor's Claim,* July 2
Elford *v.* Musgrave, Contravention of Building By-laws,* Aug. 6
Employers' Liability Act,* July 16
Fass *v.* Gunter & Whitaker, Light and Air and the Land Act,* Sept. 3
Green & Taylor *v.* Harbord & Others, Covenants for Drains,* Aug. 6
Kaye *v.* Chubb & Sons, Rights under Letters Patent,* Dec. 3
Kerr *v.* Sandys, Architect's Fees, 15
Law *v.* Bellamy, Employers' Liability,* Dec. 3
Moat, Richard, and the Croydon Corporation, Improper Foundation Material,* Aug. 13
Moyers *v.* Dublin Commissioners of Public Works, Payment for Extras Dec. 24
Nosotti *v.* Saunders, Decorator's Plans,* July 9
Parsons *v.* Ellis, Building without an Architect,* Aug. 13
Platt *v.* Parker, Building Leases,* July 23
Pritchard *v.* Williams, Position of Sub-contractors,* Oct. 1
Sivell *v.* Peters, Architect-Builder,* Aug. 6
Skivens *v.* Clements, Jeakes & Co., Obstruction of Light and Air and Trespass, 42
Smith & White *v.* Ault, Architects' Certificate, 95
Sumsion *v.* Pictor & Sons, Monks' Park Stone,* July 23
Trustees of Paton *v.* Emmett & Sons, Light and Air Case, 101

New Buildings :—
27, 42, 70, 86, 101, 116, 130, 216, 256, 317, 330, 358, 370, 381

Notes and Comments :—
Administrators of the Public Heath Act, 182

* Contract Reporter.

Notes and Comments—*continued.*
Architecture of the Year, 310
Art Museum for Paris, 278
—— Rules for the Paris Exhibition, 1889, 152
Artistic Pottery, Nice and Mentone, 8
——— Rivalries in Paris, 124
Award of Medals at Liverpool, 250
Bank of England Note Engraving, 64
Bearsted Church, 294
Berlin Museum of Decorative Art, 152
Birmingham School of Art, 166
Bonvin, M. François, 364
Building Regulations for Liverpool, 238
——— Trade in Dresden, 94
Cadastral Surveys, 338
Cambridge Slade Professor, 294
Chantilly, 278, 364
Christmas Cards, 324
Church at Montmartre, 8, 166, 224, 324
City Church Burnt, 324
Committee on Water-Colour Permanence, 64
Competition Incident at Genoa, 152
Custom Duties in the United States, 352
Deroy, Isidore Laurent, 324
Difference between Drains and Sewers, 78
Domesday Commemoration, 224
Dublin Corporation Contracts, 324
——— Sketching Club, 278
Dudley Memorial, 124
Duty of an Umpire in Valuations, 264
Ecole de Beaux-Arts, Shortcomings of, 250
Edinburgh Exhibition Awards, 264
——— Municipal Buildings, 166, 324
Educational Report, 124
Employers' Liability Abroad, 196
Engineering Laboratories, 364
English Works at the Louvre. 110
Experiences of Exhibitors, South Kensington, 138
Fate of State Art Purchases in France, 50
Fires in the Metropolis, 278
Forth Bridge, 50
Freezing Chambers at Abattoirs, 36
French Sculptors, 364
——— Water-Colour Painting, 224
Funds of the British Institution, 310
German Architect in Japan, 166
Gilded Glass, 250
Glasgow Institute of Architects, 238
Glass for Railway Sleepers, 8
Heather, the late J. F., 294
Hints from the Chinese Market, 110
Hythe Parish Church, 64
Indian Carpets, 78
Industrial Designs in France, 110
International Copyright Conference, 338
Jubilee Church House for England, 36, 182, 231
Keeling, the late Bassett, 294
L'Arc d'Etoile, Paris, 8
Langholm Statue, 238
Lectures of Mr. Gambier Parry, 36
Lien for Labour and Materials in America, 94
List of Academy Lectures Fifty Years Ago, 138
London School of Music, 50
——— Water Supply Analysis, 50
Lumley, Sir Savile, 364
Luxembourg Galleries, 224
Malcolm Statue, Langholme, 166
Masonry Class, 310
Master Builders' Association, 78
Metropolitan Central Police Offices, 78
Mont Saint-Michel, 352
Montmartre, 8, 166, 224, 324
National Jubilee Memorial, 182
Noble's Isle of Man Hospital, 64
Northampton and Local Architects, 224
Palace of Artaxerxes at Susa, 138
Paris Fire Brigade, 36
—— Houses Occupied by Napoleon I., 138
—— Treasury Economies and English Exhibitions, 36
Perkins, the late Charles, Boston, U.S., 166
Permanent Way Inspectors, 64
Pierrefonds, 238
Plaster Casts at the Louvre, 50
Profits from Art Galleries, 152
Quarries of Puebla, 94
Rearrangement of the Louvre Pictures, 352
Registration of Plumbers, 324
Ribble Navigation Works, 233
Royal Academy Reform, 124
—— Archæological Institute, 110

Notes and Comments—*continued.*
Rubens's *Chapeau de Paille*, 94
Rudiments of Decorative Painting, 324
Russian Academy of Art in Rome, 64
Sacré Cœur Church, Montmartre, 8, 166, 224, 324
Sale of an Alleged Louis XV. Table, 294
Salon Regulations, 310
Sanitary Institute, 182
School Buildings Abroad, 94
——— of Art Finances, 278
Scottish Law on Employers' Liability, 50
Sculpture for Blackfriars Bridge, 78
——— the Sorbonne, 238
Simon, M. Jules, on Education, 196
——— the late F. E., 36
Sketching Clubs' Competition, 264
Smith, the late Walter, 182
Smoke-Consuming Grates, 94
Spalding Club, 294
Spontaneous or Slow Combustion? 36
Staple Inn, Holborn, 310
Statistics of British Architects, 264
——— Water Supply, Bradford, 238
Statue of Liberty, Bartholdi's, 8, 138
Sunk Orchestras, 338
Swiftest Painter of the Age, 196
Tenantable and Decorative Repair, 78
Terra-cotta *v.* Stone, 250
Troubles of a Hanging Committee, 124
University Buildings and Fire Risks, 338
Wallace Memorial, Stirling, 152
Walton-le-Dale Church, 182
Water Companies' Freaks, 152
Welsh and Irish Setts, 364

Reviews :—
Barker's Trade and Finance Annual 1886-1887, 259
Castellated and Domestic Architecture of Scotland from the 12th to the 18th Century, David Macgibbon and Thomas Ross, Architects, 332
Consulting Architect, Practical Notes on Administrative Difficulties and Disputes, Robert Kerr, F.R.I.B.A., 320
Construction of Silos, Thomas Potter, 158
Delacroix, Eugène, devant ses Contemporains, Maurice Tourneux, 206
England's Chronicle in Stone, Personal Observations of Cathedrals, Churches, Abbeys, Monasteries, Castles, and Palaces, J. F. Hunnewell, 346
Fantaisies Décoratives, Habert Dys, 129
Fra Bartolommeo della Porta et Mariotto Albertinelli, Gustave Gruyer, 160
History of Derbyshire, John Pendleton, 104
History of Painted Glass, N. H. J. Westlake, F.S.A., 148
History of Streatham, F. Arnold, Jun., 273
Hydraulic Power and Hydraulic Machinery for the Use of Practical Engineers and Students, Henry Robinson, C.E., Professor of Surveying and Civil Engineering, King's College,* Dec. 31
Inventaire Général du Mobilier de la Couronne sous Louis XIV., Jules Guiffrey, 218
Kelly's Directory of Engineers and Iron and Metal Trades and Colliery Proprietors, 130
Kelly's Directory of the Building Trades throughout England, Scotland, and Wales, 130
La Tour, M. Chamfleury, 372
Lamour, Jean, Serrurier du Roi Stanislas à Nancy, Charles Cournault, Conservateur du Musée Historique Lorrain à Nancy, 59
Notes and Sketches of an Architect, Archibald M. Dunn, 132
Phidias, Accompagné de Gravures, Maxime Collignon, 73
Practical Guide to Photography, 174
Regnault, Henri, Roger Marx, 32
Report on the Cork Exhibition, W. K. Sullivan, Ph.D., F.C.S., &c., President of Queen's College, 30
Romano-British Mosaic Pavements, with Plates, Thomas Morgan, F.S.A., &c. 44

* Contract Reporter.

Reviews—*continued.*
Richard Wagner, Sa Vie et ses Œuvres, Adolphe Julien, 272, 288, 305
Specifications for Practical Architecture, Frederick Rogers, Second Edition, 130
Trusses of Wood and Iron, William Griffiths, 174

School Buildings:—
16, 86, 158, 216, 318, 330, 358, 370

Tesseræ:—
Abbate, G., Fresco Painting in Pompeii, 48
Ansted, D. T., Malachite Veneering, 49
Arago, D., Fallacies about Superiority of Roman Building, 194
——— Rich and Poor Limes, 63
——— F., Vicat's Discoveries, 137
Ballantine, J., Gilding in Decoration, 77
Barry, E. M., R.A., Expression of Stability, 309
——— James, Operating on Da Vinci's "Last Supper," 107
Birch, S., Egyptian Bricks, 293
Birdwood, Sir G. C. M., Hindoo Temples, 292
Boisbaudran, H. L., Ecole des Beaux-Arts, 323
Bow, R. H., Stresses in Webs of Girders, 337
Bowring, J., Copyright of Designs in France, 351
Braidwood, J., Building Workmen as Firemen, 195
Bridgett, T. E., English Mediæval Altars, 62
Bruce, J. G., Pompeii, 34
Burges, W., Architectural Drawings, 76
——— Church Roofs, 164
——— Church Restoration, 180
——— Michel Angelo's Architectural Drawings, 33
Burgess, R., Christian Basilica, 164
Burnell, G. R., Contact of Metals, 181
——— Salpetreing in Stone, 35
——— Slating in Paris, 21
Carlyle, T., How Berlin was Built, 76
Chambers, Sir W., Niches, 276
Clark, C. T., Early Norman Castles in England, 308
——— Edwin, Permanent Set of Cast-Iron, 309
——— Prototypes of Hollow Beams in Nature, 108
——— Strength of Beams, 136
——— Top and Bottom Flanges of Wrought-iron Beams, 336
——— Weight of Iron Girders, 92
Cockerell, Prof., Classic and Jewish Architecture, 151
——— Theorising in Art, 336
——— Vignola, 108
——— William of Wykeham, 48
——— F. P., Pedestals, 6
——— Polychromy of Exteriors, 323
Commissioners on Iron, Cast-iron Girders, 35
Conybeare, H., Teaching of Mathematics, 337
Cowie, M., Absolute and Relative Strength of Timber, 263
Crace, J. C., English Tapestry, 262
Dallaway, J., Mediæval Architects in France, 7
Dodwell, E., Temple of Delphi, 180
Donaldson, Prof., Development of the Doric Order, 293
——— Interior of the Pantheon, 49
——— Prof. Cockerell, 222
——— Royal Patronage of Art in France, 350
——— Sketch-Book in Lille Museum, 195
Eagles, J., Sketching from Nature, 335
Eckstein, G. F., Flues in Dwelling-houses, 262
Eisenlohr, F., Modern Architecture in Germany, 109
Elmes, J., George IV., as Patron of Architecture, 164
——— James Wyatt, R.A., 63, 350
——— John Nash and Regent Street, 34
Elmes, J., Robert Hooke, Surveyor, 195
——— Robert Milne, Architect, 277
——— Trinity House, 92
Ewart, J., Timber for Farm Buildings, 77
Fairbairn, Sir W., French Rolled Beams, 263
——— Wrought iron Columns, 123
Fergusson, J., Ostentation of Gothic Architecture, 322
——— Salisbury Cathedral, 221
——— St. Sophia, Constantinople, 48
Ferrey, B., Pugin as an Architect, 62
Fonblanque, A., Statues in Trafalgar Square, 136
Freeman, E. A., English and Italian Towers, 335
Gailhabaud, J., Triumphal Arches, 137
Gaudon, J., Foundation of Dublin Custom House, 109
Garling, H. B., Treatment of Caryatides, 349
——— Villard de Honnecourt, 21
Gibb, John, Scottish Mortar, 351
Gibbon, D., Obstruction of Light, 262
Grissell, T., Timber Scaffolding, 263
Gwilt, Joseph, Theory of the Arch, 308
Henry, J., Resonance in Rooms, 122
Hoffmann, Frankland & Abel, Atmospheric Action on Stone, 165
——— Decay of Building Stones, 122
Hosking, Prof., London Shop Fronts, 92
——— W., Brick Backing, 277
——— Latent Heat in Timber, 165
Houssaye, Arsène, French Sixteenth-Century House, 322
Huggins, S., Somerset House, 308
Humber, W., Strength of Buckled Plates, 223
Hurlstone, F. Y., Spanish Cathedrals, 222
Jones, Owen, Primaries, Secondaries, and Tertiaries, 77
Kirkaldy, D., Tests of Iron, 62
Latham, B., Sinking Wells, 322
——— Steining Wells, 123
Leeds, W. H., Modern Italian Architecture, 21
——— St. George's, Bloomsbury, 93
Lemon, J., Insufficient Timbering in Houses, 181
Lenoir, Albert, Greek Architecture in France, 93
Lusb, F., Jacopo Sansovino, 350
Mallet, R., Cement-making Facilities in Ireland, 151
Medley, J. G., Indian Houses, 322
Meigs, M. C., Conveyance of Sound, 22
Milizia, F., François Mansart, 7
Moody, F. W., Lions' Heads in Decoration, 261
Muir, G. W., Quarrying Granite, 151
Nash, E., Failures in Foundations, 6
Nasmyth, J., Cold Hammering of Iron, 22
Newton, C. T., Greek Cistæ, 292
Okeley, W. S., Simplicity of Italian Gothic, 293
Paley, F. A., Early English Doorways, 34
——— Gothic Capitals, 223
Parker, J. H., Flint Walls in France, 109
——— Malling Keep, 222
Pasley, Sir C. W., Blue Lias Lime in Mortar, 222
Penrose, F. C., Entasis of Greek Columns, 223
Planché, J. R., Costume in Painting, 164
Follen, J. H., Gobelins Tapestry, 7
Poynter, A., Arabesque Decoration, 34
Pye, John, English Academies of Art, 136
Quincy, Quatremère de, Architecture and Music, 262
Rankine, Prof., Characteristics of Good Timber, 194
Rawlinson, Sir R., Foundations, 22
Rennie, Sir John, Early Use of Concrete, 137
——— Retaining Walls, 123
——— Telford and MacAdam 293
Repton, H., Aspect of Houses, 323
Richardson, G. F., Quality of Slates, 277
Robertson, G., Expansion of Concrete, 223
Robison, Sir J., Struts and Ties in Carpentry, 337
Rydberg, Viktor, Apollo Belvedere, 276
Schinkel, K. T., Philosophy of Architecture, 49
Scott, Sir G. G., Cultivation of Eye Power, 180
——— Early Frescoes, 165
——— Rules for Restoration, 62
——— School of Architecture, 194
——— St. Mary Overy, Southwark, 108
——— Superposition in Gothic, 351
——— True Use of Gothic Examples, 336
——— Westminster Abbey and Amiens Cathedral, 121
Semper, Gottfried, Origin of Mural Decoration, 277
Sharpe, Edmund, Subordination in Gothic Arching, 194
Shaw, E. M., Chimneys, 292
——— G., Stained Glass, 7
Silloway, T. W., Timber for External Work, 337
Smirke, S., Chimney Shaft, 122
——— Improvements in Building, 165
——— Origin of Architectural Style, 181
——— Renaissance Treatment of Exteriors and Interiors, 76
Smith, C. G., Strength of Timber Beams, 181
——— C. H., Architecture and Sculpture, 180
——— Induration of Stone, 309
Spencer, H., Influence of Precedent in Architecture, 122
——— Precedent and Criticism, 150
Stevenson, T., Marine Worms and Timber, 22
Street, G. E., Baldachino in English Churches, 63
Taylor, W., Planning Theatres 322
Thissen, R., Architecture and Craftsmanship, 223
Thomson, D., Greek Thomson, 292
Turner, J., London Brickwork, 93
Ure, A., Laminæ of Slates, 222
Valery, M., Siena Cathedral, 336
Viollet-le-Duc, Unity of Periods of Art, 309
Waagen, Gustaf, Academies of Art, 292
Waller, J. G., Swanscombe Church, Gravesend, 35
Ward, F. O., Roman Tesselated Pavements, 108
Waring, J. B., Italian Gothic Wall Decoration, 349
Westmacott, R., Gothic Sculpture, 6
Whewell, W., Milan Cathedral, 276
Wightwick, G., Dome of St. Paul's, 21
Wilkinson, G., Doorways of Irish Round Towers, 263
——— Marble, 34
Wilkinson, Sir J. G., Egyptian Architecture, 223
Willis, R., English and Continental Gothic, 323
——— Gothic Orbs, or Blind Windows, 351
Wilson, C. H., Italian Builders' Work, 151
——— Venetian Pavements, 92
Winston, C., Classic Influence on Mediæval Glass Painting, 48
Wood, the late Warrington, 376
Wyatt, Sir M. D., Celtic Illuminators, 337
——— Greek Mosaicists in Italy, 180
——— Travellers' Club and Pandolfini Palace, 222
Wyatt, T. H., Architects and Gardening, 92
Yenn, John, James Elmes, 6

The Week:—
Académie Julien, Paris, 371
Admiralty and War Offices, 159
Albert Hall, 43
American "Art Galleries," 271
Ancient Roman Altar, 257
Archæological Visit to London, 87
Architect's Certificate in Ireland, 359
Art Annual, 245
Artisans' Dwellings, Glasgow, 371
Bearsted Church, 331
Birmingham Assize Courts, 57
Blackfriars Bridge Statuary Fiasco, 231
Blenheim Collection, 57, 71
Bottomley, the late R. O., 117
Boulak Museum, 1
British Museum, Print Room, 1
Buccleuch Collection of Prints, 359
Building Trade in Frankfort, 217
Canalisation of the Seine, 217
Chantilly Donation, 319
Château de Langeais, 345
Chimney or Roof? 371
Church of the Assumption, Paris, 271
Clissold and Ravenscourt Parks, 1
Coal and Wine Dues, 303
Colonial and Indian Institute, 245
Competition Rules in Glasgow, 319
Constitutional Club, 205
Corporation Art Gallery, London, 29
Croydon, Archbishop's Palace, 345
Devey, the late George, 271
Dispensing with an Architect, 257
Domesday Survey Commemoration, 57
Doo, the late G. T., Engraver, 287
Drawing as taught by South Kensington, 87
Duc d'Aumale's Gift of Chantilly, 205
Edinburgh Exhibition Surplus, 359
——— Municipal Buildings Competition, 131, 147, 331
Employers' Liability Act, 147
——— in Switzerland, 217
Examination Test of Competency, 131
Exchequer Loans for Ireland, 175
Exploration in Crete, 147
Federation of Architects, 271, 345
——— Scientific Societies, 147
Fleming Memorial Hospital, Newcastle, 71
Flemish Mural Paintings, 271
Foreign Art at Berlin, 159, 205
Forestry in Australia, 29
French Archæologists in Greece, 175
German Awards on English Art, 159
Godwin, the late Edward, 217
Guildhall School of Music, 331
Hollings, Peter, the late, 103
Holloway College, Egham, 1
Holyrood Chapel, 43
Inland Revenue on House Statistics, 87
Irish National Gallery, 71
Iron Trade in Germany, 159
Judgment of Pictures by Plebiscite, 103
Karr, M. Alphonse, 205
Leamington Art School, 319
Leeds Fine Art Gallery, 103, 131, 175
Lincoln Cathedral, Discoveries in, 359
Liverpool and Edinburgh Exhibitions, 245
——— Cathedral Designs, 345
——— Water Scheme Dispute, 103
Manchester Exhibition and the Fine Arts, 319, 359
——— Ship Canal, 57
Maspéro, M., and M. Brugsch, 303
Medallion of Sir Walter Scott for Westminster, 17
Medical Officers of Health, 303
Memorial House Tablets, 17
——— to Sir George Harrison, 257
Metropolitan Railway, Paris, 29
——— Superintending Architect, 87, 287, 331
Mont St.-Michel, Normandy, 17
Moody, F. W., the late, 87
Mouly, the late J. J. F., Sculptor, 287
Norwich Art Circle, 29
Old Wall Painting, 231
Ordish, the late R. M., 159
Paintings of Lebrun, 175
Palace of Atrides, 159
Paris Exhibition Tower, 189, 205
Penrose, Mr. F. C., 331
Pictures of Mr. Watts, R.A., 303
Preparing Plans, 271
Prix de Rome Competition, 71
Prizes at the Beaux-Arts, 257
Purchase of Richmond Hill, 189
Quai d'Orsay, Paris, 117
Quarry Disaster at Crarae, 189
Raphael's Pictures, More, 245
Ravenscourt Park, Hammersmith, 231
Refusal to Exhibit Competition Designs, 231
Remarkable Arbitration Case, 103
Richmond Hill, 131
Roman Theatre at Orange, 117
Royal Archæological Institute at Chester, 87
——— Commission, Work in Ireland, 231
——— Dublin Society, 231

The Week—*continued.*
Sanitation in Edinburgh, 245
Saxon Church, Bradford-on-Avon, 147
Schliemann, Dr., and Mr. Penrose, 17
Sculpture for St. George's Hall, Liverpool, 71
Silicon in Cast Iron, 147
Sistine Madonna, Copy of, 345
Soane, Sir John, 319

The Week—*continued.*
Society of Antiquaries and Ancient Monuments, 29
South Kensington Exhibition, 287
St. George's Hall Sculpture, 189
Staple Inn, Holborn, 287
State Art Purchases in France, 17
Statistics of Wages for Sixty Years, 217
Statue of Etienne Marcel, 371
——— Hector Berlioz, 189

The Week—*continued.*
Supervising Architect, 87, 287, 331
Supervision of Contractors, 131
Surveyors and the Birmingham Assize Courts, 257
Tay Viaduct, 159
Technical Education in Dublin, 43
Thirtle, John, 29
Tuileries Gardens, 303
Vaud Cathedral Porch, 303

The Week—*continued.*
Venice Exhibition, 217
Victoria Hotel, Manchester, 71
Wailly, the late Natalis, 331
Watt Memorial, Glasgow, 371
Watts Collection, 217
Webster, R.A., the late Thomas, 189
Westminster Hall, 117
Workmen's Houses, Competition, Edinburgh, 57

INDEX OF ILLUSTRATIONS.

*** The Lithographed Illustrations will be found opposite to the pages quoted.

Baldwin, Mrs., 79
Barometer and Thermometer in Boxwood, 139
Beckenham, Public Hall, 225
Belfast, Crescent Church, 183
Birmingham Assize Courts, Design for, 95, 125, 377
Blue Boy, 251
Boulogne, Cathedral of Notre Dame, 111
Bournemouth, Residence, 183
Bramley, Snowdenham, Hall, 325
Brentwood, Thought Cot, 365
Brighton, Premises, North Street, 339
——— St. John's Home for Children, 339
Bucklersbury, Offices, 167
Clacton-on-Sea, Prospect Tower, 279
Colchester, Design for Three Cups Hotel, 239
Commerce and Navigation, 225
Constitutional Club, Northumberland Avenue, 211
Cordes, Portrait of Jean Charles, 95
Decorative Panel, 311
Derby, Grand Theatre, 365
Diderot and His Friends, 211
Dining Hall, Middle Temple, 265
Drawing-room, Hamstead, Staffordshire, 139
Duroc, Maréchal, 37
Edenbridge, House, Crockham Hill, 153
Feltham, Proposed House, 377
Fitzherbert, Mrs., 9
Harrogate, Doctor's Residence, 365
Ingestre Hall, Staffordshire, 23, 37
Janissary, 23
Japanese Leather Paper, Seville Pattern, 139
Ledbury, Additions to The Park, 153
Leeds, Wesleyan Chapel and Schools, Design for, 239
Libyan Sibyl, 111
Lincoln Cathedral, South-west Tower, 279
Liverpool, Gordon Memorial Institute, 377
——— House, Sefton Park, 167
Llandovery, Memorial Chapel, 183
Long Ditton, Model Cottages, 377
Manchester, Victoria Hotel, Basement Smoke Room, 311
Micklefield Vicarage, Yorks, 183
Moulins, Old Château, 153
Norwich, View in the Environs, 167
Pallas, Juno, and Venus, 325
Paris, Cathedral of Notre Dame, 125
Shortlands, Kent, House, 365
Somerset, Montacute House, 365
Staple Inn, Holborn, 325
Studies from Life, 197
Summer, 183
Sunningdale, Beauvale House, 339
Travellers from Cashmere in Delhi, 279
Trieste, Frescoes from St. Spiridion, 239 265, 295
Venice, Portal of the Doge's Palace, 51
Wedding Presents, 65
West Hartlepool, Church, Schools, and Presbytery, 377
Worplesdon, Surrey, The Firs, 295

ARCHITECTURAL ILLUSTRATION SOCIETY.

Amiens, Stalls, 353
Ascanio, Bell Turret, 295
Bickley, Kent, House at, 37
Bournemouth, S.E. View of St. Michael's Church, 111
Caen, Abbaye-aux-Dames, West Door, 311
Cairo, Interior of Tomb of Sultan Baroouk, 23
——— Mosque of Sultan Hassan, Interior, 353
——— Porch, 265
——— Tomb of a Memlook King, 23
Casket, 125
Château Langeais, 353
Clymping Church, Surrey, Norman Doorway, 9
Country House, Design for, 251
Court Hayes, Oxted, 79
Cromer, Part of House at, 279
Dawpool, Cheshire, Screen in Picture Gallery, 353
Gordon Square Church, West Elevation, 139
Holcombe Wood, Kent, Garden View, 225
Karnac, Thebes, Great Hall of Columns 51
——— Central Avenue, 251
Lamps from St. Mark's, Venice, 9
Leaves from a Sketch Book, 353
Leicester, Knighton Spinneys, 167
Leverington Church Font, 197
Library for a Small Town, Design for, 51
London, Prince's Gate, Screens in Drawing-rooms, 353
Lucca, S. Giovanni, Doorway, 311
Pain's Hill, Surrey, Mansion, 9
Perugia, Chalices from the Museum, 225
——— Palazzo Municipale, 65
Pistoja, Campanile, 295
Public Buildings, Study for Central Block, 79
Saighton Grange, before Restoration, 211
Siena, Cathedral, 339
——— Gateway, Palazzo Tolomei, 197
——— Tower, S. Maria del Carmine, 197
South Marston Church, Interior as Restored, 325
Stowel Park, Gloucester, 153
Town Church, Design for, 95
Trinket Tray, 125
Venice, Campanile, Santa Fosca, 65
——— Doge's Tomb, SS. Giovanni e Paolo, 37
——— Font in the Frari Church, 353
Viterbo, Fountain, 51
Walsoken Church Font, 197
Ycolgrave Church, Interior of, 65

ARCHITECTS AND ARTISTS.

Angelo, Michael, 111
Ardron, Mr. Arthur, 153
Barratt, Mr. Reginald, 9, 37, 65, 197, 353
Belcher, Mr. John, 139, 153, 225, 239, 325
Birch, Mr. John, 23, 37
Beurdeley, M. Alfred, 139
Bourgeois, M. Urbain, 197
Bown, Messrs. H. E. & A., 365
Briggs, Mr. R. A., 239
Cattaneo, Signor Barzaghi, 239, 265, 295
Chorley & Connon, Messrs., 183
Clayton & Black, Messrs., 339
Cooper, Mr. G. Warren, 365
Crofts, Mr. James N., 167
Crome, J., 167
Crowther, Mr. John, 251
Dawes, Mr. William, 311
Debaines, M. A. Brunet, 153
Didier, M., 111
Doubleday, Mr. William, 95
Downing, Mr. H. P. Burke, 377
Dunn & Hansom, Messrs., 377
Edis, Mr. R. W., 211
Ehrmann, M. François, 225
Essex, Mr. Oliver, 365
Fabres, M. Antonio, 23
Faivre, M. Tony, 311
Farebrother, Mr. E. W., 125
Farrow, Mr. F. R., 377
Fitzroy, Mr. C. D., 251
Gainsborough, Thomas, 251
Gautier, M. Lucien, 125
Goddard & Paget, Messrs., 167
Gonzales, M., 65
Hardy, Mr. E. G., 51, 65, 295
Hayward, Mr. C. J., 295
Hodkinson, Mr. Edward, 211
Horsfield, Mr. J. Nixon, 377
Horsley, Mr. Gerald, 225, 311, 339, 353
Johnston, Mr. P. M., 9, 325
Jones, Mr. R. J. Cornewall, 111
Keen, Mr. Arthur, 365
Lalauze, M. A., 65
Lancret, Nicolas, 183
Lethaby, Mr. W. R., 353
Lewis, Mr. W. G. B., 125
Litoux, M. J. R. P., 51
Macartney, Mr. Mervyn, 79
Martin, Messrs. H. & E., 365
May, Mr. E. J., 279
Meissonier, M., 37, 211
Mongin, M. A., 211
Moore, Mr. J. H., 183
Nevill, Mr. Ralph, 325
Newton, Mr. Ernest, 37
Nichols, Messrs. G. B. & Son, 125
Osborne, Mr. John P., 139
Ough, Mr. Henry, 279
Phillips, Mr. J. H., 183
Rajon, M. Paul, 79
Ramus, M. E., 23
Reynolds, Sir Joshua, 79
Romney, G., 9
Rubens, P. P., 95
Schultz, Mr. R. W., 95
Shaw, Mr. R. Norman, 9, 65, 111, 353
Spiers, Mr. R. Phené, 23, 51, 79, 251, 265, 353
Stirling, Mr. W., 51
Vigers, Mr. George, 225, 339
Walker, Mr. David, 377
Waltner, M. C. H., 9, 95
Warren, Mr. E. R., 325
Waterhouse, Mr. Alfred, 353
Watts, Mr. G. F., 325
Weeks, Mr. E. L., 279
Wells, Mr. C. S., 339
Wilson, Mr. A. Needham, 197
——— Mr. J. B., 183
——— Mr. T. Butler, 239
Worley, Mr. R. J., 167
Young, Mr. E. M., 279

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, JULY 2, 1886.

Terms, Post Free.
SIX MONTHS, 10/-.
TWELVE MONTHS, 20/-.

Price Fourpence.
EVERY FRIDAY.

SPECIAL NOTICE.

On receipt of this Memorandum, signed, **THE ARCHITECT AND CONTRACT REPORTER** will be forwarded regularly.

..... 188

To Messrs. GILBERT WOOD & CO., Proprietors of

The Architect and Contract Reporter,

175 STRAND, LONDON, W.C.

Please forward a Copy of THE ARCHITECT AND CONTRACT REPORTER weekly to

NAME.

ADDRESS.

L'ART,

Price Two Shillings, can be ordered from all newsagents, and at any railway bookstall; or through the publishers for Great Britain, Messrs. GILBERT WOOD & Co., 175 Strand, W.C.

The scale of charges for Advertisements is as follows, and Advertisements intended for insertion in the following Number must reach the Office not later than the 24th or 8th of the month:—

ADVERTISEMENT SCALE.

	£	s	d
For Two Lines and under (nine words to the line)	0	5	0
For every additional Line	0	1	6
Per Quarter Page	6	0	0
Per Half Page	11	0	0
For a Page	21	0	0
For 1 inch deep by 2½ wide	0	15	0

Special arrangements may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 Strand, London, W.C.

NOTICE.

We have appointed Mr. JOHN BERGER, *of New York, our agent for the United States and British North America, for receipt of Advertisements and Subscriptions to* THE ARCHITECT AND CONTRACT REPORTER.

CONTRACTS OPEN.

ACCRINGTON.—July 2.—For Building Fifteen Terraced Houses. Mr. E. Knowles, Architect, Post Office Chambers, Accrington.

APPERLEY BRIDGE.—July 13.—For Building Primitive Methodist Sunday Schools, &c. Mr. Jowett Kendall, Architect, Idle, near Bradford.

APPLETHWAITE.—July 10.—For Building Chapel for the Burial Board. Mr. Robert Walker, Architect, Windermere.

BALLYNAFEIGH.—For Building Hall. Mr. W. Batt, Architect, Garfield Chambers, Royal Avenue, Belfast.

BASINGSTOKE.—July 5.—For Building Board Schools for 1,300 children. Mr. C. Bell, Architect, Dashwood House, 9 New Broad Street, E.C.

BATH.—July 8.—For Repairs to Premises. Messrs. Browne & Gill, Architects, 1 Fountain Buildings, Bath.

BAWDSEY.—July 2.—For Building Wesleyan Chapel. Mr. W. Eade, Architect, Post Office Chambers, Ipswich.

BELFAST.—For Building Stables, Clifton Street. Mr. S. M. Cooper, Templemore Park, Belfast.

BIRSTALL.—July 5.—For Nine Cottages, Mill Shed, and Boiler House. Mr. Michael Sheard, Architect, Batley.

BRADFORD.—July 6.—For Supply of Cast-iron Pipes (3,100 tons). Mr. A. R. Binnie, Waterworks Engineer, Town Hall, Bradford.

BRADFORD.—July 8.—For Rebuilding Small Warehouse. Mr. E. P. Peterson, Architect, New Inn Buildings, Bradford.

BURNLEY.—July 26.—For Co-operative Premises and Five Houses. Mr. T. Dean, Architect, 21 Nicholas Street.

BURY.—July 20.—For Building Caretaker's Lodge at Recreation Ground. Mr. J. Cartwright, Borough Engineer, Bank Street, Bury.

CARDIFF.—July 6.—For Building Cattle Sheds, &c., Roath. Mr. J. L. Wheatley, Town Clerk.

CARDIFF.—July 12.—For Building Business Premises, St. Mary Street. Mr. S. Rooney, Architect, 16 Crockherbtown, Cardiff.

CHRISTCHURCH.—July 8.—For Restoring Two Windows of Belfry of Priory Church. Mr. E. Bruton, Architect, Bournemouth.

DARLINGTON.—July 3.—For Additions to Farm-house. Mr. Neil Macara, Architect, Darlington.

DEWSBURY.—July 8.—For Rebuilding Church. Messrs. W. & D. Thornton, Architects, Oates Street, Dewsbury.

DEWSBURY.—July 27.—For Building Town Hall, Municipal Offices, Police Court, Cells, &c. Mr. H. Holton, Architect, Dewsbury.

DUBLIN.—July 5.—For Building Labourers' Cottages. Mr. R. W. Walsh, C.E., 7 Lower Ormond Quay, Dublin.

DUBLIN.—For Alterations to Store Buildings, New Offices, &c., North Wall. Mr. P. F. Comber, C.E., 37 College Green, Dublin.

DYCE.—July 9.—For Building Dwelling-house, Farburn. Messrs. Chalmers, 13 Union Terrace, Aberdeen.

EASTBOURNE.—July 15.—For Electric Lighting and Gas-fittings. Mr. W. T. Foulkes, Architect, 100 Colmore Row, Birmingham.

EDINBURGH.—July 7.—For Building Board School. Mr. R. Wilson, Architect, 2 Queen Street, Edinburgh.

GLOUCESTER.—July 3.—For Erection of New Buildings at Barnwood House. Messrs. Waller, Son & Wood, Architects, 17 College Green, Gloucester.

GLOUCESTER.—July 10.—For Erection of Workshops to Cover 5,200 yards super. Messrs. Medland & Son, Architects, 15 Clarence Street, Gloucester.

GREAT YARMOUTH.—July 10.—For Building Three Houses, Southtown. Mr. S. Rivett, Architect, Hall Quay, Great Yarmouth.

HARBURY.—July 8.—For Alterations to Inn. Mr. A. Fawcett, Architect, Old Town Hall, Wakefield.

HEREFORD.—July 28.—For Restoration of Wellington Church. Messrs. Nicholson & Son, Architects, Hereford.

HERTFORD.—July 5.—For Erection of Station. Mr. J. Hadfield, Secretary, Liverpool Street Station, London, E.C.

HINDLEY.—July 6.—For Building Station. The Engineer, Hunt's Bank, Manchester.

HUNSLET.—July 2.—For Building Three Houses and Shops. Messrs. Towse & Son, Architects, Dewsbury Road, Leeds.

HUNTLEY.—July 15.—For Rebuilding Stewart's Hall. Messrs. Matthews & Mackenzie, Architects, 255 Union Street, Aberdeen.

KINGSAND.—For Reseating and Renovating Chapel. Mr. S. P. Hosking, Architect, Landrake, St. Germans.

LANGLEY PARK.—July 9.—For Building Church. Rev. C. F. D. Hodge, Esh Vicarage, Durham.

LICHFIELD.—July 3.—For Repair of Alrewas Church Tower. Mr. Basil Champneys, Architect, 19 Buckingham Street, Strand, London.

LLANWDDYN.—July 2.—For Building Church and Vicarage. Mr. F. U. Holme, Architect, 8 Westminster Chambers, Crosshall Street, Liverpool.

LLWYNYPIA.—July 12.—For Chancel, Vestry, Organ Chamber, and Boundary Walls to Church. Mr. E. M. B. Vaughan, Architect, Cardiff.

LONDON.—July 9.—For Building Board Schools and Enlarging Schools. The Architect's Department, School Board Offices, Victoria Embankment, W.C.

LONDON.—July 22.—For Brick Sewer and Subway from St. Martin's Lane to Tottenham Court Road. The Engineer, Metropolitan Board of Works, Spring Gardens, S.W.

MABLETHORPE.—July 10.—For Schoolroom and Offices at Parochial School, and Addition to Master's House. Mr. Wilson, Solicitor, Westgate, Louth.

MEDOMSLEY.—July 10.—For Building National School. Messrs. J. Smith & Son, Architects, Rose Cottage, Shotley Bridge.

MIDDLESBROUGH.—July 10.—For Additional Fittings, Police Court, New Public Buildings. Mr. G. G. Hoskins, Architect, Darlington.

MYTHOLMROYD.—July 8.—For Building Schoolmaster's House and Appurtenances. Mr. John Sutcliffe, Architect, Roomfield Buildings, Todmorden.

NORTHOWRAM.—July 7.—For Building Malt Stores. Mr. Herbert Hodgson, Architect, 68 High Street, Queensbury.

OLDHAM.—July 14.—For Enlargement of Public Baths. Mr. L. Booth, Architect, 28 Faulkner Street, Manchester.

PENZANCE.—July 21.—For Building Ward, Medical Officers' Department, Dispensary, &c., West Cornwall Infirmary. Mr. Oliver Caldwell, Architect, Victoria Square, Penzance.

PENZANCE.—July 6.—For Public Baths. Mr. Oliver Caldwell, Architect, Victoria Square, Penzance.

PLYMOUTH.—July 3.—For Farm Buildings. Messrs. Andrew & Son, 5 Courtenay Street.

RIPPONDEN.—July 7.—For Building School. Mr. J. Crawshaw, Architect, Ripponden.

SALFORD.—July 8.—For Building Dwelling-house, Committee-room, Registrar's Office, and Enclosure Wall with Ornamental Entrance Gate at Cemetery, Weaste. The Borough Engineer, Town Hall, Salford.

SOUTHAMPTON.—July 13.—For Erection of Brick-built Offices, Town Quay. Mr. J. G. Poole, Surveyor to the Harbour Board, 9 St. Michael's Square, Southampton.

STREATHAM.—July 6.—For Postal Sorting Office. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

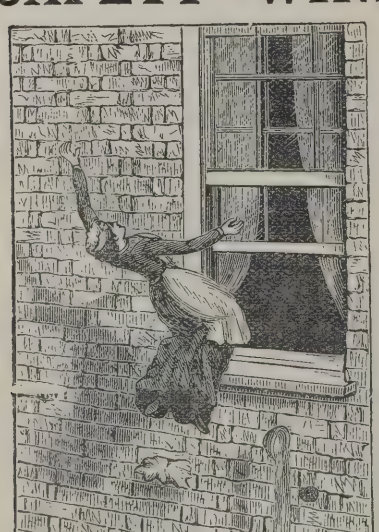
SUNDERLAND.—July 3.—For Building Wesleyan Chapel, Lecture-hall, &c. Mr. R. Carwen, Architect, Palmerston Buildings, Old Broad Street, E.C.

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES



FOR

INEXPENSIVE & PERPETUAL CLEANLINESS

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

2 Gold, 4 Silver, and 4 Bronze Medals, and 16 Diplomas of Merit.

The fearful sacrifice yearly of Life and Limb of persons in cleaning windows through sitting or standing outside whilst so engaged is most appalling. This can now be entirely prevented. The Patentee, having given this subject the most exhaustive study, is now prepared to supply his patent fittings suitable both for old and new windows at prices to meet the means of all. These improvements are protected by several patents, by each of which the outside of each sash can be reversed for cleaning, and under this new system that duty is rendered a pleasure, whilst the danger, risk, and tremendous responsibility of moral and statute law is removed.

These patent fittings can be procured from 5*s.* for each sash and all builders have the right conferred upon them to fit the same in the purchase thereof, and that all shall have the benefit of this national boon, special Agencies are being established throughout the United Kingdom. None but practical and responsible firms are appointed. Such firms are invited to apply for unrepresented districts at once, as it is desirable to complete the list as soon as possible.

The present representatives are:—



Barnstaple	Hancock, Pilton Street.
Belfast and 10 miles round	W. J. Watson, Royal Avenue, Belfast.
Bournemouth and 10 miles round	H. W. Jenkins & Son, Builders.
Brighton and 8 miles round	Cheesman & Co., Kensington Street.
Bristol and 20 miles round, and Gloucestershire, Somerset, Dorset, Wilts, Mon., Glamorganshire	Brook & Bruce, Albert Road, St. Phillip's.
Dublin and 20 miles round	J. & W. Beckett, 28 South King Street.
Dundee and 30 miles round	Stewart Robertson, 34 Bank Street.
Edinburgh	
Exeter and 20 miles round	W. R. Commings, 45 Longbrook Street.
Glasgow and 30 miles round	Baird, Thompson & Co., 24 Bath Street.
Gloucester and Cheltenham	The Sanitary and Economic Association.
Hastings	Taylor Bros., Builders.
Hereford and 5 miles round	C. Lawrence, 41 Portland Street.
Ilfracombe	W. Jones, 4 Osborne Road.
Leeds and 5 miles round	John Wm. Lewes, 65 Albion Street.
Liverpool	Evan Griffiths & George Finning, Sefton Works, Miles Street.
Ludlow and Leominster	J. Grosvenor, Ludlow.
Newton Abbott and 10 miles round	Parker Bros., Courtnay Street.
Nottingham and 15 miles round	Henry Vickers, Welford Road.
Reading and 5 miles round	
Southampton and 7 miles round	Driver & Co., St. Mary Saw Mills, Southampton.
Sunderland and 10 miles round	
Torquay and 5 miles round	C. W. Watson, Union Street.

THORNES.—July 6.—For Building Co-operative Premises. Mr. J. Vaughan, Gaskell Villas, Thornes, Wakefield.

TUBERCURRY.—July 12.—For Building Medical Officer's Residence. Mr. W. J. Byrne, 20 Suffolk Street, Dublin.

WALHAM GREEN.—For Building Six Houses and Stable. Mr. W. Connock, 101 Berwick Street, Oxford Street, W.

WESTON-SUPER-MARE.—July 6.—For Shelter Kiosk, Glentworth Bay. Mr. J. T. Scoones, C.E., 8 Unity Street, College Green, Bristol.

WHITCHURCH.—July 7.—For Building Small House. Mr. J. Hillary, Architect, Longparish, Hants.

YEADON.—July 13.—For Rebuilding Crompton Shed. Mr. Jowett Kendall, Architect, Idle, Bradford.

YORK.—July 3.—For Building Soldiers' Home. Mr. E. Taylor, Architect, 7 Stonegate, York.

TENDERS.

ACCRINGTON.

For Building Warehouse, Accrington. Mr. JASPER I. HELM, Architect, 2 Willow Street, Accrington.

W. Ramsbottom & Son	£218 0 0
Hiram Waddington	189 0 0
James Waddington	184 10 0
GEORGE CUNLIFFE & SON (*accepted*)	170 0 0

BANGOR.

For Erection of Stable and Coachhouse at Castle House, Bangor, N. Wales, for Mr. J. Fairclough. Mr. ROBERT GRIERSON, Architect.

R. & J. Williams	£280 0 0
Wm. Parry	274 0 0
Wm. Thomas	274 10 0
EVAN WILLIAMS (*accepted*)	270 0 0

CHESTER-LE-STREET.

For Alterations and Additions to The Hermitage, near Chester-le-Street. Mr. H. T. GRADON, Architect, Durham.

John Jopling, Chester-le-Street	£925 9 0
Thompson & Punshon, Chester-le-Street	881 13 1
George Gradon & Son, Durham	799 9 0

BOURNEMOUTH.

For Additions to the Royal Exeter Hotel, Bournemouth. Mr. H. E. HAWKER, M.S.A., Architect, Town Hall Chambers, Bournemouth.

McWilliam & Son	£4,460 0 0
F. Walden	4,343 0 0
Jenkins & Son	4,036 0 0
F. Hoare & Son	3,930 0 0
GEORGE & HARDING (*accepted*)	3,840 0 0

CANNOCK.

For Extension of the Male Ward at the Workhouse, Cannock. Mr. J. R. VEALL, Architect, Wolverhampton. Quantities by the Architect.

Hughes & Co., Churchbridge, Cannock	£850 0 0
G. & F. Higham, Wolverhampton	820 0 0
H. Lovatt, Wolverhampton	740 0 0
Bradford & Limford, Cannock	725 0 0
Horsman & Co., Wolverhampton	710 0 0
J. Gilbert, Penkridge	691 0 0
Jones & Son, Sedgley	690 0 0
S. Wootton, Bloxwich	681 0 0
T. Mason, Hednesford	659 0 0
J. Greensill, Great Wyrley	638 0 0
Anderson, Cannock	623 0 0
J. Guest, Brettle Lane	610 0 0
J. REYNOLDS, Cannock (*accepted*)	565 0 0

CAVAN.

For Water Supply from Beaghy Lake for Cavan.

R. Simpson, Dublin	£3,233 9 7
J. Cunningham, Dublin	3,100 0 0
J. McLarnon, Belfast	2,707 7 0
Cast-iron Pipes.	
M. Lough & Son, Cavan	1,571 11 0
R. Maclaren & Co., Glasgow	1,287 16 5

Per Schedule.
Watson, Gow & Co., Glasgow.
T. Spittle, Newport, Mon.
Macfarlane, Strong & Co., Glasgow.
T. Allan & Sons.

CHESTERTON.

For Road Improvement Works, Chesterton.

UNWIN, Chesterton (*accepted*)	£353 10 0

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.
Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.
Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS AND MANUFACTURERS,

14 ELM STREET, GRAY'S INN ROAD,

LONDON, W.C.

Designers and Manufacturers

of all kinds of ART WORK

for Ecclesiastic and Domestic Purposes,

in Silver, Copper, Brass, and Iron.

SPECIALITE:

DOOR FURNITURE AND LOCKS.

Write for Illustrated Catalogue.

COCKERMOUTH.

For Building School, Flimby Lodge, for the Cockermouth Guardians.

Grey, Mason & Co.	£1,273 0 0
W. Latimer	1,150 0 0
Accepted Tenders.	
G. F. Cook, Workington, mason	380 0 0
J. Fletcher, Workington, joiner	306 0 0
T. Mandle, slater	120 0 0
J. Waller, Cockermouth, plasterer	119 0 0
T. Mandle, Maryport, plumber	95 0 0
W. Langley, Maryport, painter and glazier	48 10 0

COLCHESTER.

For Street Improvement Works, Colchester.

H. Everett, Colchester	£675 0 0
G. DOBSON, Colchester (*accepted*)	638 0 0

COVENTRY.

For Additions to Board Schools, Spon Street, Coventry. Messrs. G. & J. STEANE, Architects, Coventry.

Hallam & Co.	£1,850 10 0
R. Wootton	1,582 10 0
C. Haywood, jun.	1,560 0 0
C. G. Hill	1,550 0 0
W. Blakeman & Sons	1,510 0 0
Edward Smith & Sons, Kenilworth	1,466 0 0
Architect's estimate	1,450 0 0

CROYDON.

For Finishing Premises, George Street, Croydon, for Mr. W. J. Bacon. Mr. JAMES WEBSTER, A.R.I.B.A., Architect, 27 Doughty Street, W.C.

Maides & Harper	£673 0 0
F. R. DOCKING (*accepted*)	515 0 0

DARTFORD.

For Works to St. Albans Road, Dartford.

J. W. Watkin	£1,181 16 6
C. Orchard	1,075 0 0
J. Ossenten	1,036 0 0
W. Manners	925 0 0
J. H. Etheridge	907 0 0
H. Knight	886 10 0
E. J. Shackleton	885 0 0
Lonergan	850 0 0
J. Hindle	830 0 0

DONCASTER.

For Building Shop, Cottages, Stabling, &c., at Hexthorpe, for the Doncaster Mutual Co-operative and Industrial Society. Messrs. PARRY & WALKER, Architects, Priory Place, Doncaster. Quantities by the Architects.

J. Barker	£3,356 7 0
Athron & Gill	3,212 0 0
R. Snell	3,147 0 0
C. Sprakes	2,735 9 0
S. Beastall	2,684 0 0
B. Wortley	2,579 10 2
ARNOLD & SON (*accepted*)	2,340 0 0

EDINBURGH.

For Construction of Playgrounds for the Edinburgh School Board.

Cowgate.	
D. Bowden	£406 13 1
Dickson's Close.	
D. Bowden	177 7 1
Guthrie Street Court.	
D. Bowden	76 9 6
Chessel's Court.	
D. Bowden	63 12 9

FOLKESTONE.

For Building Public Library and Museum, Folkestone.
ROBERT WEBSTER (*accepted*).

GLASGOW.

For Constructing Craigmaddie Reservoir, Glasgow.
R. CARLISLE & Co., Belfast (*accepted*) £104,552 0 0
The next lowest Tender amounted to £134,000.

GREENWICH.

For Paving Works, Greenwich.

Upcot Street.	
E. Bentley	£530 0 0
Blockhouse Street.	
E. Bentley	533 0 0
Homshay Street.	
G. G. Rutty	—
Hunsden Road.	
E. Bentley	115 0 0

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

ACCIDENT ASSURANCE TRANSACTED BY THE ATLAS FIRE AND LIFE OFFICE. Established 1808. West End Office, 32 COCKSPUR STREET.
Head Office, CHEAPSIDE. Secretary, SAML. J. PIPKIN.

CONTRACTS.
THE LONDON GUARANTEE & ACCIDENT COMPANY issue Bonds, security on behalf of a Contractor or Builder for the due performance of Government, Municipal, or other Contracts of every description, at moderate rates. On application, leave will be given to send in the Company's name as surety with any Tender, no charge being made unless the bond is ultimately required. For terms, &c., apply to the Office, 10 Moorgate Street, London, E.C.
The Bonds of this Company are accepted by the several Government Departments.

JOHN BRINSMEAD & SONS' PIANO.
Entirely New Construction throughout.
Highest awards at principal Exhibitions.
For Sale, for Hire, and on the Three Years' System.
JOHN BRINSMEAD & SONS, 18, 20, and 22 Wigmore Street, London, W. Illustrated Lists and Descriptions post free.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.

WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.

Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

GRUNDY'S PATENT WARM-AIR VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
'DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

LEICESTER.

For Improvement Works, Clark Street. Messrs. REDFERN & SAWDAY, Surveyors, Leicester.

Innes & Wood, Birmingham	£521 16 6
J. Smith, Belgrave	467 11 6
Hutchinson & Son, Leicester	463 14 0
J. D. Gibbins, Leicester	444 8 6
W. CORDON, Burton Joyce (*accepted*)	368 5 6

LOCHGELLY.

For Building Bakery for the Lochgelly Co-operative Society. Messrs. W. LITTLE & SON, Architects, 14 Cowan Street, Kirkcaldy.

J. Paton, Lochgelly, mason	£894 7 6
J. Simpson, Ladybank, joiner	298 18 0
W. Binning, Lochgelly, plumber	69 7 6
H. Rennie, Dunfermline, plasterer	51 0 0
T. Steel & Son, Dunfermline, slater	47 13 0

LONDON.

For Painting Exterior of Workhouse, Poplar.

McCormack	£1,379 0 0
Taylor	1,309 0 0
Beale	1,145 0 0
Palmer	1,090 0 0
Hack	996 0 0
Vigor	996 0 0
Green	995 0 0
Linen	940 0 0
Johnson	887 0 0
McCarthy	886 0 0
Coleman	870 0 0
Cox	859 0 0
Dame	845 0 0
Harris & Wardrop	835 0 0
Walker	830 0 0
Derby	796 0 0
CARNOW (*accepted*)	773 0 0

YOU will really enjoy yourself if you smoke the excellent cigars supplied direct to consumers, at wholesale prices, by HELMCKE & Co., 32 Great St. Helen's, London, E.C. Write for price list. Sample collections sent on receipt of 10*s.* 6*d.* or 21*s.*

LONDON—*continued.*

For Rebuilding No. 128A, Holborn, E.C., for Mr. A. W. Gamage. Mr. JAMES WEBSTER, A.R.I.B.A., 27 Doughty Street, W.C.

	Main Structure.	Shop Front, &c.	Total.
W. & H. Salmon	—	—	£1,619
J. M. Macey & Sons	£1,220	£363	1,583
Brown & Harris	—	—	1,567
T. L. Green	1,278	235	1,513
Gould & Brand	1,215	198	1,413
H. L. Holloway	1,127	120	1,247
Puzey & Lumley	974	246	1,220

For Construction of Sewer in Albert Street and Alfred Square, Lambeth.

Staneon	£1,190 0 0
Littles	1,127 0 0
Marshall	950 0 0
Ford & Co.	875 0 0
Bottoms	870 0 0
Mayo	710 0 0
H. TURNER (*accepted*)	686 10 0

For Pulling Down and Rebuilding No. 78 Cornhill, E.C., for the North China Insurance Company, Limited. Mr. WILLIAM KIDNER, Architect. Mr. James Barnet, Surveyor.

Brass	£7,370 0 0
Clarke & Bracey	7,329 0 0
Mowlem	7,061 0 0
Colls & Sons	6,990 0 0
Shaw	6,966 0 0
Higgs & Hill	6,940 0 0
Conder	6,666 0 0
Grover	6,344 0 0

For Alterations and Additions to No. 5 The Grove, Clapham, for Mr. R. A. Rooney. Mr. J. YOUNG, Architect. Messrs. Harding, Bond & Buzzard, Surveyors.

Brass	£1,910 0 0
Lawrance	1,800 0 0
Greenwood	1,744 0 0
McLachlan & Sons	1,716 0 0
Conder	1,598 0 0
Garrett & Son	1,500 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17½ 6*d.* & 25*s.* per ream. SPRAGUE'S TABLES, upon application.

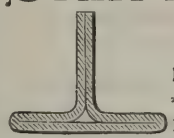
PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Desins.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

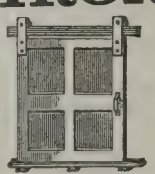
STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

WHITLAND ABBEY GREEN SLATE QUARRIES.
REDUCTION IN PRICE.
THESE Stout, Durable SLATES, which are so much sought after by Architects for Mansions, Churches, Chapels, and other Public Buildings on account of the permanency of their beautiful colour, are now offered by the Proprietor, Mr. MUSCOTT (whose name is so well known in connection with these Green Slates for the last twenty years), at a reduction of Twenty per Cent.—For Testimonials, Samples, Price Lists, &c., apply to the old address, as under.
Mr. MUSCOTT, Whitland Abbey Green Slate Quarries, Clynderwen R. S. O., South Wales.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

LONDON—*continued.*

For Painting, &c., at Schools, for the London School Board.

Gloucester Grove.

G. James	£404 11 0
W. Dudley	334 10 0
C. F. Kearley	276 0 0
E. P. Palmer	261 0 0
T. Bendon	257 4 6
M. McCarthy	216 0 0
W. Oldrey	196 0 0
W. Burgess	176 10 0

Everington Street.

Dicksee & Dicksee	530 0 0
J. B. Fox	493 0 0
J. J. White	470 0 0
Giles & McKenzie	469 0 0
C. F. Kearley	393 0 0
W. H. Smith	313 10 0
W. Oldrey	306 0 0
T. Bendon	289 7 6
M. McCarthy	261 0 0
W. Burgess	196 0 0

Whittington School.

M. & E. Pugh	445 5 6
G. S. S. Williams	251 0 0
Kirby & Chase	246 0 0
Knight & Walden	233 0 0

Monson Road.

Johnson & Co.	324 0 0
Peppercorn Bros.	283 9 8
H. L. Holloway	268 0 0

Mansford Street.

North Bros.	530 0 0
Pritchard & Son	496 0 0
Staines & Son	488 0 0
T. Taylor	470 0 0
J. F. Sargeant	442 0 0
G. Flaxman	387 0 0
C. V. Howard	376 0 0
Vigor & Co.	374 0 0
C. Willmott	338 10 0

Goodson Road.

H. L. Holloway	323 0 0
Knight & Walden	310 0 0

Oldfield Road.

Pritchard & Son	£486 0 0
T. Taylor	452 0 0
G. Flaxman	397 0 0
Knight & Walden	380 0 0
C. Willmott	353 0 0

Farrance Street.

North Bros.	496 0 0
Harrison & Co.	441 0 0
Tait & Co.	425 0 0
A. W. Derby	320 0 0
Vigor & Co.	316 0 0

Burrage Grove.

W. Davis	119 15 0
W. Holding	116 5 0
F. Johnson	83 0 0
G. Pitchford	64 0 0

Lamb Lane.

G. Flaxman	64 10 0
W. Shurmur	62 0 0
C. Willmott	60 10 0
J. F. Sargeant	55 10 0

Oldridge Road.

W. Walkley	117 14 0
Richens & Mount	97 0 0
C. Horton	88 0 0
W. Johnson	86 0 0
D. S. Rice	74 0 0

Tooting Graveney.

W. Molyneux	131 2 0
Richens & Mount	129 0 0
W. Walkley	126 4 0
C. Horton	93 0 0
W. Johnson	88 0 0

Lant Street.

R. Shepheard	135 19 0
J. D. Hobson	123 0 0
W. H. Castle	109 0 0
Johnson & Co.	109 0 0
W. Hornett	89 0 0
Davis Bros.	87 0 0
B. E. Nightingale	84 0 0

LONDON—*continued.*

Hague Street.

North Bros.	£471 0 0
Pritchard & Son	403 0 0
Vigor & Co.	345 0 0
G. Flaxman	331 0 0
J. F. Sargeant	326 12 0
C. V. Howard	318 0 0
C. Willmott	296 0 0

Crampton Street.

E. C. Howell	622 0 0
J. Chappell	595 0 0
Wood, Harris & Co.	467 0 0
Knight & Walden	463 0 0
Vigor & Co.	433 10 0

King and Queen Street.

E. C. Howell & Son	650 0 0
W. Johnson	464 0 0
Knight & Walden	388 0 0
Vigor & Co.	375 0 0

Credon Road.

Knight & Walden	459 0 0
Vigor & Co.	438 10 0
H. L. Holloway	433 0 0

Cator Street.

D. McNeil	728 0 0
E. C. Howell	650 0 0
C. A. Mackrell	464 0 0
W. Johnson	448 0 0
G. Parker	445 0 0
Knight & Walden	402 0 0
H. L. Holloway	366 0 0

Mina Road.

E. C. Howell	560 0 0
Knight & Walden	486 0 0
C. A. Mackrell	399 0 0
H. L. Holloway	335 0 0

Raywood Street.

C. F. Kearley	432 0 0
W. Johnson	429 0 0
Lapthorne & Co.	399 0 0
Knight & Walden	368 0 0
M. McCarthy	281 0 0

East Lane.

H. Williams	£430 0 0
Johnson & Co.	339 0 0
Knight & Walden	305 0 0
H. L. Holloway	261 0 0

Upper North Street.

Harrison & Co.	371 0 0
North Bros.	348 10 0
Vigor & Co.	276 10 0
A. W. Derby	258 0 0
C. Willmott	252 10 0

Bromley Hall Road.

Harrison & Co.	480 0 0
North Bros.	453 10 0
Vigor & Co.	365 0 0
C. Willmott	343 0 0
A. W. Derby	332 0 0

Dempsey Street.

Harrison & Co.	465 0 0
Johnson & Co.	419 0 0
C. V. Howard	365 0 0
Tait & Co.	340 0 0
Vigor & Co.	335 0 0

St. John's, Halley Street.

M. Calman	184 4 8
W. Shurmur	99 0 0
Atherton & Latta	98 0 0
J. T. Robey	96 10 0
C. Willmott	95 0 0
Vigor & Co.	92 10 0
R. Toole	85 0 0
B. E. Reed	75 0 0

Brunswick Road.

Johnson & Co.	110 0 0
G. Limm	109 17 0
Calmer & Co.	105 13 6
Atherton & Latta	90 0 0
Vigor & Co.	88 10 0
E. J. Coombe	87 0 0

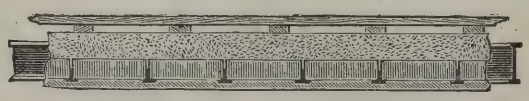
Plumstead Road.

F. Johnson	73 13 0
S. J. Jerrard	71 0 0
A. R. Masters	70 0 0
G. Pitchford	69 0 0

FLAT BRICK FIRE-PROOF FLOORS.



LONDON, 1874.


LONGITUDINAL SECTION.



BRUSSELS, 1876.

THE BEST as well as the CHEAPEST Fire-proof Floors yet introduced. Their small cost makes them specially suitable for artisans' dwellings, residential flats, offices, chambers, and private houses.

They are constructed with hard-burnt bricks, laid flat, and bonded on the upper face with tough concrete 3 inches thick; and by the method of laying all iron is protected from the action of fire.

Experiments show a resistance to load and impact greater than furnished by the ordinary concrete floors. No thrust is transmitted to the walls, as in all arched construction, the walls being tied in and strengthened.

The floors are practically noiseless, the different densities of the concrete, brick and plaster, with the air space above, intercepting the sound vibrations.

The brick soffit forms a capital key for the plaster, and no laths or counterceiling are necessary, but for high-class work wood blocks are introduced in the soffit, to which the ordinary lath and plastering or fibrous plaster is fixed. This also provides a second air-space, and furnishes the most perfect sound-resisting floors known.

They are not affected by water, acids, or alkalies, and they may be fixed during the progress of the building, thus dispensing with the use of internal scaffolding.

The concrete being tough instead of friable, the boarded finish may be nailed down without the use of sleeper joists. It is recommended to use an inch strip as a sleeper fillet. This will provide ventilation, and space for gas and water-pipes.

The depth of the finished floor is 6 to 9 inches only, and when the saving on this head is taken into account, the cost does not exceed that of the ordinary combustible timber floor of corresponding strength.

HOMAN & RODGERS,

Engineers and Patentees,

17 GRACECHURCH ST., LONDON, E.C., & 13 DAWSON ST., MANCHESTER.

WORKS: RATCLIFF, LONDON, E., & HULME IRONWORKS, MANCHESTER.

Homan's Patent Girders, Rolled Joists, Cast-iron Columns, Roofs, Bridges, and every kind of Constructional Ironwork.

London Telephone, No. 1,026. Registered Telegraphic Address—"HOMAN RODGERS, London"; "NAMOH, Manchester."

LONDON—*continued.*

Wertemburg Street.

C. F. Kearley	£293 0 0
W. Johnson	282 0 0
Dicksee & Dicksee	280 0 0
Lapthorne & Co.	277 0 0
Knight & Walden	259 0 0
M. McCarthy	236 0 0
J. Newton	223 0 0

Springfell School.

Lapthorne & Co.	429 0 0
W. Johnson	425 0 0
C. F. Kearley	417 0 0
Dicksee & Dicksee	405 0 0
Knight & Walden	357 0 0
M. McCarthy	300 0 0

Brecknock School.

M. E. Pugh	603 10 6
G. R. Earsdon	592 7 6
Pritchard & Son	563 5 0
C. F. Kearley	419 0 0
Williams & Son	474 0 0
W. Martin	424 0 0
C. Willmott (incomplete)	347 10 0

Netherwood Street.

M. E. Pugh	647 7 6
G. R. Earsdon	515 0 0
C. Willmott	394 10 0
W. Martin	391 0 0
C. F. Kearley	381 0 0
Cowley & Co.	335 0 0
W. Oldrey	287 0 0

Brewhouse Lane.

Vigor & Co.	£91 10 0
Calmer & Co.	88 8 0
Johnson & Co.	75 0 0
B. E. Reed	56 11 0
E. J. Coombe	55 0 0

Orchard House Place.

F. & F. J. Wood	69 13 0
Atherton & Latta	64 0 0
M. Calmer & Co.	52 1 6
G. Limm	48 10 6

Portman Place.

F. & F. J. Wood	123 10 0
W. Shurmur	83 0 0
G. Flaxman	80 0 0
C. Willmott	79 0 0
J. F. Sargeant	72 10 0

Cubitt Town School.

W. Buckland	81 18 0
G. Limm	75 0 0
J. Hollond	67 0 0
R. Toole	65 0 0
E. J. Coombe	57 0 0
B. E. Reed	55 0 0

Teesdale Street.

J. F. Sargeant	19 11 0
G. S. Pritchard	14 19 0
B. Curtis	12 9 0

Latchmere School.

J. D. Hobson	25 10 0
Richens & Mount	16 12 0

MALDON.

For Erection of Farm Buildings and Cottages, and Repairs to Parsonage Farm, Munden, near Maldon, Essex. Mr. OWEN LEWIS, Architect, 79 Mornington Road, Regent's Park, London. Quantities not supplied.

N. Saunderson, Dedham, Essex	£1,100 0 0
Chas. Reed, Burnham, Essex	868 10 0
Alfred Diss, Colchester	850 0 0
E. Tinson, London	840 0 0
L. & T. Cooper, Goldhanger	750 0 0
Thos. Ridley, London	748 0 0
Warren, Purleigh	720 0 0

MANCHESTER.

For Alterations to Farmhouse, &c., Goostrey. Mr. T. HARTAS, Architect, King Street, Manchester. Quantities by Mr. J. G. Petherick, B.A., Park Villas, Weaste.

	Granary.	Electric Bells.
Acton	£1,000 0 0	90 0 0 — 8 0 0
Brown	997 0 0	76 0 0 — 3 0 0
Heywood	936 0 0	106 17 0 — 3 15 0
Massey	925 0 0	75 0 0 — 4 0 0
Harrison	905 0 0	79 0 0 — 3 15 0
Holt	890 0 0	75 0 0 — 3 0 0
COATES (*accepted*)	870 0 0	73 0 0 — 7 0 0

NOTTINGHAM.

For Building School, Sycamore Road, for the Nottingham School Board. Mr. A. H. GOODALL, Architect, Nottingham. Quantities by the Architect.

John Cooper, Nottingham	£680 0 0
Frank Jay, Nottingham	650 0 0
James J. Adams, Nottingham	650 0 0
W. Wright, Nottingham	625 0 0
George Caulton, Nottingham	615 0 0
Henry Scott, Nottingham	610 0 0
T. H. Attewell, Nottingham	607 12 6
W. H. Taylor, Nottingham	606 0 0
A. B. Clarke, Nottingham	600 0 0
John W. Priestley, Nottingham	598 0 0
Arthur Priestley, Nottingham	597 0 0
John Musson, Nottingham	597 0 0
Gilbert & Gabbitass	587 0 0
Baynes & Dawson, Nottingham	580 0 0
Henry Clipsham, Norwell, Newark	572 0 0
Francis Wartnaby, Nottingham	567 0 0
THOMAS CUTHBERT, Nottingham (*accepted*)	556 0 0

OLDHAM.

For Building Eight Houses, Park Road, Oldham. Mr. THOMAS BOYTER, Architect, 103 Union Street, Oldham.

WILLIAM TURNER, Oldham (*accepted*)	£290 0 0

PLYMOUTH.

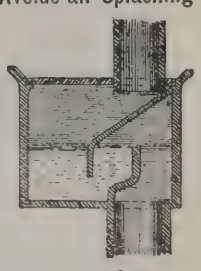
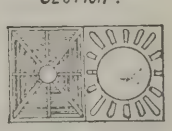
For Supply of Furniture for the Cattedown Road Schools, for the Plymouth School Board.

Taylor, Stonehouse	£290 0 0
King, Plymouth	235 11 0
Trevenn, Plymouth	234 15 6
Edwards, Devonport	218 18 0
SMITH & SON, Devonport (*accepted.*)	167 17 0

PRIMROSE & Co CHURCH ST. SHEFFIELD.
"ECLIPSE" PATENT ROOF GLAZING
NO PUTTY, PAINT, ZINC OR OTHER PERISHABLE MATERIAL.
IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c.
NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.
PRIZE MEDAL AWARDS; KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882-3.
THE ONLY GLAZING AWARD. INTERNATIONAL HEALTH EXHIBITION, 1884.



PROVISIONALLY PROTECTED.
FIRTH'S
Improved Disconnecting Trap,
FOR FALL PIPES, &c.
COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.
FOR PARTICULARS APPLY TO
GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing

SECTION.

PLAN.

NEARLY READY,
VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

PLYMOUTH—*continued.*

For Wood Paving in Exeter Street. Mr. GEORGE D. BELLAMY, Borough Surveyor, Municipal Buildings, Plymouth.

Pethick Bros., Plymouth	£1,844 0 0
J. Willcocks, Plymouth	1,815 0 0
J. Reed, Plymouth	1,692 15 0
J. Parsons & Son, Plymouth	1,652 2 0
A. R. Debnam, Plymouth	1,609 0 0
Shaddock Bros., Plymouth	1,399 1 3
W. H. R. HILL & CO., Compton Gifford (*accepted*)	1,320 0 0

Saltash Street.

Pethick Bros., Plymouth	586 0 0
J. Willcocks, Plymouth	577 10 0
J. Reed, Plymouth	538 2 6
J. Parsons & Son, Plymouth	527 2 6
A. R. Debnam, Plymouth	521 0 0
Shaddock Bros., Plymouth	456 1 10
W. H. R. HILL & CO., Compton Gifford (*accepted*)	411 5 0

For Construction of Sewer, Higher Street, Plymouth. Mr. G. D. BELLAMY, Borough Surveyor.

J. Willcocks, Plymouth	£550 0 0
A. R. Debnam, Plymouth	365 0 0
W. H. R. Hill & Co., Compton Gifford	315 9 0
J. Parsons & Son, Plymouth	311 5 6
G. Shillabear, Plymouth	290 0 0
Shaddock Bros., Plymouth	247 0 0

SOUTHAMPTON.

For Landing Steps at the Pier, Southampton. Mr. J. G. POOLE, Surveyor.

Bennett & Billham	£264 0 0
J. W. ROE (*accepted*)	208 0 0

WELLINGBOROUGH.

For Pulling-down and Rebuilding Mr. Belton's House. Mr. EDWARD SHARMAN, Architect, Wellingborough.

Brown	£520 0 0
J. Slinn	520 0 0
Underwood	520 0 0
Hacksley	503 10 0
Stewens	488 19 0
Marriott	488 0 0
Harrison	485 0 0
Clayson Bros.	477 0 0

WIMBLEDON.

For Construction of Ten-Stall Stable, with Shed, Loft, &c., at the Sewage Farm, Wimbledon. Mr. W. SANTO CRIMP, Architect. Quantities by Mr. C. G. Maylard.

T. Grant, Putney	£1,100 0 0
E. & F. Iles, Wimbledon	995 0 0
H. Johnson, Wimbledon	987 4 6
G. Roberts, South Norwood	940 0 0
J. & C. Bowyer, Upper Norwood	937 0 0
Smith & Bulled, Croydon	917 0 0
J. Newton, Clapham	892 0 0
Kirk Bros., Battersea	885 0 0
W. Martin, Willesden Green	833 10 0
W. Beale, Battersea	820 0 0
T. R. Turtle, jun., Clapham	780 0 0

WORKINGTON.

For Building Wing to Residence, Marine Villa, St. Bees, Cumberland, for Mr. J. Vivian. Mr. J. HOWES, Architect, Workington.

R. Cousins, Whitehaven	£740 0 0
L. Ferguson, Workington	685 0 0
W. Bradley, Millom	665 0 0
J. J. Wilson, Workington	642 17 6
J. S. & J. GLAISTER, Whitehaven (*accepted*)	633 18 0

YORK.

For Construction of Footpaths, Clifton District. Mr. G. STYAN, City Surveyor.

Stonework.

A. Spencer	£430 0 0
J. Galtrey	371 10 0
J. CLARK (*accepted*)	335 13 10
C. & J. Kilvington	323 10 0

Asphalting.

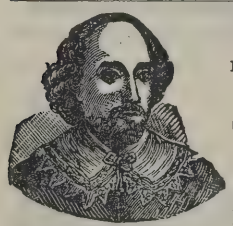
A. Spencer	530 0 0
J. STABLER (*accepted*)	416 10 0

All of York.

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT :—S.W. RY, RIVERSIDE, NINE ELMS.

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use
Address—YOCKNEY & CO. Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



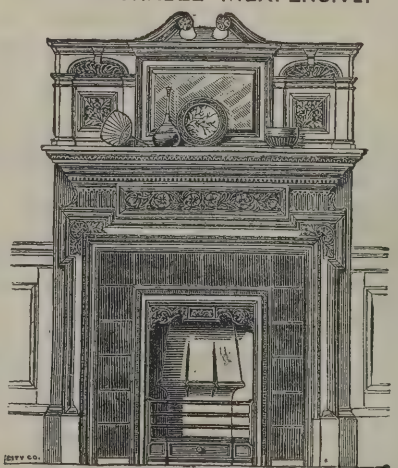
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Shakespeare Steam Printing Works,
COLMORE ROW,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.



IN PLAIN COLOURS OR VARIEGATED.
AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

TRADE NOTES.

ON St. Botolph's Day, in the presence of the Lord Mayor and Sheriffs of London and Middlesex, who attended in state, eight stained glass windows were unveiled in St. Botolph's Church, Aldersgate, E.C. They contain incidents in the life of Our Lord, and were executed by Messrs. Ward & Hughes, of 67 Frith Street, Soho Square, W.

MESSRS. ARCHIBALD SMITH & STEVENS have just completed at Norfolk House, Thames Embankment, an hydraulic lift for the service of the entire height of building. It is worked in connection with the Hydraulic Power Company's mains.

THE inscription on the tomb of Chief Justice Gascoigne, of Gawthorpe Hall, in Harewood Church, has been restored in bronzed latten brass. The work has been carried out by Mr. Gawthorp, of Long Acre, London.

MESSRS. F. SANDER & CO., of St. Albans, have just issued the first monthly part of a new work on orchids. It is illustrated in colours and printed in English, French, and German. The illustrations are well executed, and amongst the writers we find the name of Professor Reichenhart, of Hamburg.

IT is interesting to notice that Messrs. Lawrence & Son, of Bracknell, manufactured and supplied the whole of the bricks for the Royal Holloway College, opened on Wednesday, under a contract made direct with the late Professor Holloway. The plain brickwork is faced with their machine-made wire-cut facings, and the circular bays with their rubber bricks, which gained the only gold medal awarded for bricks at the late Building Exhibition.

MR. H. BASSANT has just laid his ½-inch solid Burmese teak imperishable parquet in two wards of the old wing at Queen Charlotte's Lying-in Hospital, and in four of the wards in the new wing opened last Friday by the Princess of Wales. The ½-inch solid Burmese teak is more durable than 1-inch solid, as there is no groove to wear through, it being glued and pinned to the existing floor. Mr. Bassant deserves a word of congratulation on his beautiful floorings, particularly the teak, the most valuable of all our woods, and which could receive no better treatment in any hands.

MR. MUSCOTT has sent us testimonials as to durability and permanency of colour of his Whitland Abbey green slates, and we find that they have been used all over the country, notably on the Asylum, Gloucester; part of Keble College, Oxford; and the under-named churches, &c. :—Avebury, Docklow, Duffryn, Neath, St. Jude's, Southampton; Holy Trinity, Abergavenny; Llanbadarn Fawr, near Aberystwith; Kinnersley; Goodrick; St. John's, Walford; Camrose; Camrose Schools; Moat, Pembrokeshire; Penmorgan House; the Parsonage House, Langbarne, &c. We also hear that Mr. Muscott's window-sills and flooring slabs are of very superior quality, of good colour, and very durable.

NOTES ON NOVELTIES.

Improved Folding Lattice Shutter.—We would draw our readers' attention to the improved folding lattice shutters manufactured by Messrs. Rownson, Drew & Co., of 225 Upper Thames Street and 113 Queen Victoria Street. The advantages possessed by the patent are those which are sought in the class of shutters to which it belongs and render it particularly welcome. It can hardly fail to secure universal appreciation. The following description explains the principles and objects of the patent, for which a first prize was awarded at the Inventions Exhibition :—This folding lattice shutter has for its object the better guarding of windows and doors of private houses, offices, warehouses, and shops, where space, security, and ventilation is a great object, and for providing a more efficient and simple means of protection than the ordinary revolving and other shutters hitherto in use. It is especially useful for private houses, this lattice shutter not interfering in any way with light and ventilation, nor with the Venetian or other blinds, and when drawn back it is almost hidden from view. The lattice shutter consists of two wings of equal size, each of which is composed of a number of perpendicular flat iron bars crossed by a number of short horizontal bars strongly rivetted together. The perpendicular bars are regulated in length to the height of the door or window, and are placed at equal distances from each other; the principal perpendicular bars run upon wooden rollers upon the window board or door sill. The lattice is fastened in a suitable manner to the brickwork or panels right and left of the door or window to be protected. The lattice is locked in the centre, also near the top and bottom. The bars are of wrought iron ¾-inch wide and ¼-inch thick, but can be made in any other strength or metal if desired. The advantages these folding lattice shutters have over ordinary revolving and other shutters are manifold: they are cheaper, can easily be fixed anywhere without any alteration to existing brickwork or panels, and in the smallest possible space. The

A. SANDERSON & SONS
PAPER STAINERS
IMPORTERS OF FRENCH PAPER-HANGINGS

TRADE MARK.

Sole Importers of the
NEW
IVORY DECORATIONS.



SPECIALITÉ
INGRAIN.

PRESS OPINIONS.

Messrs. SANDERSON & SONS have been awarded for their Wall Decorations the only Gold Medal at the New Orleans International Exhibition. This Medal may be considered the highest ever awarded to a paper stainer, as it was not obtained, as usual, in competition with other English firms only, but with the whole world—English, French, German, and American firms being all in one class.

Warehouse
52 BERNERS ST. W. LONDON. Manufactory
PAPER-STAINING WORKS
CHISWICK.

windows can be left wide open, thereby admitting light and air, at the same time protecting the room against burglars; they are likewise excellently adapted for nurseries in upper storeys. These folding lattice shutters are highly recommended by the medical faculty as supplying a long-felt want.

A CONTRACTOR'S CASE.

ON Friday last the case of Derwin and others *v.* the Drumcondra, Clonliffe, and Glasnevin Commissioners came on for hearing in the High Court of Justice, Dublin, before Sir Michael Morris and a special jury. The action was brought to recover 3,666*l.* claimed on foot of a contract for drainage and sanitary works executed in the defendants' township, and in respect of extras connected therewith. The defendants denied liabilities for the amount claimed, and pleaded that the greater portion of the cost of the work was covered by the contract, but that the Commissioners were ready to pay for ascertained extras. The original contract was for 5,600*l.*, which included 300*l.* which the defendants agreed to allow to the plaintiffs in consideration of their using Coal Island (or Irish-made pipes) in the drainage works.

When the case was called, it was stated that a settlement had been arrived at by which plaintiffs abandoned certain items of their claim, amounting to 2,224*l.* The remainder of the demand was referred to the arbitration of Mr. P. F. Leonard, C.E., on behalf of the Commissioners, and Mr. Patterson, C.E., on behalf of the plaintiffs, with power to call in as umpire Mr. Thomas Drew, R.H.A., architect.

THE BELGIAN GLASS TRADE.

AN application was made by the Earl of Rosebery as Foreign Secretary for information as to what extent is a statement true which lately appeared in some French newspapers, that the disturbances in the glass-making districts of Belgium have been chiefly owing to changes having been introduced into the industry which replace hand labour by machinery, and also the substitution of large for small establishments. Lord Vivian, in the course of his reply, says:—There had been no previous indication of any intention on the part of the glass-workers to strike, nor was there any justification for it; their wages, though they had lately been reduced about 15 per cent., were still high, a good glass-blower being able to earn from 400 frs. to 600 frs. a month. The savage attack on this flourishing industry has been ascribed to the introduction by M. Baudoux of a new system called the *four à bassin*, by which the raw materials of glass are fused in one furnace instead of in separate receptacles, and great economy of fuel, combined with increased production, are secured. But it does not appear that the adoption of this invention—which has in no way injured the workmen or reduced their number or pay—provoked any opposition on their part, nor did other establishments, which employed the same system, suffer so severely as that of M. Baudoux. The strikers contented themselves with breaking all the manufactured glass in these establishments and spoiling the materials in process of fusion by throwing in iron; the wanton destruction of M. Baudoux's house and factory is, therefore, probably attributable to special causes connected with his relations towards his workmen.

HOUSE OF COMMONS ARRANGEMENTS.

THIS week we give some of the evidence which was supplied by the late Mr. E. M. Barry, A.R.A., to the Parliamentary Committee, and which has lately been reprinted in the Parliamentary papers. Right Hon. T. E. Headlam, chairman.

The floor of the House of Lords at present is perforated, I believe?—It is.

And through those perforations it communicates with an air-chamber below, of considerable size?—Yes, as large as the House itself in its floor area.

What is the depth of that chamber?—I do not remember the depth perfectly, but it is sufficient for a man to stand up in.

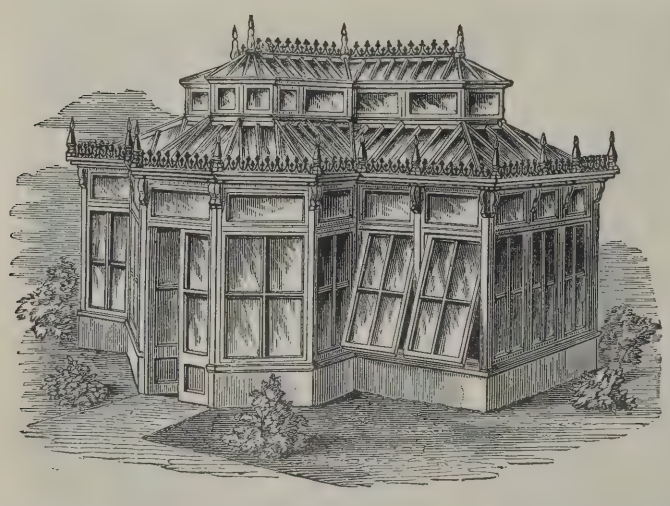
It is more than six feet high?—Yes.

You consider, I think, that this communication with a chamber below considerably increases the difficulty of being heard in the existing House?—It so appears to me.

You consider it a principle that in any new House a communication from the House above to the chamber below would increase materially the difficulty of being heard?—A communication of that nature would.

Any communication which would have the effect of making the speaker's voice audible in the chamber below?—I think so, more or less.

In addition to the evil arising from the communication to the chamber below, there is a current of air constantly coming

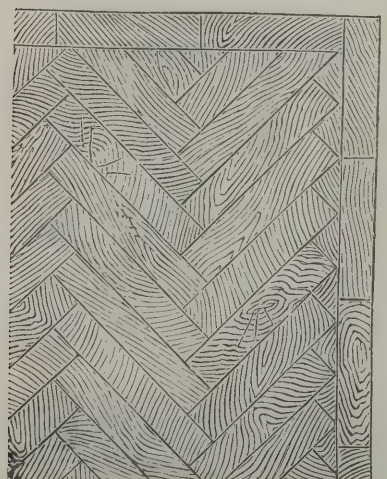


R. HOWARD,
Horticultural Works,
DONCASTER.

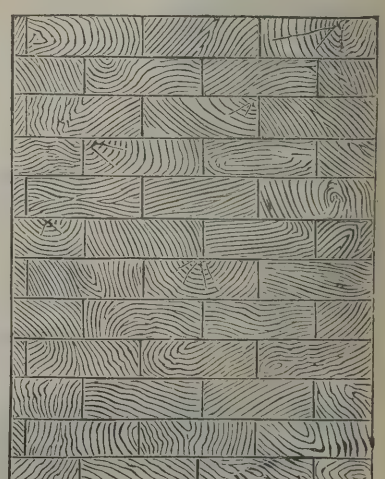
HORTICULTURAL BUILDINGS erected, with hot-water apparatus complete, in any part of the Kingdom, by experienced workmen. All the newest improvements in machinery for ventilation.

SILVER MEDAL awarded by the Society of Architects at the Architectural and Building Trades Exhibition, Sheffield, February 1886.

Also PRIZE MEDAL and CERTIFICATE, the highest and only award for excellency of Horticultural Buildings and Machinery for Ventilation, at the International Architectural Trades Exhibition, London, April 1886.



WOOD BLOCK FLOORING.
M. C. DUFFY & SON,
Saw-Mills and Steam Turnery,
66 STORKS RD., LONDON, S.E.
CONTRACTORS FOR
WOOD PAVING of Roads, Yards, Workshops, Stables, Factories, &c., and WOOD BLOCK FLOORING for Churches, Chapels, Schools (as supplied by us for the London Board Schools), and Public Buildings in any part of the World.
Estimates Free on Application.
WOOD PAVING.



up from this chamber below, and passing upwards through the House, is not there?—That is so.

Do you think that that also increases the difficulty of being heard?—I should have said not materially; but it has a tendency that way.

You consider, without the continuous introduction of fresh air into the chamber below, that the mere communication from the upper to the lower chamber, so as to enable the voice to be heard in the lower chamber, is a very considerable obstacle to the power of a speaker being heard in the upper chamber?—I think so; it must be a considerable difficulty, because it must add a considerable space to the House, and make it larger than it appears to be.

That opinion of yours, I think, is not shared by Dr. Percy, is it?—I think not.

Could you refer us to anyone who could give us an opinion upon that principle of acoustics?—It appears to me scarcely a principle of acoustics, but rather of feet and inches.

But Dr. Percy entertains one opinion and you entertain another?—It is a question of fact whether you can be heard in the chamber below or not; anybody can test it; if you go down into the lower chamber while speaking is going on above, you can hear every word that is said.

I do not ask about the facility of being heard in the chamber below; I have no doubt of that fact, but my question is as to whether the being heard down below is an obstacle to being heard above?—I think that rather turns upon this question: is it easier to speak in a small House or in a large one? Because the present House is unquestionably enlarged to the extent of the space below, inasmuch as anyone in that space below can hear what is said above.

How is it that Dr. Percy does not adopt the same view as yourself upon that point?—I cannot say.

Mr. Cowper: Should you not say that although the present floor has so many holes in it that the sound can pass through it, it is yet sufficiently solid to cause a reverberation of the sound?—So far as its solid portions are concerned, unquestionably.

Therefore you cannot altogether overlook the effect of the floor as at present constituted in reflecting the sound upwards?—The floor being, I will say for the sake of argument, perforated to the extent of half its surface, it would have just half the effect, or thereabouts, in reflecting which it would have if it were entirely solid, in my opinion.

Do you think it would be possible to manage the ventilation from below, and yet to have a much larger portion of the floor solid than is solid at present?—I think it would.

Mr. Cardwell: I suppose if anybody disputed your opinion as to the room below diminishing the facility of being heard in the room above, a very simple experiment might be tried by putting an impervious carpet on the floor of the House, and trying the effect of speaking in the House, so carpeted?—Carpet would perhaps scarcely be impervious enough, but the experiment might be tried with boards.

Mr. Darby Griffith: With regard to the presumed effect of a current of air arising from the floor impeding speaking, if sound will travel more than 1,000 feet a second, and the House is less than 100 feet across, which of course it is, it would not take so much as the tenth part of a second for the sound of the voice to travel across the room; in that case could the up-current have any material effect upon the transmission of the sound?—I do not think it has any material effect. I may perhaps state, for the information of the Committee, that I went over to Paris to examine the Chamber of Deputies there, and I found that their system of ventilation is exactly the reverse of this; they introduce the air at the top, and take it out of the floor; their architect considers that a much better system for acoustic reasons, with reference to the question of the ascending current of air.

Sir Charles Lanyon: Do you consider that the current of air either ascending or descending has any effect upon the acoustics?—I do not myself think it has any appreciable effect.

Sir Frederick Heygate: The present House can be ventilated in both ways, can it not?—Yes, it can; but the system adopted in Paris is so in defiance of what I may call the natural tendency of air to rise, that it is much more difficult, and requires many more appliances to carry out that system than one in which the heating of the air and its consequent natural rise assist the ventilation.

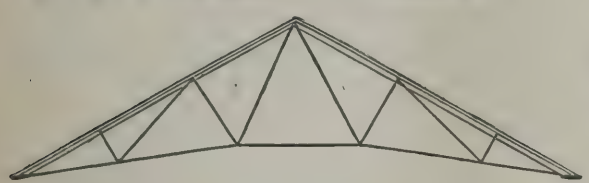
Sir Charles Lanyon: Are you aware of the average velocity with which the air passes through the floor under ordinary circumstances?—No; Dr. Percy would have that information.

Mr. Baillie Cochrane: Are you aware whether there are sittings for every member in the French Chamber?—There are sittings for more than the number of members, because since the French Chamber was built they have reduced the number of members.

Sir Charles Lanyon: Are you not aware that if you adopt a downward system of ventilation you must have a very much more powerful extractor for the purpose of carrying the ventila-

WALTER JONES, MAGNET WHARF, BOW BRIDGE, E.,

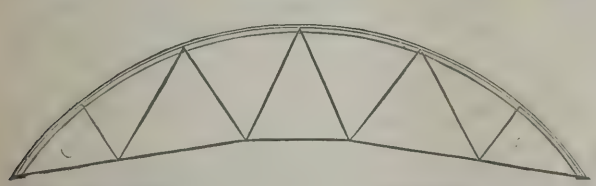
MANUFACTURER OF



WROUGHT-IRON ROOFS,

PLAIN OR ORNAMENTAL,

ADAPTED FOR



GALVANIZED IRON,

SLATES, TILES, or GLASS.

MELBOURNE INTERNATIONAL EXHIBITION, 1880, THE GOLD MEDAL

In addition to FIRST-CLASS HONOURS, was awarded to

JAMES CARTLAND & SONS,

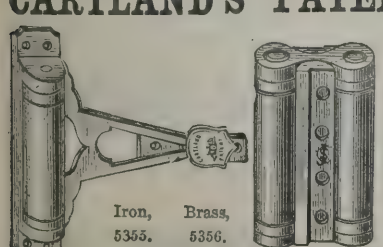
Cabinet Builders and Naval Brass Founders,

BIRMINGHAM.

London Show-rooms: 40 Holborn Viaduct, E.C.

The extent, variety, quality, and finish of articles manufactured at this establishment cannot be excelled.

CARTLAND'S PATENT HELICAL, CLIMAX DOOR SPRINGS & HINGES.



Iron, 5355. Brass, 5356.

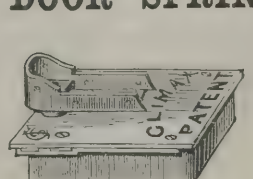
DOUBLE ACTION, Iron, 5353. Brass, 5354.

CAUTION.

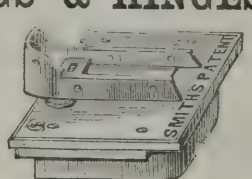
Ironmongers, Builders, and others are requested to see that the Trade Mark is on each Spring, as the Patentees are informed that spurious imitations of the

"CLIMAX SPRING HINGES"

are being sold, which have neither the Power or Durability of Cartland's Patent Climax Door Springs and Hinges.



2401.



2860

Pattern Books, both full size and Miniature, containing every information, may be obtained through any Merchant or Factor on application. All Goods for Export are carefully packed in Cartoon Boxes, and distinctly labelled with orange-coloured labels, bearing our Trade Mark, as above.

tion that way?—The ventilation upon that system is more artificial, and therefore it is more difficult to carry into effect.

Mr. Baillie Cochrane: Are you aware how many places there are in the French Chamber, including strangers; that is to say, how many can be seated in the French Chamber altogether?—I have got that information, but I cannot state it from memory. The First Commissioner of Works has got the plans, which he is about, I believe, to send to the Committee, and they will contain all that information.

Mr. Waldegrave-Leslie: Did it ever occur to you whether a bridge, or any other communication, could be made for the use of members only between the left division lobby and the present refreshment-rooms?—That suggestion has been made, but it involved a new doorkeeper, or some provision of that kind, and it was not entertained further.

It used to be the case in the old House of Commons, and a doorkeeper was put for that purpose, I think?—Yes.

Viscount Cranborne: Have you at all considered to what extent greater speaking accommodation would be given by raising the altitude of the steps which separate the successive seats, so that a member on rising should be more visible to the Speaker; I mean so as to make more of what is on the Continent called a mountain of the seats?—I do not think that there would be any advantage in that arrangement.

I apprehend that at present a good many seats are rendered unavailable for the purposes of members who desire to address the House, because when they rise they are not practically visible to the Speaker across the heads that intervene; if the steps were larger that would be much more possible, and practically every bench would then be available for members desiring to speak?—There would be no difficulty in raising the seats in a new construction, but if it were done in the present House there would be difficulties as to the height of the galleries.

It would necessarily involve modifying the gallery very considerably, then?—I think so.

Is it your impression that the gallery is practically very valuable?—As space it is.

I mean as sitting space?—That is rather a question for the Committee than for me; but, of course, if the House is too small at present, a diminution of the gallery would render it smaller than ever.

I suppose it would be perfectly possible to get exactly the same number of seats in the present House and the gallery combined, in the form of one slope, as exists now in the form of the gallery and the House?—Undoubtedly, if we were treating the question *de novo*.

It would only be treating the question *de novo* so far as to erect a little new boarding. I meant to ask whether it was not possible, so to speak, to fuse the existing seats of the gallery with the floor of the House, so as to make what I call a mountain, by which every seat up to the very top would form part of the actual House, and yet be available for members desiring to address the House. There are, in fact, seven rows now. Could not you make seven rows in a mountain?—Clearly; but then you would lose the gallery which is now over some of them.

No. Because plus the gallery there are only seven rows now altogether?—Speaking from memory I forgot the precise number. If there are only seven I was wrong in what I said just now; it could not be made to give the same accommodation.

Mr. Darby Griffith: You would consider that the preferable arrangement of the accommodation for a House of Assembly of this kind would be that the seats should be on the floor, so to speak, without a gallery?—A gallery is not an advantageous arrangement for those who wish to take part in the business of the House.

Viscount Cranborne: But if it was in your power to drive the windows back, it would then be possible to bring in the seven rows of seats in the form of a mountain, would it not?—Yes, that would be widening the House.

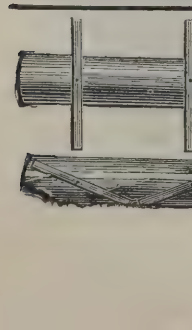
It would be widening the top of the House, but it would leave the lobby as it is, and only encroach upon the external air?—Of course the lobby would have to be thrown out to the same extent.

If you only widened the top of the House so as to drive the gallery back over the lobby, you would only encroach upon the external air, would you?—That is so.

Mr. Waldegrave-Leslie: You would have to cut through the walls of the House for that purpose, would you not?—Yes.

Mr. Cowper: You would have to rebuild the walls of the House itself in order to provide support for the roof, would you not?—Yes, to carry the roof.

Mr. Waldegrave-Leslie: Could not you obviate that by girders and pillars?—It is difficult to say what could not be done in that way, but it would be a very hazardous operation. The roof of the House of Commons is very heavy. In fact, the weight has been considerably increased lately by constructing all the arrangements there of incombustible materials. The



LIFTS! LIFTS!! LIFTS!!!
PATENT A.B.C. SELF SUSTAINING LIFTS, FOR HAND OR POWER.
CANNOT RUN DOWN, AND FREE FROM JERKY MOTION.
DIRECT ACTING AND MULTIPLYING CYLINDER HYDRAULIC LIFTS,
CONTINUOUS, AND WATER BALANCE INCLINE LIFTS.
LIFTS OF ALL KINDS FOR GOODS OR PASSENGERS,
WORKED BY STEAM, GAS, HYDRAULIC, OR HAND POWER.
SHUTTERS & DIVISIONS,
FOR SHOP FRONTS, GATE OPENINGS, SCHOOL PARTITIONS, ETC.
A. ATTWOOD & CO., LATE Salmon, Barnes, & Co.
LONDON OFFICE: 20 BUCKLERSBURY, E.C.
ULVERSTON, LANCASHIRE.

WOOD BLOCK FLOORING & PAVING BLOCKS

OF EVERY DESCRIPTION.
Speciality—London Board School Blocks out of 18 × 3 × 3, 10s. per 100, delivered. Also Blocks of every description for Stables, &c., 3 × 8 × 3, 4, 5, or 6 deep.
Builders supplied with Short End Deals, from 2 ft. × 6 ft., 2 × 7, and 3 × 9, sold per standard or fathom, all of best Swedish Yellow.
Poling Boards, from 3 ft. to 6ft. in length, at very low prices. Posts and Feather Edge Boards for Fencing.
JOSEPH DRAPER,
Draper's Wharf, Wellington Road, Battersea Bridge, S.W.

PAIN'S SMOKE ROCKETS FOR TESTING DRAINS.
Cheapest, Simplest, and most Efficient Test yet invented.
Burn from Ten to Fifteen Minutes and emit a dense volume of Smoke.
6s. per dozen. 48s. per gross.
MANUFACTURED ONLY BY
JAMES PAIN, 9 ST MARY AXE, LONDON, E.C.

ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustrations which have appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing.

THE MARTYRDOM OF ST. STEPHEN.

AWARDED THE GOLD MEDAL AT THE INTERNATIONAL HEALTH EXHIBITION.

By E. J. POYNTER, R.A.

Size, Forty Inches by Fifteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE AURORA.

By GUIDO RENI.

From the Celebrated Painting in the Rospigliosi Palace, Rome.

Size, Thirty-eight Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.
A few Tinted Proofs may be obtained at Two Shillings and Sixpence each, including postage and packing.

THE FLITCH OF BACON.

By THOMAS STOTHARD, R.A.

Size, Forty Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE CANTERBURY PILGRIMS

By THOMAS STOTHARD, R.A.

Size, Forty Inches by Sixteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE REVENGE OF ATHALIE.

By XAVIER SIGALON.

Size, Thirty-two Inches by Twenty-one Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

SHAKSPERIAN DECORATIVE PANELS.

By H. STACY MARKS, R.A.

Printed in Colours.

1. Scene from "The Tempest."
2. Scene from "Midsummer Night's Dream."
3. Petruchio and the Tailor.
4. Falstaff in the Buck Basket.
5. Touchstone, Audrey, and William.
6. Falstaff acting the King.
7. Parolles' Eyes Unbound.
8. Malvolio in the Garden.

Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.
Or the set of Eight, Five Shillings; by post, Five Shillings and Sixpence.

THE BANQUET.

The well-known and beautiful Chromo-lithograph by

H. STACY MARKS, R.A.

Size, Thirty-nine Inches by 15 inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE HISTORY OF ART.

In Two Plates, reproduced from the Splendid Painting around Cupola in Place St.-George's, Paris.

By M. FRANCOIS EHRMANN.

Showing Typical Figures of Ancient and Modern Styles of Art.

Size, Thirty-six Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence each.

AN IDYLL.

By ALBERT HYNAIS.

A BEAUTIFUL TINTED INK PHOTOGRAPH.

Size, Nineteen Inches by Fourteen Inches.
Price Sixpence.
Free by post, carefully packed inside patent roller, Eightpence.

THE GUITAR PLAYER.

From the Painting by Charles Sprague Pearce.

Size, Nineteen Inches by Fourteen Inches.
Price Sixpence.
Free by post, carefully packed inside patent roller, Eightpence.

ARCADIA.

By P. P. PRUDHON.

Size, Nineteen Inches by Thirteen and a half Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE ARTS.

DECORATIVE PANELS.

By M. F. EHRMANN.

Printed in Colours.

1. The Architect.
2. The Engraver.
3. The Goldsmith.
4. The Painter.
5. The Potter.
6. The Sculptor.

Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.
Or the set of Six, Three Shillings and Sixpence; by post, Four Shillings and Sixpence.

THE BARD.

Facsimile of Cartoon by Prof. Maillart.

Size, Thirty-six Inches by Twenty-two Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE BATTLE OF THE AMAZONS.

By PETER PAUL RUBENS.

Size, Thirty-five Inches by Twenty-seven Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

LA FONTAINE'S ALLEGORY OF WAR.

From the Painting by ADRIEN MARIE.

Size, Thirty Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE FAREWELL BEFORE EXILE.

From the Picture by MONS. COESSIN DE LA FOSSE.

Size, Thirty Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE DEATH OF KING CHILPERIC.

From the Painting by MONS. E. V. LUMINAIS.

Size, Twenty Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

MARIONKA.

From the Painting by M. FRANCOIS SHOMMER.

Size, Twenty Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

A VENETIAN WEDDING.

(Saint Mark's, XV. Century.)

From the Painting by M. JACQUES WAGREZ.

Size, Twenty Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

DEPARTURE OF CRUSADERS FOR THE HOLY LAND.

By G. GUFFENS.

Size, Thirty-six Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

May be obtained from all Newsagents or Booksellers, or from the

PUBLISHERS, GILBERT WOOD & CO., 175 STRAND, LONDON, W.C.

ceiling itself is a considerable weight, and altogether the amount of weight on the side walls is very great.

Viscount Cranborne: You would prefer a reconstruction to that?—It would practically be, I think, reconstructing the House to carry out such a scheme.

Chairman: In a plan I think you give to members on the floor an increase of seats from 306 to 367?—That is so.

Then what is the number of seats for peers and official seats?—It gives 32 official seats and peers' seats; but I think that number will have to be increased by giving the back row at the door end also to the peers. Of course if that were done it would diminish the accommodation in the House to that extent.

To what extent would it diminish the accommodation?—You must strike off 30 from the accommodation of members.

So that that would give an accommodation of 337, as against the present accommodation of 306?—That is so.

Which would be an increase of 31 members within the House, and an increase in the number of peers' seats from 44, as at present, up to what?—There would be 46 peers' seats, and 16 official seats.

The official seats being at the Speaker's end?—The official seats would be at the Speaker's end.

That is the extent of the additional accommodation upon the area of the House?—That is the extent of the accommodation according to this arrangement of the seats, but by a rectangular arrangement of the seats you would gain accommodation.

With the rectangular arrangement of seats you obtain, I see, for members on the floor, 429 seats?—The number of members on the floor would be subject to a similar reduction for the increase of peers' seats; in this case 20 seats would have to be deducted for peers, leaving 409 upon the floor.

What would be the number of peers' seats?—There would be 36 peers' seats and 16 official seats.

By peers' seats you mean the seats under the gallery at the Serjeant-at-Arms' end, do you not?—Yes.

And you mean by the official seats, seats at the other end, near the Speaker's chair?—Yes; that is a new suggestion.

That would practically give about 100 additional seats for members on the floor, and what addition in the gallery?—The gallery would hold about 160.

As against how many in the present gallery?—The present gallery holds 124. In this plan the front row of the gallery over the door is shown to be given to members; but that would be an inconvenient arrangement, and therefore that number would have to be deducted from the members' gallery, because the peers' and diplomatic gallery would have to be there. Therefore, instead of giving 160, it would be 136 members in the gallery.

You heard what Mr. Ayrton said with respect to the difficulty of members at the end of the present House hearing or taking part in the proceedings, did you not?—I did.

Would not that difficulty be very much increased if you added to the length of the House?—I think it would.

Would it not be the case that in the new House, elongated according to this scheme, the practically available seats would be nearly the same as they are at the present moment, and that there would be merely an addition of unavailable seats at the extreme end?—To a certain extent that would be so.

Would it not make the area of the House pretty nearly the area of the House of Lords?—I think it would.

Would not the same objections which apply to being heard in the House of Lords apply with greater force to the House of Commons, where the body assembled is not quite so quiet as the body assembled in the House of Lords?—The House of Commons is not so high as the House of Lords.

Would that make any material difference?—It would make a considerable difference.

Mr. Waldegrave-Leslie: Is there a chamber underneath the House of Peers in the same way as there is under the House of Commons?—There is.

So that those acoustical difficulties would be the same?—According to my judgment they would.

Mr. Cardwell: Would not the difficulty of hearing vary very much, according as the House was full or empty?—I think it would.

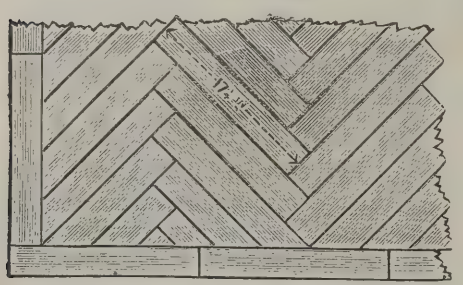
Is not the House of Commons often much more full than the House of Lords, upon the average, is?—Much more.

When you speak of available seats, do you mean available for sitting only, or for sitting and hearing also?—I presume the chairman meant to refer to those seats from which members would speak.

Supposing you include in the definition of "available seats" hearing as well as sitting, would not any change which made the House larger have a tendency to make the number of available seats even less than at present?—I think it would; the larger the House is made, no doubt, the greater must be the difficulties to be encountered.

Viscount Cranborne: How many cubic feet would there be in this proposed House?—The cubical contents of the present

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¼ × 4½ Dry Wainscot Oak, 54s. 9d. per square; 1×4½ ditto, 45s.; 1¼×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s. 9d.

IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone, 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES,
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

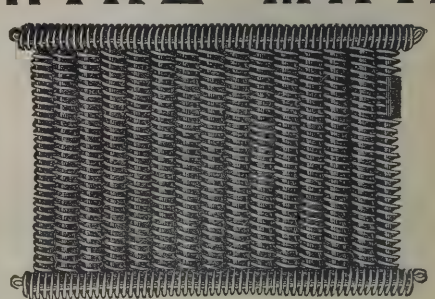
RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

Building Paper. LIGHT—STRONG—WATERPROOF. In 10 yard rolls, 40 in. wide, 2d. per yard. Sample roll, post free, 2/6. *Use under slate and tiles, under weather boarding, for temporary roofs, and as lining paper for damp walls.* For home and export.—EASTWOOD AND CO., LIMITED, Dealers in Building Materials. BELVEDERE ROAD, LONDON, S.E.
Chemical Papers Co.,

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market:—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.


LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

FELTEN & GUILLEAUME'S
Patent Galvanised "Spiralium"
WIRE MAT.



Mat and Scraper combined. Practically indestructible. The best Mat ever invented. Prices upon application.
SOLE AGENTS:—
W. F. DENNIS & CO.,
101 Leadenhall Street, London, and
28 Strand Street, Liverpool.
And of all Ironmongers.

DRY WAINSCOT OAK, in every thickness, several thousand Logs, from 8d. per foot.
Dry Wainscot Floor Boards, ¾-inch, 65s.; 1-inch, 75s.; 1¼-inch 95s. per square.
Dry Mahogany, Teak, and Birch.
Dry Black Walnut, 8d. and 9d. per foot.
T. FORMAN, Walnut Tree Walk, Kennington Road, S.E.

BRICKS.—WILLSON BROS.,
BRICKMAKERS,
HOO, KENT,
Kent Bricks supplied alongside in the river by barge.—Apply, London Office—7A SOUTHWARK STREET, S.E.

IMPORTANT NOTICE.

L'ART

AND THE

WHOLE of the PUBLICATIONS

OF THE

FRENCH

LIBRARY OF ART

WILL IN FUTURE BE PUBLISHED

SIMULTANEOUSLY AT

29 CITÉ D'ANTIN, PARIS,

AND

175 STRAND, LONDON, W.C.

House are 127,000 cubic feet, which would of course be increased if the House were lengthened.

Chairman: What is the exact increase caused by the greater length?—The addition to it, by the elongation, would be about 30,000 cubic feet.

Mr. Cardwell: Does that include the chamber below, or is it only the House itself?—That is exclusive of the chamber below; the cubical contents of the chamber below are about 27,500 cubic feet.

A corresponding addition would have to be made to those figures if this alteration were made, I suppose?—If the same system of ventilation is carried out, undoubtedly.

Mr. Cowper: Would you explain what the walls carry now which you propose to remove; do they carry the roof?—They only carry some small cross-beams, which could be provided for in other ways, not the main roof.

The main roof rests upon the walls, which would still remain after you had made your alteration?—It does.

So that this alteration could be made without any material expense?—I have not gone into the question of expense, but of course the expense would be much less than if you interfered with the main walls of the House.

I mean you would not have to make any alteration as regards the roof itself?—I think not.

What provision would be made for the purposes of the division lobby?—If you turn to the plan on page 6, you will see the arrangement; the division lobby would be carried all round the House, as at present, but the private rooms now behind the Speaker's chair would be sacrificed for that purpose.

Sir Charles Lanyon: But you propose to provide them where they are shown upon the plan in red?—I have made that suggestion to meet the difficulty.

Mr. Waldegrave-Leslie: Would there be any increased difficulty in the lighting (I refer to the daylight) of the House by this addition?—No.

Not of that part which is added on?—It would be lighted exactly in the same way as the present House is.

Viscount Cranborne: I see that you have put some of the official seats behind the Speaker's chair. Do you see any reason why that suggestion should not be applied to all the strangers' seats? Would you not by that expedient avoid the difficulty of having a certain number of seats for members from which no one could by any possibility ever address the House?—I think there would be great difficulties as to access to seats behind the Speaker's chair for strangers. Probably that would be a great objection, owing to the difficulty of keeping order; it would involve, as it appears to me, reversing the whole arrangement of the House.

Could not you put the Serjeant-at-Arms closer to the door?—The difficulty would be as to where the strangers are to come from to get behind the Speaker.

Could not they come round by the library?—I think that would be very inconvenient.

With reference to another point, as to the acoustic properties of the House, I want to call your attention again to what I alluded to a few minutes ago, namely, the keeping the seats continuous up to the bottom of the windows, instead of dividing them into a lower and an upper tier. I understand you to say that the human thigh, being a constant quantity, you would thereby lose the seats in the gallery; but what I wish to know is, if it were decided that seats in the gallery were not practically of any great utility, you would not thereby very much diminish the amount of cubic area which the speaker's voice would have to fill, would you? I speak merely with reference to the acoustic properties of the House, not the increase or loss of room. I ask whether you would gain in acoustic value by obliterating that angle, which exists in consequence of the overlapping of the galleries over the benches?—I do not think the existing conditions are unfavourable to acoustics.

You think the conditions would not be more favourable if you had the tiers with a continuous slope?—The question would be this: If you do away with the galleries, you would have to enlarge the House to get the same amount of accommodation, and therefore you must enlarge the area of the House.

The thesis I put to you is that the galleries are useless, because they do not afford accommodation for anybody who desires to address the House; the difficulty is not in finding accommodation for members in a division, but in finding accommodation for those who take part in the proceedings. For that purpose, would you not gain in the acoustic properties of the House by obliterating the cavity which now exists underneath the galleries, and by continuing the seats in a slope up to the lower edge of the windows, so that the whole of the cavity and space would disappear?—Now, I think, I understand you; the arrangement that you suggest involves, as I understand it, a diminution of the cubical contents of the House; inasmuch as it involves that it would, I think, be favourable to hearing.

Not only that, but would it not further have an acoustic value in presenting a more regular form, instead of a form in which the voice is necessarily broken and lost?—Whether it

Price 21s. Post Free. **HARNESS' ELECTROPATHIC (BATTERY) BELT.** Will last for years.

Over a quarter of a million Patients have been successfully treated for Rheumatism, Lumbago, Sciatica, Gout, Kidney Complaints, Epilepsy, Paralysis, Indigestion, Constipation, Female Complaints, General and Local Debility, Functional Disorders, &c. The following are selected from upwards of 25,000 reports received. The originals may be seen at the Company's Rooms, 52 OXFORD STREET, LONDON, W.

GOUT.
"Completely cured me."—*Major Pakenham, Armagh.*

HYSTERIA.
"The Belt has done wonders."—*Mrs. M. Oriel, Dowlais.*

LUMBAGO.
"It has been an untold comfort to me."—*Miss Hudson, Twyford.*

RHEUMATIC FEVER.
"I can speak positively of its advantages."—*Dr. C. Lempriere, D.C.L., Senior Fellow, St. John's College, Oxford.*

SCIATICA.
"Worth fifty pounds."—*Mr. R. J. Watson, Harwich.*

KIDNEY DISORDERS.
"I am like a new man."—*Mr. W. P. Pougher, Plymouth.*

BRONCHITIS.
"A wonderful change."—*Rev. E. Aubrey, Ystrad, Pontypridd.*

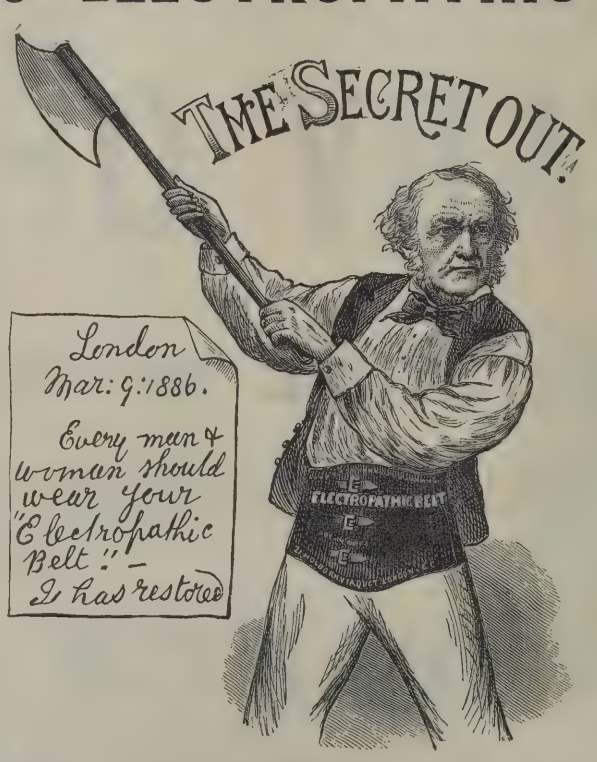
NEURALGIA.
"A most complete success."—*M. A. Langdale, Esq., Leacroft.*

RHEUMATISM.
"Found wonderful relief."—*Dr. A. Dresser, Norwood.*

NERVOUS HEADACHE.
"Derived much benefit."—*Mr. Wm. Holt, New Stafford.*

INDIGESTION.
"It has saved me hundreds of pounds. I wish I had purchased one before."—*Mr. C. Hitchcock, Bicester.*

NERVOUS DEBILITY.
"My health is quite restored."—*Dr. Bouracier, Garfield House, Burgess Hill, Sussex.*



LIVER COMPLAINT.
"I have no pain now."—*Mr. T. Smith, Hey, Lees.*

EPILEPSY.
"Wonderfully improved."—*Mrs. Godwin, Andoversford.*

SHORTNESS OF BREATH.
"Greatly relieved."—*Mrs. C. Frayer, 72 Elm Park Gardens, S.W.*

ASTHMA.
"Quite left me."—*Mrs. J. Low, Stirling, N.B.*

CONSTIPATION.
"A wonderful effect."—*Mr. H. T. Stokes, Demerara.*

FEMALE IRREGULARITIES
"Quite restored to health."—*Mrs. Hawkey, 16 Matilda Street, Barnsbury.*

DYSPEPSIA.
"A new man."—*Mr.*

PILES.
"Better in every way."—*Mr. R. Stringer, East Bradenham.*

BAD CIRCULATION.
"Feel like a different person."—*John Algar, Esq., Campsey Ashe, Wickham Market.*

PALPITATION.
"Quite free."—*Mr. G. Gate, St. Helier, Jersey.*

PARALYSIS.
"Very great benefit."—*Mrs. Sharp, Maidstone.*

WRITERS' CRAMP.
"A complete cure."—*Miss E. Hastings, Eastbourne.*

SPINAL WEAKNESS.
"Rapid improvement."—*Mr. Wm. Watson, Newspynie, N.B.*

MR. C. B. HARNESS, the Eminent Consulting Medical Electrician, has been specially retained by the Company, and may be consulted daily (without charge), on all matters relating to health and the application of Curative Electricity. Residents at a distance, and those unable to avail themselves of a personal consultation, are invited to write for a PRIVATE ADVICE FORM, which will be forwarded POST FREE, on application to THE MEDICAL BATTERY COMPANY, LIMITED, 52 OXFORD STREET, LONDON, W.

On receipt of Post Office Order or Cheque, value 21s., crossed London and County Bank, THE MEDICAL BATTERY COMPANY, LIMITED, 52 Oxford Street, London, W., undertake to forward the ELECTROPATHIC (BATTERY) BELT, as described above, for either Lady or Gentleman, free by post to any part of the United Kingdom.

"ELECTROPATHY; or HARNESS' GUIDE TO HEALTH," will be sent post free on application to the

The MEDICAL BATTERY CO., Ld., 52 OXFORD STREET, LONDON, W.

would be a better form for speaking than the present is questionable. I think a greater rise in the steps might be favourable, but not so great a rise as would take them nearly up to the sill of the windows.

Would not the favourable effect be proportional to the rise: the more you get the House into the form of a horizontal cylinder would it not increase the acoustic properties of the House?—I think there would be a point where the advantage would cease, and it would be somewhere between the present steps and the sills of the windows.

On what ground do you consider that the advantage would cease at some intermediate point?—I think you would be too much above the member speaking if you raised yourself up to the sills of the window.

You have never yourself practically gone into the House to listen to a speaker from the gallery, perhaps?—No, I have gone into the strangers' seats, but never into the members' galleries.

Is not it the case that the form exercises quite as important an effect upon the acoustical properties of a building as the volume, that is to say, the cubical contents?—Unquestionably.

And that any broken form is very injurious to the acoustical properties?—It is very difficult to dogmatise as to the forms which are injurious, but I generally find that any unusual proportion is unfavourable to acoustics. I mean, for example, if a room is unusually long or unusually high, or out of the general proportion in any way.

Your professional knowledge furnishes you with nothing like a formula in that respect, does it?—I am afraid not.

Mr. Darby Griffith: In point of fact, is this plan submitted by you rather to meet the wishes of the Committee, or does it really satisfy your own judgment?—It was prepared simply to show how an increase of accommodation could be gained.

It is not a plan which would meet with your approbation in comparison with other plans you could produce upon the subject?—It is not; I think it is too long.

Viscount Cranborne: Is not it the case that in the House of Lords a good deal of the voice is lost by the very elaborate character of the ornament, and the absence, therefore, of the regular form?—I should doubt that; it is a very large place to fill with the voice; I think that is the principal difficulty in the House of Lords.

Mr. Waldegrave-Leslie: Is it not also owing very much to the very long space beneath the House of Lords, which is very nearly equal to one-third of the chamber of the Lords itself?—I have already stated that I think that that has a prejudicial effect, but I should not like to state that I thought it was the main cause of the difficulty of hearing.

Mr. Cardwell: If there is any objection to the present House on the ground of the difficulty of hearing, the effect of adding 15 feet to it would not be to diminish those objections?—I think not.

Would it be to increase them?—I am afraid it would.

Viscount Cranborne: Have you ever thought of the advantage, for the purposes of enabling members to address the House from all parts of it, of removing the Speaker right into the wall behind his present chair?—I have considered the possibility of putting him as far back as possible under the gallery, but I do not think you could put him right back into the wall, because that would be right under the gallery.

What evil would result from his being right under the gallery?—It would be a very undignified and undesirable position.

You could remedy that, I suppose, by architectural expedients?—Scarcely.

Chairman: Have you ever thought of the plan of putting the Speaker at the side of the House; that has been suggested to me?—That would be a very difficult thing to do, the arrangements of the whole plan of the House having been conceived on the opposite principle.

As I understand it, the side walls of the House of Commons are very solid and substantial?—They are.

And they support the roof?—They are the main walls supporting the roof.

The walls of the division lobby are light walls; they would not be strong enough to support the roof?—Not to support such a roof as the House of Commons roof; they carry their own roof.

Supposing the plan were adopted of keeping the area floor of the House of Commons of the same size as it is at this present moment, and of expanding the size of the roof, could that, do you think, be accomplished without practically building a new House of Commons?—I do not think it could.

Will you have the goodness to look at Mr. Bazley's section. Suppose that, instead of the seats on the sides of the House rising as they do at the present moment, each tier slightly above the one in front of it, they were to rise at a more rapid inclination to the level of the gallery, and were then carried through the gallery to some elevation, so as to give a continuous rise from the area of the House up to, we will say,

COMYN CHING & CO.,

22 & 23 LITTLE SAINT ANDREW ST., and 54, 56, & 58 CASTLE ST., UPPER SAINT MARTIN'S LANE, W.C., LONDON,

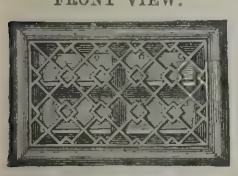
WHOLESALE IRONMONGERS.

MANUFACTURERS OF EVERY DESCRIPTION OF BRASS AND IRON WORK ON THE PREMISES.

Large Stock of Builders', Cabinetmakers', and Upholsterers' BRASSFOUNDRY. LOCKS of every description.

SPECIALITIES IN ORNAMENTAL BRASS DOOR FURNITURE, PICTURE RODS, STAIR RODS, CORNICE POLES, STAIR NOSINGS in BRASS or IRON, ESPAGNOLETTE BOLTS, and IMPROVED SELF-ACTING WATER-BAR, or WEATHERING for FRENCH CASEMENTS.

FRONT VIEW.



BACK VIEW.



Gasfitters, Bellhangers, Hot Water, and Ventilating Engineers. Sole Proprietors of

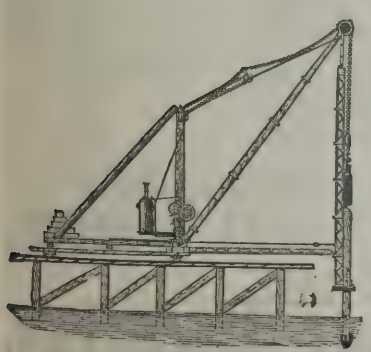
THOMAS BOYLE'S PATENT CHIMNEY-BREAST VENTILATORS.

Prices and Estimates on Receipt of Business Card.

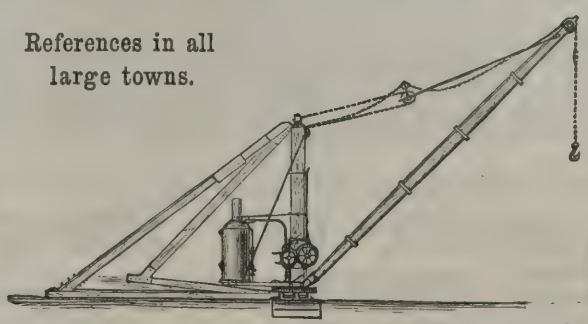
BUTTERS BROTHERS, ENGINEERS, GLASGOW.

PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

References in all large towns.



Crane used for Piling.



SCOTCH BUILDERS' CRANES,

Large Stocks. Send for List.

FOR SALE HIRE, OR HIRE-PURCHASE.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8 10	0
„ ¾ „	.	9 10	0
„ 1 „	.	10 10	0

eight rows. Could that be accomplished, do you think, without practically building a new House?—I do not think it could.

Supposing the Committee were of opinion that that was a right alteration to make, if it could be made, do you think that that operation could be accomplished by building up the division lobbies during the session, and then completing the work in the recess, so as not to have the necessity for a temporary House of Commons?—I do not think it could. It would be a very serious operation.

Mr. Darby Griffith: In fact, to effect an operation of that kind, would not you practically have to obliterate the whole of the wall above the junction of the present gallery with the present House?—A great part of it. Some portion of it would have to remain as piers or columns, to help to support the roof, which would be obstructions, of course, in the House as altered.

They would be obstructions of a very serious nature as regards hearing and seeing the proceedings in the House, would they not?—I think they would be very considerable obstructions.

Can you give us some idea, in a general way, of the scantling of the piers, for instance, that would be required?—I do not think I could do that without some consideration.

Can you give us any general idea of what portion of the wall would be left for that purpose?—Taken at the level of the windows, if you assume the minor piers removed, and the windows removed, the major piers would have to remain.

Can you give us an idea of what the scantling of these piers would be in comparison with the intervals between them?—The piers would be about three feet.

What would the intervals between them be?—Ten or 12 feet.

Then, with regard to the perspective effect of a person seated half-way in the gallery, with regard to communication with the Speaker, would not piers of this form and shape, standing in that manner, very seriously interfere with the communication by sight or hearing?—I think they would; they might perhaps be made, by the use of iron, a little less than three feet, but still they would be objectionable.

It would be a row of intermittent obstructions in the main body of the House, as we may call it, for such it would be then, and that would have a considerable effect in impeding oral and visual communication between the main portions of the House, would it not?—It would; it would be like a row of pillars in a church, with a nave and aisles.

Viscount Cranborne: Could not you have a considerable width of arch?—Not with the present construction; not without entirely altering the House.

On grounds of style or on grounds of structure?—On grounds of structure.

Mr. Waldegrave-Leslie: You would have such arches as would agree with the plan of the arches of the upper roof, that is to say, flat Tudor arches?—Yes, I assume that you would have a pier and an arch in each bay—each bay is about 15 feet in width.

Could not you double the bays?—I think not.

Mr. Darby Griffith: If you were to double the bays to obliterate one of the piers, would not there be a liability to throw a greater weight upon the remaining piers than they could properly bear?—Yes, with the existing conditions of the House of Commons I should hesitate very much, indeed, to take the risk of such a work.

Viscount Cranborne: Could not the roof be made lighter than it is now?—It could be reconstructed altogether, but taking it as it is it is very heavy.

Sir Charles Lanyon: I think that by taking out one pier, namely, the centre or smaller pier of the window, leaving the major pier to support the window, at the back row of the gallery not a single member would be able to see the Speaker?—There would be considerable difficulty, no doubt.

I think, if you look at these lines I have drawn upon this sketch, you will see that it is as I say; there would be no place from which members would see the Speaker, except from the immediate front of the gallery?—It may be so.

None of the back row would be able to see the Speaker?—I think a few might, because the piers, although they would be of large dimensions, would still be rounded off; they would not be great square piers. The arrangement, however, would doubtless be far from satisfactory.

Then, supposing you were to do what has been suggested by one of the members, take the intermediate pier away, so as to enlarge the space, that would be tantamount almost to the reconstruction of the House?—I think it would.

Mr. Darby Griffith: In fact, you could hardly interfere seriously with the side walls of the House without its amounting, practically, to a reconstruction?—That is my opinion.

Mr. Hankey: The adoption of some of the plans proposed would involve the necessity of practically rebuilding the House?—Yes; it would involve pulling down the present House and building a new one, and also the provision of a temporary House during the operation.

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co^s
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST, BENTLEY PRIORY, ROYAL, LANGHAM, GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S, BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

ESTABLISHED 1838.

MARVIN'S
AMERICAN
FIRE & BURGLAR PROOF SAFES,

PATENT WELDED STEEL AND IRON,

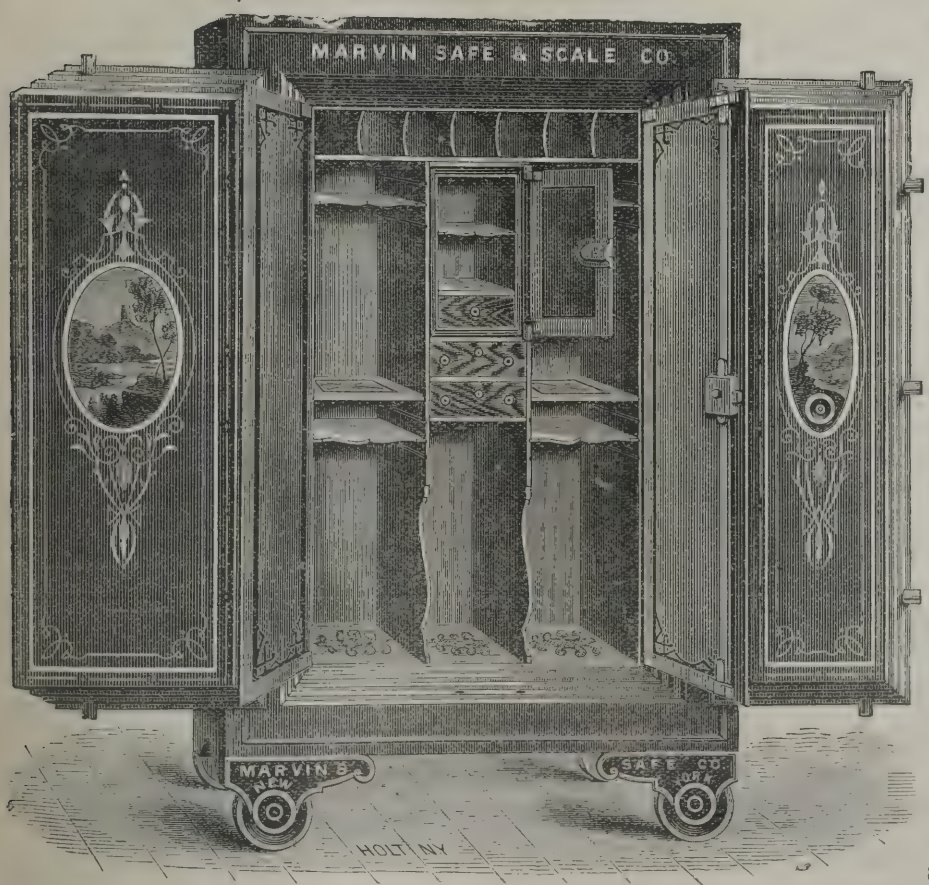
STRONG-ROOM DOORS & BANKERS' VAULTS,

NEW YORK, U.S.A., and LONDON, E.C.

BY SPECIAL APPOINTMENT

CONTRACTORS TO THE UNITED STATES GOVERNMENT TREASURY AND POST OFFICE.

FIRE AND BURGLAR PROOF SAFES.



Manufactured with the newly patented "Tongue and Groove" Improvement, "Forged Angle Frame with Sliding Back-plate," "Annealed Hinges," &c. &c. Body of heavy plate iron, secured by angle iron corners and welded refined iron frame and an entire inside iron lining.

Our new patterns give a greater thickness of Fire-proofing than in any other makes. Doors are fitted with round bolts and "Yale" Combination Lock of 1,000,000 changes. Inside doors are of plate-iron secured by suitable bolt work and key lock.

ABSOLUTELY PROOF

Against Blasting, Drilling, and Pick Lock.

Estimates and Designs furnished on application for all sizes and thickness of burglar proof vault doors; also for all styles of vault work.

Every description and style of Fire and burglar proof Safes for Merchants, Bankers, Jewellers, &c. Illustrated Catalogue, with full description, on application.

EUROPEAN BRANCH:

66 QUEEN STREET, CANNON STREET, LONDON, E.C.

"THE PEDESTAL VASE,"

JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,

SANITARY ENGINEER, STANGATE, LONDON.

A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



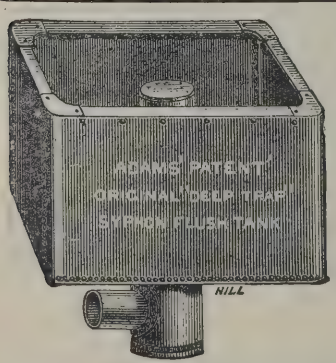
ELECTRIC & PNEUMATIC BELLS.

NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.

MECHANICAL TELEPHONES. Everything for a line complete for £3.

PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

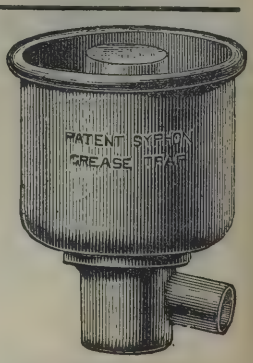


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
" **FLUSH SYPHONS** for Sewer Flushing.
" **FLUSH LATRINES** for Barracks, Schools, &c.
" **FLUSH URINALS** " " "
" **TROUGH CLOSETS** " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, July 2, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, JULY 9, 1886.

L'ART,

Price Two Shillings, can be ordered from all newsagents, and at any railway bookstall; or through the publishers for Great Britain, Messrs. GILBERT WOOD & Co., 175 Strand, W.C.

The scale of charges for Advertisements is as follows, and Advertisements intended for insertion in the following Number must reach the Office not later than the 24th or 8th of the month:—

ADVERTISEMENT SCALE.

For Two Lines and under (nine words to the line)	£0 5 0
For every additional Line	0 1 6
Per Quarter Page	6 0 0
Per Half Page	11 0 0
For a Page	21 0 0
For 1 inch deep by 2½ wide	0 15 0

Special arrangements may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 Strand, London, W.C.

THE ARCHITECT AND CONTRACT REPORTER.

ADVERTISEMENT SCALE.

For Two Lines and under	£0 2 6
For every Additional Line	0 0 6
For Quarter Page	2 10 0
For Half Page	4 10 0
For a Page	8 8 0

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, at the *Office*, 175 *Strand, London W.C.*

NOTICE.

We have appointed Mr. JOHN BERGER, *of New York, our agent for the United States and British North America, for receipt of Advertisements and Subscriptions to* THE ARCHITECT AND CONTRACT REPORTER.

CONTRACTS OPEN.

ABERGAVENNY.—For Alterations and Additions to Tan House Premises. Mr. E. A. Johnson, Architect, Abergavenny and Newport.

AINTREE.—July 13.—For Building Engine Shed. The Engineer's Office, Hunt's Bank, Manchester.

ALLERTON.—July 10.—For Building Wesleyan Chapel. Mr. H. Isitt, Architect, Queen Anne Chambers, Bradford.

ALNWICK.—July 14.—For Building Feeding Sheds and Granary at Stoup Hill. Mr. W. T. Hindmarsh, 26 Bondgate Without, Alnwick.

APPERLEY BRIDGE.—July 13.—For Building Primitive Methodist Sunday Schools, &c. Mr. Jowett Kendall, Architect, Idle, near Bradford.

APPLETHWAITE.—July 10.—For Building Chapel for the Burial Board. Mr. Robert Walker, Architect, Windermere.

AVONMOUTH DOCK.—July 17.—For Erection of Shed (Brick and Slate, Iron Fireproof Floor, &c.). Mr. J. W. Girdlestone, C.E., Dock Engineer's Office, Underfall Yard, Cumberland Basin, Bristol.

BARNSLEY.—July 13.—For Building Twelve Dwelling-houses. Messrs. Wade & Turner, Architects, 10 Pitt Street, Barnsley.

BELFAST.—July 14.—For Building Premises. Messrs. S. & W. H. Stephens, Donegall Place, Belfast.

BELFAST.—For Building National Schools and Teacher's Residence, Hillsborough. Mr. W. Batt, Architect, Garfield Chambers, Royal Avenue, Belfast.

BELFAST.—July 16.—For Building Premises. Messrs. Young & Mackenzie, Donegall Square East, Belfast.

BRAMLEY.—July 12.—For Building Two Through Houses at Whitecote. Mr. W. N. Wynn, Architect, 3 Matlock Mount, Roundhay Road, Leeds.

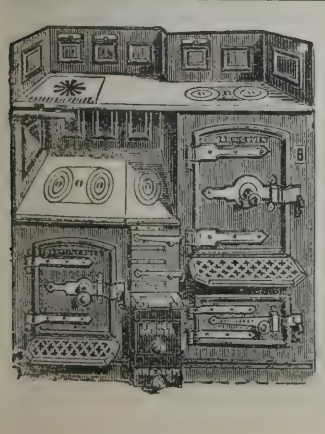
BRAMLEY.—July 12.—For Building Twelve Through Houses. Mr. J. Charles, Architect, 14 Butts Court, Albion Street, Leeds.

BRAY.—July 14.—For Building Dispensary House. Mr. W. Sterling, Architect, 107 Stephen's Green, Dublin.

BUCKIE.—July 15.—For Building Institute. Messrs. Bruce & Sutherland, Architects, Banff & Buckie.

BULWELL.—For Two Houses, Shops, Coach House, Stables, &c. Mr. F. Bailey, Architect, Pelham Street, Nottingham.

BURNLEY.—For House and Shop. Mr. T. Dean, Architect, 21 Nicholas Street, Burnley.



GOLD MEDAL, Health Exhibition, 1884, after the most careful and exhaustive tests.

THIS KITCHENER (CRABTREE'S PATENT) is the most effective and economical of any in the Market. Obtain List, post free, and read through the various Testimonials.

All ARCHITECTS should have our Catalogue, post free, of INVENTIONS in WINDOW APPLIANCES.

SILVER MEDAL AT INVENTIONS,

☞ AND NOTE

Their Patent Chain Fan and Hopper Light Opener, which has no rival.

" " Skylight Lifters and Iron Skylights.

" " Reversible Pivot Windows for Cleaning outside from inside.

" " Epicycloidal Action for Opening one or any number of Lights.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C.; 54, 56 58 CALL LANE, LEEDS; 58 HOPE ST., GLASGOW.

CARDIFF.—July 12.—For Building Business Premises, St. Mary Street. Mr. S. Rooney, Architect, 16 Crockherbtown, Cardiff.

CHIPPING NORTON.—July 17.—For Building Master's House and Enlarging School. Mr. T. Mace, Clerk to the School Board, Chipping Norton.

COLNE.—July 17.—For Extension of Retort-house Roof. Mr. T. Varley, Gasworks, Colne.

CONWAY.—July 23.—For Addition to Workhouse. Mr. T. B. Farrington, Architect, Conway.

DEWSBURY.—July 27.—For Building Town Hall, Municipal Offices, Police Court, Cells, &c. Mr. H. Holton, Architect, Dewsbury.

DYCE.—July 9.—For Building Dwelling-house, Farburn. Messrs. Chalmers, 13 Union Terrace, Aberdeen.

EASTBOURNE.—July 15.—For Electric Lighting and Gas-fittings. Mr. W. T. Foulkes, Architect, 100 Colmore Row, Birmingham.

ELTON.—For Building Catholic School Chapel. Mr. O. C. Hill, Architect, Albert Square, Manchester.

GIPSY HILL.—July 19.—For Station Offices, Platform Roofs, &c. Mr. A. Sarle, Secretary, London Bridge Terminus.

GLOUCESTER.—July 10.—For Erection of Workshops to Cover 5,200 yards super. Messrs. Medland & Son, Architects, 15 Clarence Street, Gloucester.

GREAT YARMOUTH.—July 10.—For Building Three Houses, Southtown. Mr. S. Rivett, Architect, Hall Quay, Great Yarmouth.

HEREFORD.—July 28.—For Restoration of Wellington Church. Messrs. Nicholson & Son, Architects, Hereford.

HIGH WYCOMBE.—For Building Business Premises. Mr. T. Thurlow, Architect, High Wycombe.

HUNTLEY.—July 15.—For Rebuilding Stewart's Hall. Messrs. Matthews & Mackenzie, Architects, 255 Union Street, Aberdeen.

HYDE.—July 17.—For Building Detached House and Stables. Messrs. J. Eaton & Sons, Architects, Ashton-under-Lyne.

LANGLEY PARK.—July 9.—For Building Church. Rev. C. F. D. Hodge, Esh Vicarage, Durham.

LLWYNYHIA.—July 12.—For Chancel, Vestry, Organ Chamber, and Boundary Walls to Church. Mr. E. M. B. Vaughan, Architect, Cardiff.

LONDON.—July 9.—For Building Board Schools and Enlarging Schools. The Architect's Department, School Board Offices, Victoria Embankment, W.C.

LONDON.—July 22.—For Brick Sewer and Subway from St. Martin's Lane to Tottenham Court Road. The Engineer, Metropolitan Board of Works, Spring Gardens, S.W.

MABLETHORPE.—July 10.—For Schoolroom and Offices at Parochial School, and Addition to Master's House. Mr. Wilson, Solicitor, Westgate, Louth.

MANCHESTER.—July 19.—For Building Chimney at Gas Works. The City Surveyor.

MEDOMSLEY.—July 10.—For Building National School. Messrs. J. Smith & Son, Architects, Rose Cottage, Shotley Bridge.

MIDDLESBROUGH.—July 10.—For Additional Fittings, Police Court, New Public Buildings. Mr. G. G. Hoskins, Architect, Darlington.

MIDDLESTOWN.—July 14.—For Rebuilding Mill. Mr. F. Broadbent, Architect, 3 Bradford Road, Dewsbury.

NEW NORMANTON.—July 19.—For Additions, &c., to Board Schools. Mr. F. C. Coulthurst, Architect, 4 Albert Street, Derby.

NORTH-EASTERN RAILWAY.—July 14.—For Building Workshops at Hull. Mr. Wm. Bell, Architect, York.

NOTTINGHAM.—For Building Three Houses. Mr. H. Gill, Architect, Cobden Chambers, Pelham Street, Nottingham.

OLDHAM.—July 14.—For Enlargement of Public Baths. Mr. L. Booth, Architect, 28 Faulkner Street, Manchester.

OXFORD.—July 14.—For Building Dispensary, Worcester Street. Mr. E. G. Bruton, Architect, Oxford.

PENZANCE.—July 21.—For Building Ward, Medical Officers' Department, Dispensary, &c., West Cornwall Infirmary. Mr. Oliver Caldwell, Architect, Victoria Square, Penzance.

PORTHCAWL.—July 14.—For Villa, Stable, &c. Mr. D. L. Harris, Surveyor, 69 Stacey Road, Roath, Cardiff.

PORTLAND.—July 16.—For Watch House for the Customs. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

SOUTHAMPTON.—July 13.—For Erection of Brick-built Offices, Town Quay. Mr. J. G. Poole, Surveyor to the Harbour Board, 9 St. Michael's Square, Southampton.

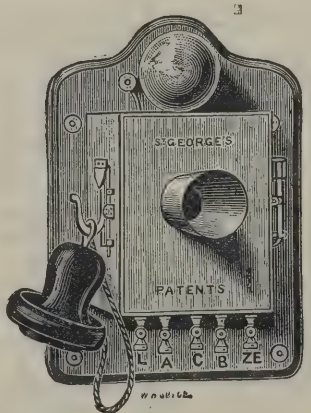
A. F. ST. GEORGE,

Electrician.

Telephone Manufacturer and Patentee.

Electric Light Contractor and Patentee.

85 Chancery Lane, London, W.C.



Price £12 12s. per pair.

TELEPHONE SYSTEM (St. George's Patents), ON RENTAL FROM £5 PER ANNUM, OR ON PURCHASE OUTRIGHT.

GOWER-BELL PATENT TELEPHONE SYSTEM, ON RENTAL OR PURCHASE.

ESTIMATES FOR ELECTRIC LIGHTING ON ST. GEORGE'S PATENTS or OTHER SYSTEMS FREE.

GEARY'S PATENT "INVINCIBLE" SYSTEM OF

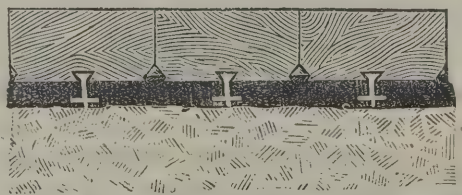
WOOD BLOCK FLOORING.

Now being extensively adopted throughout the country for

Public Buildings, Churches, Schools, Banks, Mansions, Warehouses, Railway Station Offices, Basements, &c.

POSSESSES IMPORTANT ADVANTAGES OVER ALL OTHER SYSTEMS.

Every Block fastened IMMOVABLY to a Substratum of Adhesive and Preservative Mastic by METAL KEYS, as shown.



NO CEMENT "FLOATING" REQUIRED the Mastic being laid on the ROUGH Concrete Foundation.

BLOCKS ABSOLUTELY IMMOVABLE.

ALL FLOORS GUARANTEED.

FULL PARTICULARS, PRICES, SAMPLES, &c., ON APPLICATION TO

GEARY & WALKER, { LONDON: 24 CHARING CROSS, S.W. MANCHESTER: 7 JOHN DALTON STREET.

SPECIALITY:—Oak and Darkened Oak for Church Aisles, Mansions, &c., from 9s. per superficial yard.

TUBERCURRY.—July 12.—For Building Medical Officer's Residence. Mr. W. J. Byrne, 20 Suffolk Street, Dublin.

YEADON.—July 13.—For Rebuilding Crompton Shed. Mr. Jowett Kendall, Architect, Idle, Bradford.

TENDERS.

BLACKBURN.

For Building Offices for the Guardians, Blackburn. Messrs. STONES & GRADWELL, Architects, 10 Richmond Terrace, Blackburn.

Accepted Tenders.

C. Hindle, Blackburn, masonry, &c.	£1,750 0 0
T. Ruckledge, Blackburn, joiner work	1,349 10 0
J. F. Cooper, Blackburn, brickwork	1,150 0 0
P. Walsh & Son, Blackburn, plumbing, &c.	915 16 0
Geary & Walker, Manchester	702 5 6
E. Carr, Blackburn, plastering	398 10 0
R. T. Eastwood, Blackburn, slating	279 10 0
J. Leaver, Northgate, painting	89 0 0

BOURNEMOUTH.

For Street Improvement Works, Norwich Avenue and Southcote Street, Bournemouth. Mr. G. R. ANDREWS, Surveyor.

Saunders & White	£251 3 1
G. JAMES (*accepted*)	248 14 3
J. J. Eyres (*informal*)	247 10 10

St. Peter's Road.

W. E. Jones	610 10 0
Saunders & White	524 9 0
G. James	470 0 0
J. J. EYRES (*accepted*)	435 0 0

BURY.

For Building Caretaker's Lodge at Recreation Ground, Bury. Mr. J. CARTWRIGHT, C.E., Borough Engineer.

J. Byrom, Bury	£612 0 0
J. Tinline, Bury	599 0 0
T. & L. Wilde, Bury	583 0 0
J. COMPORT, Bury (*accepted*)	578 0 0

CAISTOR.

For Construction of Stoneware Pipe Culvert under the Louth Canal (100 feet). Mr. J. MAUGHAN, C.E., Town Hall, Great Grimsby.

Riggall & Hewin, Great Grimsby	£214 0 0
C. Simons, Great Grimsby	187 16 0
G. H. H. HICKLING, Louth (*accepted*)	186 10 0
Hill & Blythe, North Thoresby, Louth (*informal*)	172 15 6
Engineer's estimate	200 0 0

BRISTOL.

For Building Party Wall at No. 69 Victoria Street, Bristol, for Messrs. Price & Titley. Messrs. J. W. TREW & SONS, Architects, 22 Broad Street, Bristol. Quantities not supplied.

Thomas Penny	£114 0 0
William Norris	81 17 6
E. C. Howell & Son	78 0 0
ENOS GAY, Bristol, masonry only (*accepted*)	68 0 0

CARDIFF.

For Building Mission Hall, Cardiff. Mr. J. H. PHILLIPS, Architect, 24 Duke Street, Cardiff.

C. Gray	£1,137 0 0
D. THOMAS (*accepted*)	924 0 0

CREWKERNE.

For Building Factory at Crewkerne, Somersetshire, for Mr. John Henry Walter. Mr. HENRY HALL, F.R.I.B.A., Architect, 19 Doughty Street, W.C.

Wheeler & Gregory, Radstock	£2,160 0 0
Draper, Crewkerne	1,921 5 5
Howell & Son, Bristol	1,875 0 0
Trevena, Plymouth	1,829 0 0
Paull, Merriott	1,825 1 11
Cox, Yeovil	1,824 6 0
Poole, Ilminster	1,823 0 0
Davis & Son, Dorchester	1,775 7 11
Gibson, Exeter	1,760 0 0
S. & J. Staple, Stoke-under-Ham	1,736 0 0
Symes, Combe St. Nicholas	1,718 0 0
Hama, Stoke Abbott	1,655 0 0
Pitman & Rowsell, Stoke-under-Ham	1,525 10 0
Lye & Son, Crewkerne	1,490 0 0
Mumford, Crewkerne	1,460 0 0

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,

Is admitted to be the best ever put before the Public.

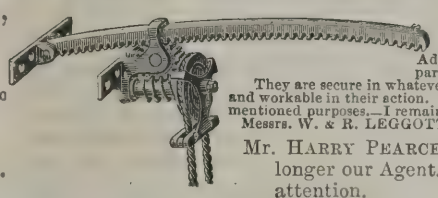
From 5s. each.

Write for REDUCED PRICE LIST and Testimonials to

W. & R. LEGGOTT,

70 Park Road, Bradford, Yorkshire.

N.B.—Size and height of window no object.



TESTIMONIAL.

BANGOR, N. Wales: September 14, 1885.

Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction.

They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.

Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.

Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS AND MANUFACTURERS,

14 ELM STREET, GRAY'S INN ROAD,

LONDON, W.C.

Designers and Manufacturers

of all kinds of ART WORK

for Ecclesiastic and Domestic Purposes,

in Silver, Copper, Brass, and Iron.

SPECIALITE:

DOOR FURNITURE AND LOCKS.

Write for Illustrated Catalogue.

DEPTFORD.

For Bar Fittings, &c., at the Royal George Public-house, Deptford, S.E., for Mr. C. Bull. Mr. HENRY ROBERTS, Architect and Surveyor, 113 Lewisham Road, S.E.

Fittings, &c.

J. W. TAYLOR, Camberwell (*accepted*).

Pewtering.

F. J. RUSE, Bermondsey (*accepted*).

Gas Fittings.

C. C. FEATHERSTONE, Deptford (*accepted*).

DOVER.

For the Erection of Auction Rooms and Furniture Stores, Dover, for Messrs. Worsfold & Hayward. Mr. E. W. FRY, Architect.

G. Parks	£957 0 0
H. Richardson	926 0 0
W. J. Adcock	873 0 0
W. J. Wiles	858 0 0
H. Stiff	837 0 0
W. T. Dowle	812 0 0
Austin & Lewis	767 0 0
W. BROMLEY (*accepted*)	725 0 0

EASTBURY.

For Forming Road at Eastbury, on the Northwold Building Estate. Messsrs. HUMBERT, SON, & FLINT, Surveyors, Watford and London.

J. Coote, Watford	£2,475 0 0
W. Harris, Camberwell	2,015 0 0
G. Pilkin, Bushey	1,988 0 0
H. Drury, Harrow	1,858 0 0
W. Smith, Bushey	1,849 18 6
G. Felton, Brondesbury	1,828 0 0
Rowland Bros., Fenny Stratford	1,810 0 0
T. TURNER, Watford (*accepted*)	1,802 0 0
G. Capper, St. Albans	1,508 1 5
Judge & Eames, Watford	1,190 0 0

FAKENHAM.

For Additional Drainage Works, Fakenham.

Tithills Brothers	£388 0 0
Priest	358 0 0
Seppings	349 10 0
J. W. Smith	308 10 0
NEEDS (*accepted*)	295 10 0

GREAT MARLOW.

For Erection of School Buildings, Little Kingsmill, Little Missenden. Mr. CHARLES CARTER, Architect, West Street, Great Marlow. Quantities by the Architect.

J. Grist, Bierton, Aylesbury	£383 0 0
G. Darlington, Amersham	375 0 0
W. R. Noosley, High Wycombe	348 0 0
W. Creed, Maidenhead	348 0 0
Cooper & Co., Aylesbury	344 0 0
Snell & Co., Maidenhead	335 0 0
G. H. Gibson, High Wycombe	328 0 0
G. Biggs, Great Kingshill, Wycombe	319 0 0
G. Parsons, Prestwood, Missenden	261 0 0

GREETLAND.

For Engine House and Water Wheel Race, &c., at Gatehead Mill, Greetland. Messrs. HORSFALL & WILLIAMS, Architects, 15 George Street, Halifax.

Accepted Tenders.

E. Riley, Rishworth, mason, &c.	£295 15 0
C. W. Whiteley, Rishworth, joiner	59 10 0
J. Naylor, Halifax, plumber	24 15 0

GWAUN-CAE-GURWEN.

For Vestry Room at Carmel, Gwaun-Cae-Gurwen.

J. Thomas, Gwaun-Cae-Gurwen	£228 0 0
S. Jenkins, Gwaun-Cae-Gurwen	208 0 0
T. Thomas, Gwaun-Cae-Gurwen	205 0 0
D. Rees, Ystalyfera	200 0 0
E. Davies, Cwmgorse	191 0 0
T. BOWEN & WALTERS, Gwaun-Cae-Gurwen (*accepted*)	157 6 0
Architect's estimate	159 0 0

HALIFAX.

For Pulling Down old Buildings and Erection of a new Cocoa House, near Lee Bridge, for the Halifax Cocoa House Company. Messrs. HORSFALL & WILLIAMS, Architects, 15 George Street, Halifax.

Accepted Tenders.

W. Firth & Son, Queensbury, mason	£400 0 0
Julian & Thompson, Halifax, joiner	175 0 0
W. Ward, Halifax, plumber	83 0 0
Woodhead & Co., Halifax, slater	34 0 0

PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.

GIBBARD'S Reliable Wood Block Flooring,

FOR CHURCHES, SCHOOLS, ETC.

ALL WORK GUARANTEED.

Works—TIVERTON ROAD, EXETER.

THE

London Drawing Office

AND

ARCHITECTURAL STUDIO.

(LLOYD AND CO.)

ESTABLISHED 1878.

37, Great James Street, Bedford Row, W.C.

Managing Director, EDWD. H. LLOYD, Architect & Surveyor.

WM. YOULTEN, Secretary.

Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.

Office Hours: 9.30 to 5.30. Saturdays to 2.

The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.

Estimates by return of post on receipt of full particulars.

REGISTERED TELEGRAPHIC ADDRESS:—

"ARCHITECTURE, LONDON."

SANITARY CONGRESS AND EXHIBITION.

THE SANITARY INSTITUTE OF GREAT BRITAIN

will hold its Ninth Congress at York on September 21 and following days.

The Council invite papers on subjects relating to Health and Sanitary Science. Full particulars as to the conditions under which papers are accepted can be obtained on application to the Secretary.

The Health Exhibition, including Sanitary Apparatus and Appliances, will be held at the same time, and details are ready for distribution.

74A Margaret Street, London, W.

THE WHITLAND ABBEY SLATE COMPANY (LIMITED),

29 EXCHANGE BUILDINGS, SWANSEA.

TO ARCHITECTS, BUILDERS, AND OTHERS.

THE above Company having acquired the ORIGINAL WHITLAND ABBEY GREEN SLATE QUARRIES, and opened them out on a large scale, are now prepared to supply any quantity of the very first quality, having a large stock on hand of all sizes. These slates were used by the late Sir G. G. Scott, F.S.A., &c., and many other eminent architects, on their best buildings. The colour of these slates is not affected by London smoke, or weather. Price lists, samples, and all information will be sent on application to the Secretary at the above address.

JOHN BRINSMEAD & SONS' PIANO.

Entirely New Construction throughout.

Highest awards at principal Exhibitions.

For Sale, for Hire, and on the Three Years' System.

JOHN BRINSMEAD & SONS, 18, 20, and 22 Wigmore Street, London, W. Illustrated Lists and Descriptions post free.

COMPETITION WORK.

High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.

ARCANUM, 20 Theobald's Road, W.C.

PERMANENT EXHIBITION

OF

ARCHITECTURAL APPLIANCES,

10 Baker St., Portman Square, W.

WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.

Applications for Space can now be made to the Manager,

S. S. PHILLIPS.

ARROWSMITH'S

"SOLID" PARQUET FLOORS



SOLID INCH THICK. BOTH SIDES ALIKE.

Not Veneered. PATENTED.

Also Quarter-inch THICK, for Surrounds of Carpets.

References to Works executed since 1851, in all parts of the World.

CARVED WOOD CHIMNEY-PIECES.

Contracts for all kinds of Joinery, Painting, Decorating, &c.

No. 80 NEW BOND STREET, London, W.

WILLIAM HALFORD

(The Patent Self-Fastening Coal Plate Co.),

MANUFACTURER OF

"SEMI-PRISM" LENS

And other Pavement Lights,

Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.

Patent Self-Fastening Coal Plates,

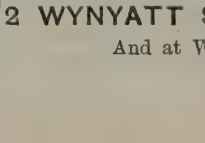
M. & T.'S PATENT.

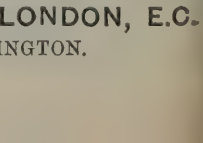


NO. 4,125.

International Inventions Exhibition, London, 1885,

HIGHEST AWARD, BRONZE MEDAL.





Price Lists and Special Quotations on application to

2 WYNYATT ST., LONDON, E.C.

And at WARRINGTON.

HUDDERSFIELD.

For Forming Street (200 yards) at Wood Terrace, Little Royd. Mr. J. B. ABBEY, C.E., 1 Peel Street, Huddersfield.

E. Crowther	£286	12	0
R. Naylor, Cleckheaton	283	0	0
G. Blackburn	260	0	0
A. Graham	247	0	0
H. Radcliffe	240	0	0
W. Waring	235	0	0
J. Bateman, Dyke, near Bradford	234	11	3
J. Fox, Lockwood	229	0	0
Cocks & Smith, Ashton-under-Lyne	200	0	0
B. Brooke, Butternab	199	17	6
J WHITTAKER, Largwood (*accepted*)	199	14	2

HULL.

For Erection and Completion of Sail Loft, Fish-curing Premises, Stabling, &c., in Beecroft Street, St. George's Road, Hull, for Mr. Joseph Marr, Smack Owner. Mr. J. W. L. WHITFIELD, Architect and Surveyor, Chancery Buildings, Hull.

Stanley	£1,600	0	0
Seward	1,405	0	0
Harding	1,349	0	0
Hird	1,289	0	0
Watson	1,260	0	0
Garbutt	1,256	0	0

HUNTINGDON.

For Building Villa Residence near Huntingdon. Mr. R. HUTCHINSON, Architect, Huntingdon.

W. Wade, St. Neots, Hunts.	£1,244	0	0
W. Allen, Brampton, Hunts.	1,205	0	0
Thackray & Son, Huntingdon	1,200	0	0
G. Page, Buckden, Hunts.	1,199	18	0
W. Hawkins, Stanground, Peterboro'	1,181	14	6
A. Bunting, Fenstanton, St. Ives	1,180	0	0
W. Howard, Huntingdon	1,176	0	0
W. Coates & Thrapston	1,130	0	0
W. Emerson, Stamford	1,129	0	0

YOU will really enjoy yourself if you smoke the excellent cigars supplied direct to consumers, at wholesale prices, by HELMCKE & CO., 32 Great St. Helen's, London, E.C. Write for price list. Sample collections sent on receipt of 10*s.* 6*d.* or 21*s.*

For Additions, &c., to Private Residence, Huntingdon. Mr. R. HUTCHINSON, Architect, Huntingdon.

W. Osborne, St. Neots	£1,055	0	0
W. Saint & Sons, St. Ives	1,050	0	0
J. Rowe, Huntingdon	1,020	0	0
W. Balmer, Huntingdon	991	0	0
A. Bunting, St. Ives	850	0	0
Thackray & Son, Huntingdon	810	0	0

KENDAL.

For Additions to House, Helsington Laithes. Mr. JOHN STALKER, Architect, Kendal.

Accepted Tenders.

D. Thoms, Kendal, excavating, &c.	£122	0	0
S. Compstone, Kendal, carpenter and joiner	68	0	0
G. Lyon, plumbing and painting, &c.	28	9	0

For Additions, &c., to the Kiln Green, and Towers Farms, Whassett, Westmoreland, belonging to Mr. W. Bindloss, Flowerden, Milnthorpe. Mr. J. STALKER, Architect, 31 Stramongate, Kendal.

Brennand & Son, Kendal, excavating, &c.	£120	0	0
A. Nelson, jun., Old Hutton, carpenter and joiner	60	0	0
W. Jackson, Kendal, plumbing, &c.	20	0	0

LINLITHGOW.

For Building Board School at Bridgend, Linlithgow. Mr. FAIRLEY, Architect.

Accepted Tenders.

J. & W. Sorley, Wishaw, bricklayer	£1,329	3	8
W. Walker, Polmont, joiner	641	17	6
M. D. M'Kerracher, Bo'ness, plumber	131	0	0
J. Boyd & Co., Bo'ness, slater and plasterer	235	3	8
Extras for Dormers	35	0	0

LONDON.

For Additions to Lavatory Accommodation at Tanner Street Workhouse, St. Olave's.

Preston, Bermondsey	£178	10	0
Smith & Barnes, Bermondsey Square	180	0	0
BULLERS, George Row (*accepted*)	135	0	0
Architect's estimate	135	0	0

For Enlarging Lodge, Southwark Park.

J. & J. GREENWOOD (*accepted*)	£324	0	0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Desins.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, * * * * * * * * SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), **Engineers, &c.**
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL * * * * * PARTICULARS (SENT POST FREE). * * * * *

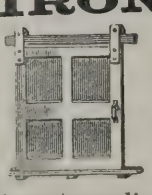
WHITLAND ABBEY GREEN SLATE QUARRIES.
REDUCTION IN PRICE.
THESE Stout, Durable SLATES, which are so much sought after by Architects for Mansions, Churches, Chapels, and other Public Buildings on account of the permanency of their beautiful colour, are now offered by the Proprietor, Mr. MUSCOTT (whose name is so well known in connection with these Green Slates for the last twenty years), at a reduction of Twenty per Cent.—For Testimonials, Samples, Price Lists, &c., apply to the old address, as under.
Mr. MUSCOTT, { Whitland Abbey Green Slate Quarries / Clynderwen R.S.O., South Wales.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK.
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*


TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

LONDON—*continued.*

For New Staircase at Congregational Memorial Hall, Farringdon Street, E.C. Mr. W. D Church, Architect, 10 South Place, Finsbury, E.C. Quantities by Mr. C. Stanger, Surveyor, 21 Finsbury Pavement, E.C.

J. Holloway, Lavender Hill (*accepted*)	£989 0 0

For Rebuilding the New Inn, Tottenham Court Road, for Messrs. Cakebread. Mr. W. T. Farthing, Architect.

H. Pickersgill & Co.	£2,893 0 0
E. Lawrance & Sons	2,875 0 0
J. & J. Greenwood	2,798 0 0
H. Cook (*too late*)	2,795 0 0
T. L. Green	2,789 0 0
T. R. Lamble	2,765 0 0
W. Scrivener & Co.	2,714 0 0
R. Marr	2,667 0 0
Spencer & Co.	2,640 0 0
Jackson & Todd	2,593 0 0
Leslie & Knight (*accepted*)	2,548 0 0

LUDDENDEN.

For Building Two Houses, Outbuildings, and Boundary Walls, Luddenden. Mr. T. L. Patchett, Architect, Halifax.

Accepted Tenders.

J. & W. H. Fletcher, Luddenden, excavator, mason, and bricklayer.
Edwin Marsland, Booth, carpenter and joiner.
Jonas Alderson, Luddenden Foot, plumber and glazier.
J. & T. Alderson, Luddenden, plasterer and slater.

MARLOW.

For Alterations, &c., at Sir W. Borlase's School, Marlow.

W. H. Symonds, Reading	£897 0 0
Y. J. Lovell, Marlow	894 0 0
Snell & Co., Maidenhead	876 0 0
W. Creed, Maidenhead	849 0 0
J. S. Carter, Marlow	697 0 0
H. Harris, Bolter End	649 0 0
W. R. Loosley, Wycombe (*accepted*)	610 0 0

Ham Hill Stone! Ham Hill Stone!!! For Ham Hill Stone of best quality and workmanship, apply to JOHN HANN & SON, Quarry Owners, Montacute, Ilminster. Established 1837. Agents, MATTHEWS & GEARD, Albany Wharf, Regent's Park Basin, N.W. Advt.]

MITCHAM.

For Vestry Hall and Parochial Offices. Mr. R. M. Chart, Surveyor, Mitcham. Quantities by Messrs. Franklin & Andrews.

Wall Bros., Kentish Town	£4,377 0 0
Nightingale, Albert Embankment	4,190 0 0
Peters, Horsham	4,170 0 0
Harris, Sutton	4,055 0 0
Potter, Sutton	3,935 0 0
Kirk & Randall, Woolwich	3,923 0 0
Pawley, Norwood	3,849 0 0
Stewart, Wallington	3,848 0 0
Knight, Morden	3,792 0 0
Humphries, Sutton	3,778 0 0
E. J. Burnand, Wallington (*accepted*)	3,545 0 0

MONTROSE.

For Building School, &c., Craigo. Mr. John Sim, Architect, Montrose.

Accepted Tenders.

James Ford & Son, Montrose, mason.
James Hird & Son, Montrose, joiner.
Foobes, Laurencekirk, plasterer.
Moug, Montrose, plumber.
J. Wishart & Son, Laurencekirk, slater.
Total, 612*l.* 10*s.*

MOUNTAIN ASH.

For Providing a temporary Supply of Water to the District of Blackrock, Mountain Ash. Mr. S. O. Harper, Surveyor.

McE. M. Davies, Penrhewceibed	£185 12 2
T. Morris, Mountain Ash	144 11 9
J. John, Mountain Ash	142 12 0
T. Taylor, Pontypridd (*accepted*)	140 14 2

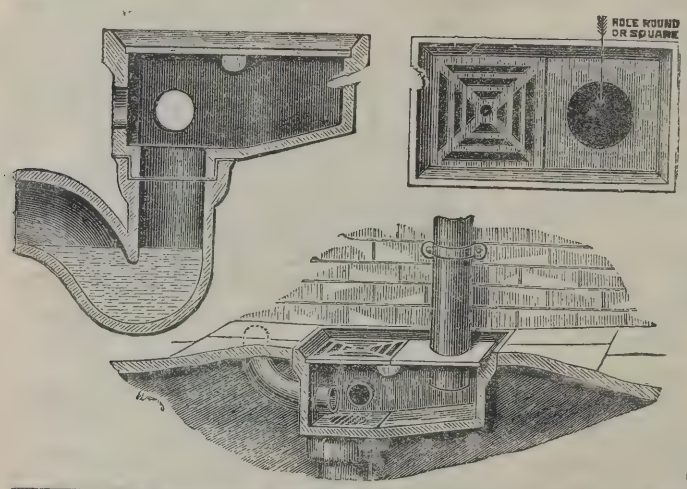
NEATH.

For Building Schoolroom and Vestry-rooms, Skewen, near Neath. Mr. D. M. Davies, Architect, Neath.

E. Thomas & Co., Seven Sisters	£984 0 0
D. Beynon, Skewan	876 6 6
A. George, Neath	820 0 0
Walters & Johns, Swansea (*accepted*)	747 0 0
D. Morgan, Neath	695 0 0
R. Griffiths & Co., Neath	685 3 0

NOTICE OF REMOVAL.

BELLMAN'S PATENT GULLY.



This Gully possesses the following advantages:—

Receives and disconnects one Rain-water Pipe and Three Waste Pipes.
Avoids all Splashing. | **Forms Drain for Area or Surface.**
Ventilates the Pipes and Trap. | **Is easy of Access for Clearance.**

The ordinary P or S trap to be used in connection with Gully being in a separate piece, can be placed at any angle to meet the drain exactly, thus insuring a perfect joint, the Gully being fixed at right angles. This is a great advantage over other arrangements made with the trap in one piece.

The Holes for Rain-water Pipes are made both Circular and Square and of various sizes.

DESCRIPTIVE CIRCULAR ON APPLICATION.

THIS GULLY IS HIGHLY RECOMMENDED by Authorities on Sanitary Matters.

PRICE AT DEPOT:—EDWARD ST., DORSET SQUARE, N.W., 8s. 6d. each.

Also SINGLE GULLIES, for Sink Wastes only, price 3/9 each.

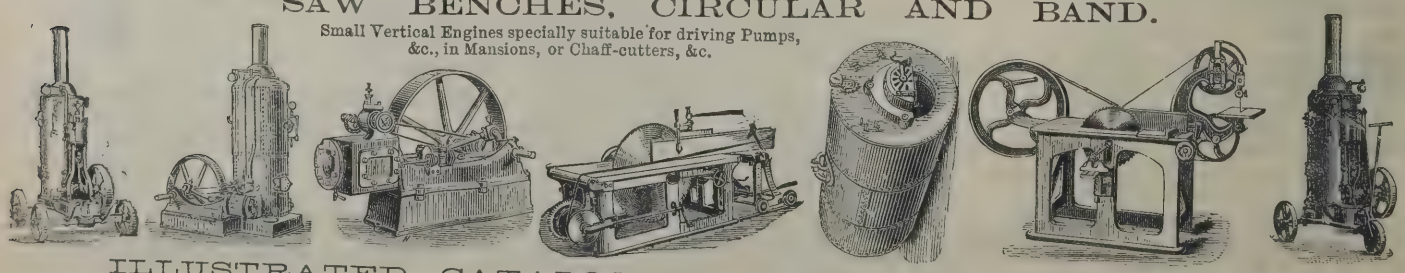
BELLMAN & IVEY,
(OFFICE ONLY) 37 PICCADILLY, LONDON, W.

E. S. HINDLEY, 11 QUEEN VICTORIA STREET.

VERTICAL STEAM ENGINES, PORTABLE OR FIXED. HORIZONTAL STEAM ENGINES } WITH OR WITHOUT VERTICAL BOILERS.

SAW BENCHES, CIRCULAR AND BAND.

Small Vertical Engines specially suitable for driving Pumps, &c., in Mansions, or Chaff-cutters, &c.



ILLUSTRATED CATALOGUES FREE ON APPLICATION.

PLUMSTEAD.

For Three Dwelling-houses in Herbert Road and Two in Ripon Road, Plumstead, Kent, for Mr. J. Glock. Mr. HENRY H. CHURCH, Architect, Woolwich.

Johnson	£2,750	0	0
Coombs	2,625	0	0
Fenn	2,470	0	0
Lonergan Bros.	2,465	0	0
Covil	2,370	0	0

PORTSMOUTH.

For Building Board School, Penhale Road, Portsmouth. Mr. A. FORD, Architect. Quantities by Mr. C. M. Houghton, Surveyor, Portsmouth.

W. Ward, Landport	£10,891	0	0
Evans Bros., Southsea	10,837	0	0
Cockerell, Southsea	10,775	0	0
G. Burbridge, Southsea	10,623	0	0
W. D. Lewis, Southsea	10,518	0	0
H. C. Corke, Southsea	10,262	0	0
Scadden, Southsea	9,970	0	0
T. C. Quick, Southsea	9,797	0	0
Cook	9,479	0	0
T. B. Hayter, Landport	9,454	0	0
T. P. Hall, Southsea	9,114	0	0
LIGHT BROS., Landport (*accepted*)	9,082	0	0

STONE.

For New Chancel, Organ Chamber, Vestries, and Nave Ceiling at St. Michael's Church, Stone, Staffordshire, for the Rev. Newdigate Poyntz. Messrs. R. SCRIVENER & SONS, Architects, &c., Hanley. Quantities supplied by the Architects.

Buildings.

Horseman, Wolverhampton	£3,191	12	6
Bromage, Longton	3,160	0	0
William Cooke, Burslem	3,022	0	0
Richard Bradbury, Stoke-on-Trent	2,988	10	4
George Emery, Stafford	2,969	1	4
N. & R. Inskip, Longton	2,874	0	0
NATHAN BARLOW, Stoke-on-Trent (*accepted*)	2,790	0	0
John Grosvenor, Tunstall	2,686	0	0

Small-bore Heating.

Bacon & Co., London	197	0	0
Renton Gibbs, Liverpool	175	0	0
JOHN JACKSON, Newcastle-under-Lyme (*accepted*)	167	8	0

ROYSTON.

For Additions to Village School at Royston. Mr. D. WOLSTENCROFT, Architect. Quantities by the Architect.

J. & J. Whitehead	£770	0	0
E. Stephenson	750	0	0
Executors of E. Whittaker	720	0	0
R. Hilton & Sons	700	0	0
W. WHITTAKER (*accepted*)	700	0	0
J. Whittaker	695	0	0
J. & D. Blunn	672	0	0

SUNDERLAND.

For Building Chapel, Pallion, Sunderland. Messrs. J. & T. TILLMAN, R.I.B.A., Architects. Quantities by Architects.

W. B. Cooper	£923	18	0
A. Leitch	913	0	0
T. P. Shaftoe	861	11	0
R. Hudson, jun.	850	0	0
E. H. & G. Allison	840	0	0
Parker & Brammer	827	0	0
J. Hirst & Sons	775	0	0
G. Douglas	717	0	0

SURBITON.

For Works to Balaclava Road, Surbiton. Mr. S. MATHER, Surveyor, Surbiton.

J. H. Jarvis, Surbiton Hill	£258	0	0
Kellett & Wright, West Kensington	248	4	6
G. & W. Iles, Wimbledon	232	0	0
S. Atkins, Twickenham	215	10	0
T. Rigby, Croydon (*accepted*)	215	0	0

WHITBY.

For Alterations to Dwelling-house, York Terrace, Whitby.

P. C. Bedlington, Guisborough	£180	0	0
J. Russell, Whitby	175	5	0
J. Kidd, Whitby	151	3	6
W. Chapman, Whitby	134	15	0
W. Langdale & Sons, Whitby	125	0	0
J. WHITE, Whitby (*accepted*)	124	10	0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

HOLDEN & CO.'S PATENT ZINC ROOFING
WITH THEIR
PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,
Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.
Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.
ZINC AND IRON WORKERS AND COPPERSMITHS.
Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.
HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

THE ÆOLUS WATERSPRAY
SYSTEM OF
HEATING, COOLING, & VENTILATING
IS THE
CHEAPEST AND BEST.
For Particulars apply to
MANAGER, 235 HIGH HOLBORN, LONDON, W.C.
Applications for Agencies invited.



SPECIALITÉ MEDIÆVAL ECCLESIASTICAL TILES.
LONDON DEPOT: Kinson Wharf, Albert Embankment, LAMBETH, S.E.
CARTER, JOHNSON & CO., ENCAUSTIC TILE MANUFACTORY, St. George's Works, WORCESTER.
20 Victoria Buildings, Victoria Street, MANCHESTER.
Agents:—STURGEON & SMITH, 3 Cross Lane, Eastcheap, E.C.

TRADE NOTES.

MESSRS. JONES & WILLIS, of Birmingham and London, have just erected in Ogley Hay Church a Caen stone pulpit, and for Filey Church have executed a polished brass eagle lectern.

THE Patent Noiseless Plain and Inlaid Tile Company, 11 King Henry's Walk, Balls Pond Road, N., have received an order to cover the offices of the Royal London Friendly Society, at their new premises, 108 Paul Street, Finsbury Square, with their new tiles, and have recently laid them at the private entrance to the Globe, 105 Great Titchfield Street, Oxford Street, W.

WE are pleased to hear that Mr. Charles D. Phillips, of the Emlyn Engineering Works, Newport, Mon., is about to ship some machinery of various kinds from the Alexandra Docks, Newport, Mon., for Buenos Ayres, this being the third or fourth shipment for this destination which has been sent from the above docks. He has also received some considerable orders, which are now under execution, from New York, and has just completed some shipments, all of machinery, to Helsingfors, Finland, Hong Kong, Cape of Good Hope, Australia, India, Sicily, Lisbon, and Madrid, and is sending some of his harvest fans to Germany.

THE Hanley Town Council have accepted the following tenders in connection with the Quarter Sessions Court and approaches, viz.:—Messrs. Geary & Walker, for wood-block flooring, 6*s.* per square yard and 2*d.* per foot run for extra trimming; Messrs. Geary & Walker, for concrete flooring in basement, 2*s.* 3*d.* per square yard; Messrs. Homan & Rodgers, for concrete flooring on ground floor corridors, 6*s.* per square yard; Messrs. Homan & Rodgers, for special quartz finish to iron and concrete corridors, 3*s.* per square yard; Messrs. Homan & Rodgers, for fireproof iron and concrete gallery, 40*l.*; the Campbell Tile Company, for tiled floor in the entrance corridor and hexagon hall, as per design submitted, 60*l.* 10*s.*; Mr. Renton Gibbs, for hot-water heating apparatus, 167*l.*, and for coil case, 10*l.*; Mr. C. Cornes, for conversion of stables into fire engine-house and weights and measures office, 44*l.*; and Mr. Thomas Bickley, for plumbing, painting, and glazing at the new Sessions Court.

THE old-established hotel in Cranbourne Street, known as the Cambrian, has just been rebuilt, and is decorated with a very fine picture in tiles from Messrs. Carter & Co.'s works at Poole. The scene represents an historic incident which took place in Leicester Fields in the latter part of the seventeenth century. "A foul murder had been done," and the occasion was the means of gathering together a motley group of gallants, with the slashed and varied doublets and hose, and picturesque Rembrandt hats and feathers; interspersed with them are one or two sturdy Puritans, together with a miscellaneous crowd of men and boys. The grouping of the whole is most picturesque and harmonious, whilst the action and expression of the figures is lifelike. In striking contrast to this stir and bustle is the bit of "still life," as embodied in the corpse; but this is subdued, and has none of the ghastly realism which generally attaches to the representation of a dead body, and this brings out the merits of the artist, who has dealt with a sensational subject in an unsensational and pleasing manner. The framework is of majolica moulding and flat framing combined. The high excellence which Messrs. Carter have attained in all branches of ceramic and tile decoration is worthy of all praise, and when the durability and cleanliness of this style of art is considered, it will doubtless come into very general use.

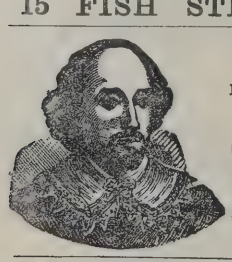
MESSRS. GENT & CO., of the Faraday Works, Leicester, have just issued an enlarged and revised price-list of their electric and pneumatic apparatus. The catalogue also contains a quantity of useful information on the construction, fixing, and repairing of electric and pneumatic bells, with details of electric-lighting and telephones, forming quite a valuable little *vade mecum* to a branch of industry which is assuming such large proportions—bells alone worked by electricity include more than a dozen different varieties, and each variety is capable of embracing other modifications. Indicators likewise form quite a collection of themselves. It would be impossible to enumerate all the different electrical furniture manufactured nowadays, or even the electrical machinery in use. We must refer our readers for this to Messrs. Gent & Co.'s list.

NOTES ON NOVELTIES.

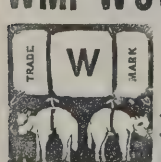
Locks and Door Furniture.—Door furniture and locks are made a prominent speciality by Messrs. Edgar Keeling, Teale & Co., ironmongers and manufacturers, art metal workers, &c., 14 Elm Street, Gray's Inn Road. We have pleasure in drawing the attention of our readers to the locks and door furniture made by this firm. They seem to us to supply a very universal want in the way of good useful articles of best finish and workmanship at a very moderate cost. The most inexpen-

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use
Address—YOCKNEY & CO. Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.


QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,


ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

HENRY KING
(Late GREEN & KING),
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.




JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

sive and the plainest articles are handsome and ornamental in themselves, as is every plain object turned out by good workmen as distinguished from wares which are supposed to be "cheap," but are decidedly "nasty." In what is technically called ornamental work the same judicious management is apparent. Attention might be called to the well-finished mortice locks made by the firm, of different varieties, the mechanism of which are all of a character to secure freedom from the drawbacks of ordinary locks. New designs in ornamental rim locks are also deserving of attention. Finger plates in oak and ebony or porcelain are noticeable for a quiet gracefulness which render them suitable for the highest class requirements. The door knobs and spindles, window hoops, &c., are in keeping with the rest of the specialities made by this firm.

Osmond Safety Door Bolt.—We have had forwarded to us for inspection the "Osmond Safety Door Bolt," the patent of Mr. Osmond, of Thornhill Works, Lee, London. It seems to us a decided improvement on the ordinary door-chain. A steel bolt slides into a guide fixed to the door and a catch is fixed to the door jamb into which the bolt also slides. The door is thus securely fastened or opened for ventilation by the easiest of movements, and is perfectly secure. When the door is closed it is impossible to remove the screws, they being within the bolt. A much stronger hold of the door is obtained than by the ordinary chain, besides being perfectly noiseless, and giving a much better appearance. It does not cut the door as does the chain, it is impossible to move the screws, and as it is so simple in construction, the "Safety Door Bolt" when once fitted is not likely to get out of order. It should meet with approval amongst architects.

ENGLISH PORTLAND CEMENT IN AMERICA.

The English Consul at San Francisco reports that Portland cement is one of the few articles from England whose importation has steadily increased during the last ten years in his district. Previous to that the annual importations did not exceed 15,000 barrels, while it now amounts to 120,000 to 150,000 barrels annually. The duty on this is 20 per cent. of its original cost, yet English Portland cement has almost driven American cement out of the market. In former years large quantities of Rosendale cement, manufactured in the Eastern States, were used, but its importation has almost ceased. To keep this large trade low freights from England are necessary, so as to be able to place the cement in this market at a price not higher than 12*s.* (3 dols.) per barrel of 100 lbs.

MAINTENANCE OF ROADS.

At the Gloucestershire Quarter Sessions, which were held last week, Major Salmon, one of the magistrates, referred to the recent road conference, and said he had received a report by the surveyor of the Northamptonshire main roads, which stated :—"I am of opinion that by a more skilful and judicious management of labour and material, the roads which are defective might have been in a better condition than they are ; in all cases without any addition to the cost of maintenance, and in some with an actual reduction in that cost. The material, be it granite or slag, must be broken on Macadam's principle, *i.e.*, to as near as possible inch and a half cubes, or so that the largest stone in a heap should pass through a 2-inch ring in any direction. The neglect of this principle is the main cause of the badness and costliness of the defective roads. Stones thus broken fit much tighter together, work in much quicker, make a much smoother road, and wear much better, and, moreover, will cover a much larger surface than if broken to a larger size. No mud or other binding material must be used, but the stones must unite by their own angles into a solid mass, except that sometimes it is desirable to add a little fine stuff of the same material as that used for repairs, to help to work in some material which would otherwise get loose and scattered. The traffic will generally provide more than sufficient mud and dust to fill up the very small interstices which will be left when the stones have been properly bound together. The stones should be laid on the road only where wanted, and not in too long lengths. The evenness of the road is then easily maintained, and the tendency for traffic to track is prevented. And it is a mistake to lay them down more than one thick, for the result of so doing is that they get ground against each other into mud, instead of working in, thereby occasioning waste of material and an uneven road. The stones should be laid down during November, or not later than Christmas, so as to get settled down before frosts or drying winds come to prevent them working down to an even surface. This of course necessitates the early storage of broken material."

PRIMROSE & Co
CHURCH ST.
SHEFFIELD.
"ECLIPSE" PATENT ROOF GLAZING
NO PUTTY, PAINT, ZINC OR OTHER PERISHABLE MATERIAL.
IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c
NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.
PRIZE MEDAL AWARDS; KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882.3.
THE ONLY GLAZING AWARD. INTERNATIONAL HEALTH EXHIBITION, 1884.

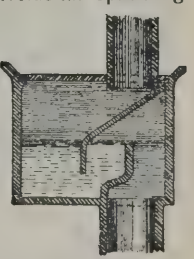
W. RAMMAGE & CO. { CONSTRUCTIONAL ENGINEERS, } 42 OLD BROAD ST., LONDON, E.C.
JOISTS, GIRDERS, COLUMNS, STANCHIONS, ETC.



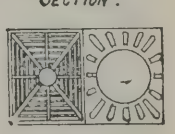


PROVISIONALLY PROTECTED.
FIRTH'S
Improved Disconnecting Trap,
FOR FALL PIPES, &c.
COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.
FOR PARTICULARS APPLY TO
GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing.



SECTION.



PLAN.

The Chairman said it came out very clearly at the conference that the Clee Hill stone, which cost 13*s.*, 14*s.*, or 15*s.* a yard, was very much cheaper than the inferior oolite stone, which cost only 3*s.* 6*d.* a yard when put on the road, as it was so much more permanent. He much desired the main roads of the county to be laid with the more expensive but really more economical stone than the inferior local stone which was so generally used, as he was sure a great saving of expenditure would thereby result.

Mr. Smith referred to the importance of the information given in the papers read at the conference being widely circulated. In his district some of the roads were mended with pieces of jagged flint and sea sand, which rendered the road very dangerous.

The Chairman said much valuable information was given at the recent conference. Two contributions had been offered towards the cost of publishing the papers read, namely, by the Cyclists' Club and the Clee Hill Stone Company.

After further discussion it was agreed that, with the aid of the contributions mentioned, copies of the papers read be printed and circulated.

BRITISH TRADE WITH FRANCE.

AT the present time it is the duty of every one to do their utmost towards extending British trade. When it is found that our German rivals are selling goods at prices which at first sight seem less than the cost of production, nothing should be left untried to bring English work into competition with them. There is much in the English mercantile system of foreign trade which demands revision. Take the case of France, for example. It is assumed that English goods must be as well known in every part of the country as in Scotland or Ireland, and that it is not requisite to make any difference in the mode of disposing of them. But there is scarcely a report from one English Consul in France which does not testify to the absence of something which if present must lead to an increase of business. Thus, for example, in the report from Corsica, which was written on April 26 last, Consul Graves says :—

I notice that many important articles are imported from Germany and other countries which can be obtained cheaper and better from England, but most English manufacturers object to offer their goods otherwise than on English standards of weight, measure, and value, for delivery at their works, or at most free on board at a British port, while Germany and Holland offer their manufactures on French standards delivered free to Marseilles or even to this port (Bastia). The advantages of this latter system to the buyer are manifest, while the seller who really desires to do a foreign trade should find no difficulty in complying with this need, without which few buyers will give any attention to his offers, however advantageous they may really be.

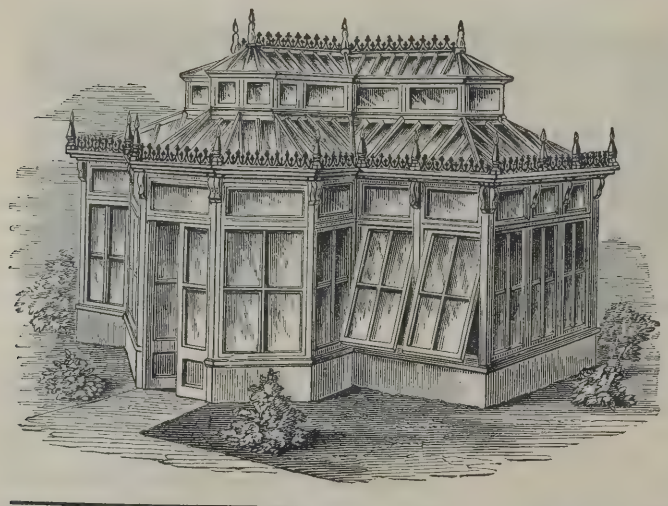
The complaint about non-compliance with foreign requirements is not new, and is heard throughout the world. Even more explicit is the report from Vice-Consul Warburton at La Rochelle. He writes :—

La Rochelle is a small district, and one which does not take a large amount of British produce, *but I have no doubt that here, as well as elsewhere, that amount might be greatly increased if proper steps were taken to do so.* Almost all business is done through commercial travellers, who come round monthly (or in some cases quarterly) looking for orders. These agents are sent by the manufacturers and wholesale houses to sell their own goods, and their success depends in a great measure on their smartness and activity in the face of much competition.

Local tradesmen buy principally through them; many do so entirely, seldom leaving their place of business, but expecting what they require to be brought to their doors, and not always getting the best or most advantageous goods, but those which are most pressed upon their notice provided they are saleable.

The principal British products in demand here are coals, pitch, cement, and iron. These are imported direct from the producer, or through agents, who only receive a very moderate commission. The freights are as low as possible, and there is not much room for improvement in the conditions under which they are imported and distributed. But there are a number of other English articles which only reach the consumer here in a roundabout way, passing through many hands before doing so, and finally reaching him at an enormously increased cost for want of a more direct and efficient system of agency. Generally speaking, cheapness comes first in this country, and then quality; and if these qualifications are fairly well attended to, British manufacturers should do a much greater business than they do now under present tariffs.

The principal bugbear that deters English traders is the French tariff. It would be better perhaps if Mr. Ruskin's wish could be carried out, and all custom-houses be demolished, but



R. HOWARD,
Horticultural Works,
DONCASTER.

HORTICULTURAL BUILDINGS erected, with hot-water apparatus complete, in any part of the Kingdom, by experienced workmen. All the newest improvements in machinery for ventilation.

SILVER MEDAL awarded by the Society of Architects at the Architectural and Building Trades Exhibition, Sheffield, February 1886.

Also PRIZE MEDAL and CERTIFICATE, the highest and only award for excellency of Horticultural Buildings and Machinery for Ventilation, at the International Architectural Trades Exhibition, London, April 1886.

M. C. DUFFY & SON'S Improved and Perfectly "Immovable Acme" System of
WOOD BLOCK FLOORING
(W. DUFFY'S PATENT)
OBTAINED THE
HIGHEST AWARDS
AT ALL THE
International Exhibitions, 1885.
SUITABLE FOR
Churches, Schools, Warehouses, Basements, Railway Station Booking Offices and Platforms, Mansions, Hospitals, Banks, AND Public Buildings Generally.



PRICES and full PARTICULARS on application to the Manufacturers,
M. C. DUFFY & SON,
At their Chief Office,
66 STORKS ROAD, S.E.
ALSO AT
GLASSHOUSE STREET, Albert Embankment, S.E.
UNION ROAD, Rotherhithe, S.E.;
STATION ROAD, Spa Road, S.E.;
VAUXHALL WALK, S.E.;
AND AT
GREAT YARMOUTH.

we are not likely to see that accomplished prior to the millennium, when custom-house officers and soldiers will both take to pastoral pursuits. Meanwhile, it may be asked whether the tariff is as bad as it has been represented. In respect to many classes of goods it is not oppressive, and there are manufacturers who find that, in spite of it, they can do a good trade with France. But some think it to be their interest to make the worst of the custom-house regulations, and in this way contrive to frighten their competitors. English goods stand well with the French, and there is no reason why they should not have as extensive a sale as those which are produced in Germany.

DECORATORS' PLANS.

THE case of Nosotti *v.* Saunders, which was tried on Friday in the Queen's Bench Division, suggests what is the law in respect of expenses incurred in the preparation of estimates. The plaintiff, who is known as a decorator having premises in Oxford Street, was asked by the defendant, proprietor of the Assembly Rooms at Margate, to tender for the decoration of the rooms, and Mr. Nosotti, in order to enable him to do so, sent down men to make measurements and plans on which he might base his estimates, and in so doing he incurred an expense of 27*l.*, for which, as the matter went off, he sued the defendant. The case was tried in the Mayor's Court before the Recorder, and the plaintiff called witnesses to prove that the charge was customary; but more than one of them stated that, though he should have made such a charge, he should have told his employer so, and it did not appear that Mr. Nosotti had told the defendant he should make the charge. The jury, however, found for Mr. Nosotti.

Counsel for the defendant moved to set aside the verdict on the ground that there was no evidence of any contract to pay for the expenses of the tender.

On the part of the plaintiff, it was urged that there was sufficient evidence to raise an implied contract to pay.

The Court, however, said that an implied contract would not arise in such a case, and it was necessary to show an express contract to pay for such expenses. And as to the evidence of custom, it was not sufficient to raise an implied contract unless shown to be so well known that it must have been known to the defendant. The verdict, therefore, must be set aside.

WAGES IN NEW YORK.

THE following are the average wages paid to workmen in the building trades of New York, according to the latest official return :—

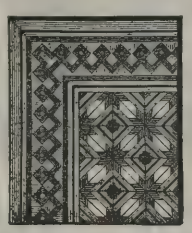
Trades.	Wages per day.	Hours.	Wages average per week.
	£ s. d.		£ s. d.
Carpenters	0 14 5½	9	4 6 7
Plas erers, work 4½ days	0 16 6	9	3 14 2
Painters ,, 5 ,, ...	0 14 5½	9	3 12 2
Stone masons ,, 4 ,, ...	0 14 5½	9	2 17 9
,, cutters ,, 5 ,, ...	0 16 6	8	4 2 6
Bricklayers ,, 4 ,, ...	0 16 6	9	3 6 0
Stair builders	0 14 5½	9	4 6 7
Marble cutters	0 14 5½	9	4 6 7
,, furniture workers	0 10 3¾	9	3 1 10
Bricklayers	Per Month 6 3 8 and found.	..	..
Planers in planing mills, full	0 14 5½	10	4 6 7
Sawyers, full	0 14 5½	10	4 6 7
Boys in planing and saw mills, full ..	0 4 1⅝	10	1 4 9
Labourers, unskilled	0 6 2½	10	1 17 1
,, masons	0 10 3¾	9	3 1 10
Cabinet-makers	0 14 5½	10	4 6 7

THE SOUTHAMPTON WATERWORKS.

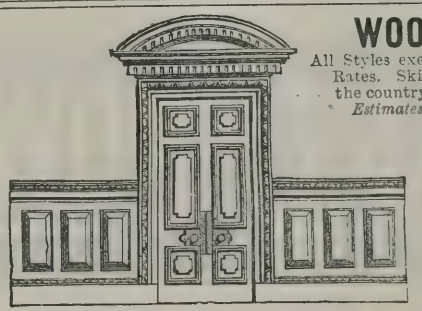
THE memorial-stone of the buildings connected with the new waterworks of the Southampton Corporation has lately been laid by the mayor. The site is near the Shawford railway-station. The works are being carried out by Mr. W. H. Simonds, of Reading, under the direction of Mr. W. Mathews, C.E. After the stone had been laid, the engineer, at the request of the mayor, described the undertaking. Mr. Mathews said that works for water for Southampton were originated about the year 1290. It was 600 years since waterworks were introduced into Southampton, and 466 years ago since the Corporation first acquired them. Previous to that the matter, like other things of the period, was in the hands of the clergy, and it was not until 1420 that the water came into the hands of the Corporation, and since then a great many things had been done in the

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD., 22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.
150,000 ft. super. in Stock, ready for Laying.
RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.
Immense Stock always ready for Laying.



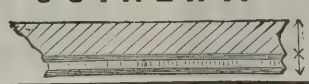
THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction



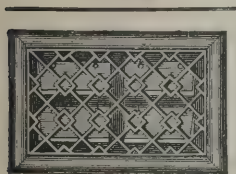
WOOD CARVINGS.
All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.
Estimates and Designs on Application.



ARTISTIC JOINERY.



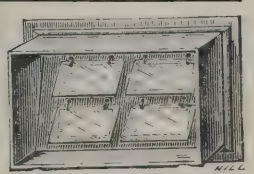
ORNAMENTAL PARQUET
DEAL BACKING.



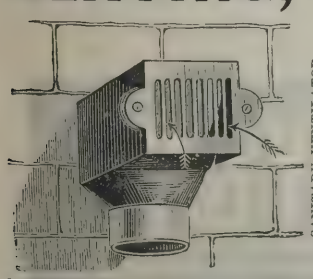
FRONT VIEW.

VENTILATION. Practical! Perfect! Natural!
(Thomas Boyle's Original Patent.)
COMYN CHING & CO., Sole Proprietors,
FOR PRIVATE HOUSES, PUBLIC HALLS, CHURCHES, SCHOOLS, SANITATION.

BACK VIEW.



HEATING, VENTILATING, & GAS ENGINEERS.
ALL SYSTEMS.
MANUFACTURING IRONMONGERS.
Special Manufacturers of Ornamental Brass Work of every Description.
PRICES AND ESTIMATES ON APPLICATION.



SANITARY VENTILATOR.

COMYN CHING & CO.,
54, 56, & 58 Castle Street, Long Acre, and 22 & 23 Little St. Andrew Street, London, W.C.



INLET VENTILATOR.

VOLUME XXXIV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.—Office : 175 Strand, London, W.C.

way of getting a supply of water for the houses from springs and conduits in the town. Eventually the waterworks were established at Mansbridge. They had heard and seen so much of the new works that he thought he might go at once to the place where they were then assembled. The building, the memorial-stone of which they had just seen laid, would be 250 feet long by about 40 feet in width. There would be the engine-house, the boiler-house, tool-house, filter-house, and the lime-house. The building would be red brick, with a certain amount of Portland stonework, a little ornamentation being introduced. The engines would be on the compound principle, beam engines, working up to 120 and 150 horse-power, and each capable of pumping two million gallons of water per day, so that they would see the engines would be ample to keep the town supplied with water. The next would be the boiler-house, where they would have three steel boilers, with room for a fourth. The next building would be used as a tool-house, &c., so that in the case of a breakdown of any part of the machinery it could be repaired without sending things away. The next building, and one which was of importance, was the filtering-house, where there would be a number of filters to purify, or rather clarify, the water before it would be softened by the softening process. The next building would contain the softening materials—the lime-house, with the lime for softening. When the water was pumped from the well below it was very hard, but by mixing it with the lime it became very much softer. In order to get rid of its milky appearance a large amount of deposit had to be got rid of. Under the old system they had large tanks—such as they had at Mottisfont—into which the water was run and the deposit allowed to subside. Of course, if that were done in this instance it would be a big thing. They would be obliged to have tanks which would hold three million gallons of water, which would be a very expensive matter indeed. Instead of that, after being pumped up the milky water would pass through a series of revolving filters, then through some perforated zinc, and eventually through cotton cloth, leaving the deposit on the outside. They would then have discs or revolving sprays of water, which would fall on the cloth, and disperse the deposit, the latter falling to the bottom without any trouble whatever. This would not take two men all their time, and he was in very great hope that one man would be able to manage the whole thing. The well was nearly completed. They had two deep borings, 6 feet in diameter. One would have been completed but for an accident to the tool the night before. These borings would go down something like 100 feet into the chalk, and they were the largest borings ever sunk anywhere. With regard to the money to be laid out, there was no doubt it was great, and the bulk of the money would be spent on the spot where they then stood. Of the 50,000*l.* or 60,000*l.* required, nearly 40,000*l.* would be sunk there.

THE EDINBURGH INTERNATIONAL EXHIBITION.

IT has been a matter of surprise with those who interest themselves in exhibitions that the Scottish metropolis has so long refrained from following the example set by the other chief cities of the kingdom, the colonies, and foreign countries generally, in the direction of national and international displays of arts and manufactures. But if she has been long in making up her mind, Edinburgh has every reason to be proud of the collection that the executive body charged with the carrying out of the arrangements have drawn together in the temporary building in the "Meadows." It appears at first thought a somewhat doubtful experiment to "run" four important exhibitions in one country simultaneously, but it is certainly one that will enable us to judge if there is any reason to suppose that the parrot cry so constantly heard that exhibitions are overdone has any foundation in fact. So far experience points in an opposite direction, and it may have been supposed that the Edinburgh display being so far north would have materially differed from the counter attractions of London, Liverpool, and Folkestone, each of which can lay claim to valid reasons as to why they are likely to receive a large amount of public patronage. But Edinburgh has no reason to complain, and we understand that the exchequer is in that satisfactory condition that all fear of having to make a call upon the guarantors has long since ceased to trouble the executive, and at the present time the numbers who have passed the turnstiles approach the first million very closely. Be it remembered, too, that this is before Scotland's tourist season has thoroughly set it, so with the prospect of the usual influx of visitors, coupled with the promised visit of Her Majesty and other members of the Royal Family later on, the record of Scotland's first international exhibition is likely to be one of a most satisfactory character.

The exhibition is divided into sixteen classes, one of them, No. 14, being devoted to fine art. No. 16 is devoted to women's industries, those of Scotland and Ireland being principally illustrated, while the others cover almost every other kind of manufacture and industry; class 1, comprising minerals, mining,

BRYANT, POWIS & BRYANT
LIMITED,
WOOD BROKERS AND IMPORTERS,
101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586.
Telegraphic Address: "Stadacona," London.
AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617.
Telegraphic Address: "Carter," Liverpool.
SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.
BRYANT, POWIS & BRYANT
LIMITED,

quarrying, and metallurgy, forming a very interesting section. Exclusive of the sixteen classes, there is an artisans' section, which should be spoken of with every mark of respect. It forms a by no means incontemptible exhibition in point of numbers, there being no less than 440 exhibits, Scottish workmen contributing 375 of the total, the rest hailing from Sheffield, and being composed chiefly of cutlery and edge-tools. Of the former it may be said that they cover a very wide range, and amongst other things embrace many models of steam-engines, beautifully made, to a new differential steam-engine of two-horse power at work amongst the machinery in motion.

Amongst the manufactured exhibits that of Mr. Robert Adams, Blackman Street, Borough, S.E., is, as usual, of much interest, and embraces the many specialities connected with window and door work for which he has become so noted. Prominent amongst them is his patent safety window, enabling the vertical sashes to be instantly changed to swinging ones for cleaning. The many fanlight-openers he has introduced are all to be seen on the stand and their action illustrated. The door stay and weather-tight sill-bar is an admirable invention for preventing rain or wind from entering a room from the bottom of a window, and of somewhat similar character is the tongue bolt for casements, extending the whole length of the frame, and being shot into a groove in the opposite frame, forming a sound barrier to the inroads of "wind or weather." The "Victor" silent spring hinges necessarily form an important part of Mr. Adams's exhibit, which also embraces his burglar-proof sash gear, the three-through bolt for French casements, &c.

Messrs. Hobbs, Hart & Co., Cheapside, have an imposing display of their specialities, the collection of locks in particular being fine specimens of workmanship. In this department specimens are shown of those manufactured for prisons and convicts' departments. The collection of safes, strong doors, &c., are of the usual character made by the firm.

Messrs. Robert Boyle & Son, Holborn Viaduct and Glasgow, are present with examples of their several ventilating appliances, though their exhibit is by no means so extensive as we are accustomed to see in London. However, it is quite sufficient to illustrate the *modus operandi* of the different articles made by this popular and enterprising firm. As we have so often drawn attention to Messrs. Boyle's inventions further description is rendered unnecessary. We may, however, remind our readers that the special name given by Messrs. Boyle to their leading ventilator is that of the "Air-Pump Ventilator."

Messrs. Nightingale & Co., Great Grimsby, exhibit to advantage their patent system of wood-block flooring, which was described by us in detail in our report of the Exhibition of the Sanitary Institute of Great Britain, at Leicester, in September and October last. The firm submit a list of the principal places in which their flooring has been laid, which includes a large number of notable buildings in various parts of the kingdom.

Messrs. J. & M. Craig, of Kilmarnock, have a large display of their varied productions in sanitary pottery, fireclay goods, &c. The exhibit comprises a large number of individual articles, and also includes amongst builders' goods tinted enamelled bricks for string courses, dados, &c. There are also balusters of fireclay, and a variety of garden vases and rustic work, all of which are salt-glazed. Messrs. Craig's productions in point of quality are so generally acknowledged that we need not further revert to them.

Messrs. Shanks & Co., of the Tubal Works, Barrhead, near Glasgow, and Cannon Street, E.C., well maintain their reputation as makers of sanitary appliances. One of the leading items in the exhibit is their "Eureka" combination bath, in which the number of taps is reduced. They have also a compact Turkish or vapour bath, in polished walnut, for home use, and an "Independent" plunge and spray bath, without woodwork. Sanitary lavatories are shown in white porcelain for dwelling-houses, and white enamelled fireclay for schools. The exhibit also comprises a general assortment of the goods manufactured by the firm, including wash-out and other closets, water waste-preventers, fold-up lavatories, sanitary appliances for ships, &c.

Messrs. H. J. & C. Major, Bridgwater, have sent a small collection of their patent waterproof and self-fixing roofing tiles, which have been fully described by us on former occasions.

Messrs. Geary & Walker, 24 Charing Cross, S.W., and John Dalton Street, Manchester, exhibit their patent Premier system of wood-block flooring, which has been already described in these columns, the notable feature in the invention being that it is not only laid on a solid concrete foundation, rendering it practically fireproof, but the blocks are dessicated and bedded into a specially prepared mastic, but are afterwards secured to the sub-structure by metal keys dovetailed into the blocks.

Messrs. Williams & Co., Lillie Bridge Works, West Brompton, S.W., have a similar exhibit to that shown at the last

A. SANDERSON & SONS
PAPER STAINERS
IMPORTERS OF FRENCH PAPER-HANGINGS

TRADE MARK.

Sole Importers of the
NEW
IVORY DECORATIONS.



SPECIALITÉ
INGRAIN.

PRESS OPINIONS.

Messrs. SANDERSON & SONS have been awarded for their Wall Decorations the only Gold Medal at the New Orleans International Exhibition. This Medal may be considered the highest ever awarded to a paper stainer, as it was not obtained, as usual, in competition with other English firms only, but with the whole world—English, French, German, and American firms being all in one class.

Warehouse
52 BERNERS ST. W. LONDON. Manufactory
PAPER-STAINING WORKS
CHISWICK.

Building Exhibition at the Agricultural Hall, comprising their improved metal casements, of which we gave our opinion at the time. The favourable comments we then made have since been strengthened, and the exhibit is attracting as much attention in Edinburgh as it did in London.

Messrs. Le Grand & Sutcliff, Bunhill Row, E.C., are represented by the well-known and highly useful appliances, the Abyssinian tube wells and pumps, and registering turnstiles (Norton's patents). They also exhibit specimens of dwarf piles for foundations of telegraph and railway signals or other poles, that will be found very useful for such purposes. The "Ramrod" lawn-tennis poles, recently patented, will, we doubt not, be much appreciated by those charged with the forming of the courts, and they are substantially-made articles, likely to last an indefinite period.

In decorative articles, Messrs. Rottmann, Strome & Co., St. Mary Axe, E.C., send specimens of their Japanese embossed leather hangings for walls, of elaborate designs. These hangings are washable, non-poisonous, and damp-proof. A very fine Japanese cabinet is also shown, a fringed carving around the edges of the different sectional openings being a finely-treated piece of work. The exhibit is supplemented by a superb pair of large vases, as well as some small pottery of choice design.

Messrs. Jeffrey & Co., Essex Road, N., have a commendable exhibit of their non-arsenical wall-papers, both hand and machine-made, some of the tools used in the manufacture being also shown. The exhibit comprises five sections, devoted to—No. 1, flocks; No. 2, embossed leathers and leather papers; Nos. 3 and 4, hand-printed papers; and No. 5, machine-printed. The designs are numerous, and many of them from the pencils of well-known artists. Amongst the hand-printed, Mr. Lewis F. Day is credited with No. 21, a decoration with a dado of lilies and crown imperials, a choice *morceaux*; and an embossed leather, No. 11, by Mr. Walter Crane, "The Golden Age," is well worth notice. Mr. J. D. Sedding's name appears against No. 12 in this section, a rich hanging, the colours ranging from subdued greens to a kind of gold-green, if such a term is permissible. Other artists who have contributed to this display are Miss K. Faulkner, Messrs. W. S. Morton, G. E. Fox, T. W. Sharp, B. J. Talbert, A. F. Brophy, and B. Binyon.

Mr. J. Leslie Jamieson, of the Crown Granite Works, Aberdeen, well represents the speciality of the "Granite City," as it is often called, by the specimens of granite vases exhibited by him in the grounds of the exhibition. Mr. Jamieson is a manufacturer of granite specialities of long standing, and can supply the native stone in any form required. The vases shown here are worthy of high commendation, and we should like to see them introduced fully into the London market, where we are convinced they would be appreciated.

Messrs. Frederick Walton & Co., Limited, Sunbury-on-Thames, make an interesting display of the popular "Lincrusta Walton" wall decoration, which has been so often mentioned in these pages. The specimens shown on the present occasion well maintain the reputation of the firm, and are attracting considerable attention amongst the better-class visitors to the exhibition.

Messrs. William Woollams & Co., High Street, Manchester Square, W., are located next to the last-named firm, and their exhibit loses nothing by comparison. The first to introduce non-arsenical paper-hangings, Messrs. Woollams & Co. have always made the innocuous character of their productions an especial study, and have unmistakably shown how unnecessary it is to allow poisonous pigments to enter into the composition of wall-hangings. The exhibit embraces the entire range of papers of which they make a speciality, as well as samples of their patent tergorine, a substitute for leather, of which we have given a description on a former occasion. Amongst the patterns that drew our attention we may mention "The Netherlands," an Italian damask of rather large pattern, from an old example, the name of the designer being unknown. The colours here are yellow, drab, and white. "Savoy" is a dado decoration from the pencil of Mr. A. F. Brophy, and is coloured in neutral blues and white and gold, and, as a lady remarked in our hearing, "is sweetly pretty." Another decoration called the "Lyrebird," by Mr. Owen W. Davis, must not be overlooked. It is a complete hanging, including frieze and dado, a pale terra-cotta red being the principal colour in the body, turquoise blue, white, and gold figuring in dado and frieze. We miss the name of Miss Aumonier on this occasion from the list of designers, which also comprises Messrs. C. F. A. Voysey, A. V. Tatham, F. J. Weidemann, F. Darling, J. Wildey, T. W. Hay, Allan Ramsay, J. West, and H. Noble.

Messrs. Campbell, Smith & Campbell, Newman Street, Oxford Street, W., have an attractive and meritorious display of stained-glass panels for domestic use. The subjects are varied, but all are well executed, many of them showing great delicacy of treatment and purity of colour.

Messrs. Peebles & Co., Tay Works, Bonnington, Edinburgh,

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, General Manager.

HILL & HEY,
Inventors, Patentees, and Sole Makers of their Patent
"EXCELSIOR" Syphon and Outlet VENTILATORS,
For the Ventilation of Schools, Churches, Mission Rooms, Staircases of Residences, Stables, Billiard Rooms, &c.
WORKS, HALIFAX
SUCCESSORS TO THE
ORIGINAL "WATSON'S" VENTILATOR WORKS. ESTAB. 1852
Prices, Descriptive Pamphlets, Testimonials, &c., on application.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
☞ *Legal and Commercial Stationery.*

ACCIDENT ASSURANCE TRANSACTED BY THE ATLAS FIRE AND LIFE OFFICE. Established 1808.
West End Office, 32 COCKSPUR STREET.
Head Office, 92 CHEAPSIDE. Secretary, SAML. J. PIPKIN.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

Building Paper. LIGHT—STRONG—WATERPROOF. In 10 yard rolls, 40 in. wide, 2d. per yard. Sample roll, post free, 2/6. *Use under slate and tiles, under weather boarding, for temporary roofs, and as lining paper for damp walls.* For home and export.—EASTWOOD AND CO., LIMITED, Dealers in Building Materials, BELVEDERE ROAD, LONDON, S.E.
Chemical Papers Co.,

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market:—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

To Architects, Builders, Ironmongers, and the Building Trades generally.
BLAKEY'S PATENT
SELF-FIXING STEP PROTECTORS
Are Cheap, Elegant, & Durable.
ANY DESIGN MADE WITHOUT EXTRA COST.
Apply to the Patentee
JOHN BLAKEY, LADY LANE LEEDS,
Or to any Ironmonger.

NOW READY.
J. & W KIRKWOOD'S
NEW PATENT
SPRAY BATH.
Write to Leith for Particulars.

DRY WAINSCOT OAK, in every thickness, several thousand Logs, from 8d. per foot.
Dry Wainscot Floor Boards, ¾-inch, 65s.; 1-inch, 75s.; 1¼-inch 95s. per square.
Dry Mahogany, Teak, and Birch.
Dry Black Walnut, 8d. and 9d. per foot.
T. FORMAN, Walnut Tree Walk, Kennington Road, S.E.

have an assortment of their noted wet and dry gas-meters and governors on show; also a clock lamp-pillar for ascertaining the consumption of gas without meter. Messrs. Peebles's gas consumer governor stands highest, according to the tests of the jurors of the Glasgow Gas Exhibition, in the list of dry governors, and is one of the lowest in the range of variation. The gas burners made by this firm have a high reputation. They are named the Automatic Needle Governor Burner, maintain a uniform consumption under varying pressures, and, according to tests made with them by Mr. T. Fairley, F.R.S.E., public analyst and gas examiner for the borough of Leeds, the saving in consumption of gas by their use as against the ordinary burners is from 20 to 40 per cent.

The Blackman Air Propeller Ventilating Company, Limited, Fore Street, E., exhibit their powerful fans for the moving of large bodies of air in whatever way required. By fixing in one direction the blades act as extractors, and in the case of manufactories, where much dust arises, the workshops can be kept perfectly clear, and the health of the workers free from injury, and by reversing the mode of attachment the blades are changed to inlet ventilators and draw in a large volume of fresh air every minute. The Blackman air propeller is made in various sizes, and to work by power or hand force.

Messrs. Wm. Sugg & Co., Limited, Vincent Works, contribute some excellent scientific instruments connected with the gas industry, including Sugg's improved "Letheby" bar photometer, and the required apparatus for testing, for illuminating power, &c., and their improved "Lowe's" jet photometer. There is, in addition, Sugg's patent illuminating power meter, and an attractive collection of the new patent "Cromartie" gas-lights, of which we have spoken heretofore. This light is certainly the prettiest in effect of any gas-light before the public, and the consumption of gas is said to be very small. The remainder of the exhibit is composed of a variety of painted and coloured glass globes, shades, &c., of high-class workmanship, and a full "line" of the firm's patent gas-burners in argands, patent table top steatite, &c.

Messrs. Doulton & Co., of Lambeth, appear in Class 2 with a small but choice collection of their popular art ware, including Doulton, faïence, impasto, pâte sur pâte, silicon, &c., and again in Class 9, the exhibit being composed of a general assortment of pottery ware for domestic and manufacturing purposes, including specimens of their glazed terra-cotta fireplaces and mantelpieces, open and close stoves, hearths, kerbs, &c., sanitary ware of all kinds, and apparatus used by distillers, chemical manufacturers, dentists, assayers, &c. Messrs. Doulton also appear in the complimentary list as having rendered the executive good "suit and service," in so far that they have provided the complete fittings for three retiring-rooms (two gentlemen's and one ladies') with their newest and most approved closets, lavatories, &c., and two sets of urinals in the grounds. They have also provided a number of the fittings for an artisans' model dwelling, one of a set erected in the grounds by the Lord Dean of Guild Gowan, amongst which we may mention a glazed terra-cotta fireplace, which it is expected can be manufactured in quantities at a price that would enable them to be used for such erections.

Messrs. Shanks & Co., Tubal Works, Barrhead, Glasgow, have also, in addition to their trade exhibit, assisted the executive in a similar manner to the Messrs. Doulton, by providing the fittings for a ladies' private retiring-room, and two public retiring-rooms.

Many other firms have generously come forth in a similar manner, amongst whom we may mention Messrs. Walter Macfarlane & Co., who have supplied a quantity of ornamental garden seats for the use of visitors, also the ornamental iron pipes and guttering for the tenement houses before alluded to. We are sorry, however, to find that Messrs. Macfarlane are not exhibitors in their trade section.

In the same category we find Messrs. Robey & Co., of Lincoln, who contribute several splendid engines and boilers, part of which are used for generating the electric light used in the exhibition.

Messrs. Tangye's (Limited), Cornwall Works, Birmingham, have also materially assisted the committee by supplying some of their powerful machinery, in the shape of hydraulic and other lifting-jacks, chain-guides, Weston's differential pulley-blocks, &c.

One other attraction in this excellent exhibition has yet to be mentioned, and that is "Old Edinburgh," erected and carried out upon similar lines to "Old London" at South Kensington. Amongst the buildings reproduced are facsimiles of several of considerable historic interest to the Edinburgh folk as well as to the general visitor, and include the Luckenbooths, Westport, Lawnmarket, West Bow, &c., all of the fourteenth, fifteenth, and sixteenth centuries. The houses are filled with artificers at work, and stalls or shops for the sale of a variety of articles. Sixteenth-century costume is worn by all engaged in them, and we have only one fault to find, viz., that too much of the bazaar element has been allowed to find its way into the building.

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24s.; Relié, 28s.

LES STYLES.

OVER 700 ENGRAVINGS OF DIFFERENT PERIODS, AND NOTICES.

BY PAUL ROUAIX.

NEW EDITION. Price, Single Volume, 5s.; Complete Series, 12 Volumes (by Subscription), £2 8s.

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

LONDON: GILBERT WOOD & CO., 175 STRAND.

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

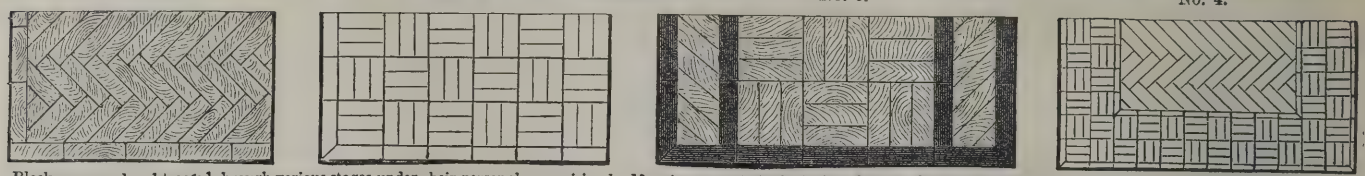
SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

No. 1. No. 2. PATTERNS. No. 3. No. 4.



Blocks prepared and treated through various stages under heir personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

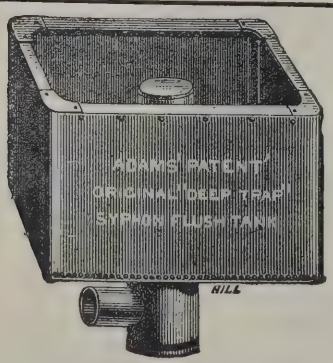
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL ..... **St. Philip's Marsh.**
EXETER ..... **Basin Head.**
SOUTHSEA ..... **Beaufort Road.**
READING ..... **Caversham Road.**
DUBLIN ..... **14 St. Andrew's Street.**
MANCHESTER ... **20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

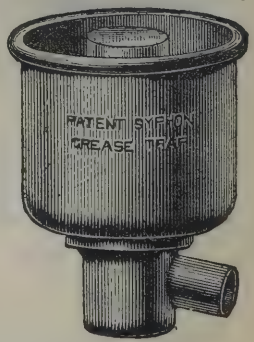


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
„ FLUSH SYPHONS for Sewer Flushing.
„ FLUSH LATRINES for Barracks, Schools, &c.
„ FLUSH URINALS „ „ „
„ TROUGH CLOSETS „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, July 9, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, JULY 16, 1886.

Terms, Post Free.
SIX MONTHS, 10/-.
TWELVE MONTHS, 20/-.

Price Fourpence.
EVERY FRIDAY.

SPECIAL NOTICE.

On receipt of this Memorandum, signed, THE ARCHITECT AND CONTRACT REPORTER will be forwarded regularly.

188

To Messrs. GILBERT WOOD & CO., Proprietors of

The Architect and Contract Reporter,

175 STRAND, LONDON, W.C.

Please forward a Copy of THE ARCHITECT AND CONTRACT REPORTER weekly to

NAME. | ADDRESS.

CONTRACTS OPEN.

ALDERSHOT CAMP.—July 27.—For Building Post Office. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

ASPATRIA.—July 17.—For Building Dwelling-house at Aspatria. Mr. Samuel Hanvey, Harriston, Aspatria.

AVONMOUTH DOCK.—July 17.—For Erection of Shed (Brick and Slate, Iron Fireproof Floor, &c.). Mr. J. W. Girdlestone, C.E., Dock Engineer's Office, Underfall Yard, Cumberland Basin, Bristol.

BARNET.—July 28.—For Building Infirmary at Workhouse. Mr. John Ladds, Architect, 4 Chapel Street, Bedford Row, W.C.

BATLEY.—July 17.—For Building House. Mr. J. T. Law, Architect, 64 Commercial Street, Batley.

BELFAST.—July 16.—For Building Premises. Messrs. Young & Mackenzie, Donegall Square East, Belfast.

BELFAST.—July 24.—For Aisle and Transept to Presbyterian Church. Messrs. Young & Mackenzie, Architects, Donegall Square East, Belfast.

BOGNOR.—July 17.—For Building Post Office, Shop, and other Buildings. Mr. Arthur Smith, Architect, Aston House, Bognor.

BRADFORD.—July 19.—For Building House and Shop and Three Houses. Mr. M. Brayshaw, Architect, Bowling Old Lane, Bradford.

BRADFORD.—July 20.—For Building Four Houses and Two Shops. Mr. A. Cordingley, Architect, 199 Great Horton Road, Bradford.

BURNLEY.—July 26.—For Co-operative Premises and Five Houses. Mr. T. Dean, Architect, 21 Nicholas Street.

BURY.—July 20.—For Building Caretaker's Lodge at Recreation Ground. Mr. J. Cartwright, Borough Engineer, Bank Street, Bury.

BURY.—July 21.—For Building Church at Hawkshaw. Messrs. Maxwell & Tuke, Architects, Peel Chambers, Bury.

CHIPPING NORTON.—July 17.—For Building Master's House and Enlarging School. Mr. T. Mace, Clerk to the School Board, Chipping Norton.

COLNE.—July 17.—For Extension of Retort-house Roof. Mr. T. Varley, Gasworks, Colne.

CONWAY.—July 23.—For Addition to Workhouse. Mr. T. B. Farrington, Architect, Conway.

DEWSBURY.—July 27.—For Building Town Hall, Municipal Offices, Police Court, Cells, &c. Mr. H. Holton, Architect, Dewsbury.

DODBROOK.—July 22.—For Restoring Church. Messrs. Beer & Trent, Dodbrook.

DUBLIN.—July 24.—For Building Church of Crosserlough Mr. W. Hague, Architect, 62 Dawson Street, Dublin.

FAILSWORTH.—July 21.—For Building Mortuary Chapel, Registrar's Offices, &c. Mr. S. C. Trapp, 88 Moseley Street, Manchester.

GIPSY HILL.—July 19.—For Station Offices, Platform Roofs, &c. Mr. A. Sarle, Secretary, London Bridge Terminus.

HALIFAX.—July 21.—For Building Warehouse. Mr. H. Isitt, Architect, Sunbridge Road, Bradford.

HARTLEPOOL.—July 24.—For Building Church, Parish of St. Hilda. Mr. G. D. Irvine, Quantity Surveyor, 32 Fawcett Street, Sunderland.

HEREFORD.—July 28.—For Restoration of Wellington Church. Messrs. Nicholson & Son, Architects, Hereford.

HURST.—July 16.—For Building Minister's House. Mr. S. Shirt, Architect, 53 Hillgate Street, Hurst.

HYDE.—July 17.—For Building Detached Villa and Stables. Messrs. J. Eaton & Sons, Architects, Ashton-under-Lyne.

KIRKBY STEPHEN.—July 20.—For Additions to Vicarage. Mr. C. J. Ferguson, Architect, 50 English Street, Carlisle.

LEEDS.—July 27.—For Roof to Newspaper Offices. Mr. C. Fowler, C.E., Britannia Buildings, Leeds.

LEEDS.—For Building Seven Houses, Shops, and Outbuildings, Clark Lane, Ellerby Lane, Leeds, for Mr. J. T. Pearson. Mr. T. Butler Wilson, Architect, 12 East Parade, Leeds.

LONDON.—July 22.—For Brick Sewer and Subway from St Martin's Lane to Tottenham Court Road. The Engineer Metropolitan Board of Works, Spring Gardens, S.W.

LUTTON MARSH.—For Erection of Farm Buildings, Home Farm. Mr. Joseph Sawyer, Architect, 63 Chancery Lane, W.C.

LYNN.—July 19.—For Building Infant School. Mr. J. A. Hillam, Architect, South Everard Street, Lynn.

MANCHESTER.—July 19.—For Building Chimney at Gas Works. The City Surveyor.

NAVAN.—July 21.—For Converting Bridewell into Constabulary Barrack. Mr. W. B. Soady, Office of Public Works, Dublin.

NETHER HEYFORD.—For Laying 2 inch Water Main, Putting Up Stand Pipes, Building Tank, &c. Mr. W. Hull, Architect, Northampton.

NEW NORMANTON.—July 19.—For Additions, &c., to Board Schools. Mr. F. C. Coulthurst, Architect, 4 Albert Street, Derby.

NEWPORT PAGNELL.—July 21.—For Sinking Well (Contract 2, Water Supply). Mr. John Eunson, C.E., Northampton.

ORKNEY.—For Building Mansion at Aikerness. Mr. T. S. Peace, Architect, Kirkwall.

PENZANCE.—July 21.—For Building Ward, Medical Officers Department, Dispensary, &c., West Cornwall Infi Oliver Caldwell, Architect, Victoria Square, Penzance.

STOKE-ON-TRENT.—July 21.—For Additions to Old Hospital at Workhouse. Mr. C. Lynam, Architect, Stoke-on-Trent.

TENDERS.

ASHTON-UNDER-LYNE.

For Altering Six Single Cottages into Through Houses. Mr. J. H. BURTON, Architect, Warrington Street, Ashton-under-Lyne.

William Neal, Ashton-under-Lyne	£110 0 0
John Robinson, Ashton-under-Lyne	107 0 0
Joseph Clayton, Denton	101 10 0
Allen Holmes, Ashton-under-Lyne	98 0 0
H. Rowland, Ashton-under-Lyne	89 10 0
Z. Pike, Hooley Hill	85 15 0
Walter Clough, Ashton-under-Lyne	85 0 0
Charles Morris, Ashton-under-Lyne	83 5 0
F. W. Williamson, Ashton-under-Lyne	82 0 0
THOMAS DEAN, Ashton-under-Lyne (*accepted*)	82 0 0

BARTON.

For Main Drainage of Portion of Township of Clifton. J. & W. ARMSTRONG, Walkden (*accepted*).

YOU will really enjoy yourself if you smoke the excellent cigars supplied direct to consumers, at wholesale prices, by HELMCKE & CO., 32 Great St. Helen's, London, E.C. Write for price list. Sample collections sent on receipt of 10*s.* 6*d.* or 21*s.*

For the Erection of Board Schools for 1,300 Boys, Girls, and Infants, including Covered Playgrounds, Fences, and Drainage. Mr. CHARLES BELL, F.R.I.B.A., Architect. Quantities by Mr. Henry Lovegrove, 26 Budge Row, E.C.

Barton	£14,928 0 0
Martin	14,600 0 0
Jones	13,985 0 0
Allen & Sons	13,600 0 0
Bull & Co.	13,595 0 0
Woodbridge	13,580 0 0
Gibson	13,577 0 0
Stevens & Bastow	13,500 0 0
W. Brown	13,490 0 0
Musselwhite	13,477 0 0
Claridge	13,359 0 0
Elliott	13,320 0 0
Botterill	13,157 0 0
Hickinbotham	13,069 0 0
Brown	12,996 0 0
Kingerlee	12,995 0 0
Green	12,993 0 0
Haines	12,988 0 0
Smith	12,774 0 0
Watson	12,605 0 0
Leslie & Knight	12,487 0 0
Woodroffe	12,460 0 0
Knight	12,200 0 0
Sims	12,194 0 0
Crook	12,097 0 0
GOODALL*	11,964 0 0
Taylor	11,644 0 0
Beale	11,396 0 0
Hilton & Son	11,000 0 0

* Goodall, Basingstoke, accepted at 10,351*l.*, after fresh tenders from five selected builders.

ACCRINGTON.

For Building Fifteen Houses, Accrington. Mr. E. KNOWLES, Architect, Accrington.

Accepted Tenders.

Ramsbottom & Son, Accrington, masons	£2,580 0 0
Joiner work by Proprietors	713 13 8
Eatough, Accrington, plasterer	177 9 0
Threlfall, Accrington, plumber	161 11 4
Whitehead, Accrington, slater	126 0 0

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

ACTON.

For Pumps at the Outfall Works, for the Acton Local Board.

Hathorn, Davey & Co.	£3,850 0 0
Worthington & Sons	3,650 0 0
Lilleshall	3,570 0 0
Gibson & Co.	2,622 0 0
E. Jacobs & Co.	2,583 0 0
J. Watt & Co.	2,350 0 0
Coalbrookdale Company	2,310 0 0
Glenfield & Co.	2,162 0 0
Grange Iron Company	2,025 0 0

Alternative and sectional tenders also received.

BATLEY.

For the Erection of a Warehouse at Batley, for the Executors of the late Mr. John Fox, Rag Merchant, Batley. Mr. J. T. LAW, Architect, 64 Commercial Street, Batley.

Masons.

J. & B. Farrar, Birstall	£166 0 0
G. Kitson, Batley Carr	149 0 0
J. & T. Oldroyd, Batley	140 0 0
S. Y. North, Batley	135 0 0
C. Goodall, Batley	135 0 0
S. S. Baines, Batley	125 10 0
J. LAKE, Batley (*accepted*)	120 0 0

Joiners.

C. Illingworth, White Lee	192 0 0
Lyles & Smith, Batley Carr	135 10 0
Horsnell & Heald, Ossett	130 0 0
S. Armitage & Son, Dewsbury	125 0 0
G. Elliott, Hanging Heaton	125 0 0
H. Brooke, Batley	120 0 0
KAYE & SCATES, Batley (*accepted*)	112 0 0

Slaters.

E. Thornton, Shipley	43 10 0
G. Hargreaves, Dewsbury	42 10 0
Pickles Bros., Leeds	41 6 0
W. Atkinson, Leeds	40 8 0
J. M. THORNTON, Batley (*accepted*)	39 10 0
G. Fawcett, Dewsbury	38 16 0

Plumbers.

J. Brooke, Heckmondwike	4 15 0
S. Waller, Batley Carr	4 4 0
J. Firth, Batley	3 17 6
R. SAXTON, Batley (*accepted*)	3 12 6
J. Walshaw, Batley	3 12 6

BATLEY—*continued.*

Plasterers.

Grange & Cookson, Heckmondwike	£11 0 0
S. Crawshaw, Batley	10 0 0
W. Parker, Heckmondwike	9 4 0
Metcalfe & Lockwood, Staincliffe	7 10 0
J. BROADBENT, Dewsbury (*accepted*)	7 10 0

BIRMINGHAM.

For Building Public Baths at Smethwick.

HOLLAND & SONS, Dudley (*accepted*)	£6,872 0 0

BROOKMOOR.

For Erection of Schools at Brookmoor, near Birmingham, for the Kingswinford School Board. Messrs. ROLLINSON & BECKLEY, Brierley Hill, and Mr. J. H. BURTON, Ashton-under-Lyne, Joint Architects.

S. Bennett & Son, Brierley Hill	£2,058 0 0
John Guest, Brettell Lane	1,960 0 0
W. Willetts, Old Hill	1,949 0 0
C. A. Horton, Brierley Hill	1,867 0 0
J. H. Bate, Dudley	1,800 0 0
DORSE & SON, Cradley Heath (*accepted*)	1,750 0 0

CARDIFF.

For Building Unitarian Church, Tredegarville, Cardiff. Mr. EDWARD H. BRUTON, A.R.I.B.A., Architect. Quantities by the Architect, 19 Queen Street, Cardiff.

Bath Stone.

Symmonds, Cardiff	£2,850 0 0
Small & Co., Cardiff	2,748 0 0
Hallett, Cardiff	2,715 0 0
Jones Bros., Cardiff	2,700 0 0
Shepherd, Cardiff	2,625 0 0
Gough, Cardiff	2,598 0 0
Gibbon, Cardiff	2,500 0 0
D. C. Jones & Co., Gloucester	2,273 0 0

Ham Hill Stone.

Symmonds, Cardiff	2,920 0 0
Small & Co., Cardiff	2,914 0 0
Gough, Cardiff	2,820 0 0
Gibbon, Cardiff	2,790 0 0
Hallett, Cardiff	2,760 0 0
Shepherd, Cardiff	2,662 0 0
D. C. Jones & Co., Gloucester	2,569 0 0

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.

Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS AND MANUFACTURERS,

14 ELM STREET, GRAY'S INN ROAD,

LONDON, W.C.

Designers and Manufacturers

of all kinds of ART WORK

for Ecclesiastic and Domestic Purposes,

in Silver, Copper, Brass, and Iron.

SPECIALITE:

DOOR FURNITURE AND LOCKS.

Write for Illustrated Catalogue.

COLCHESTER.

For Building House in Bergholt Road, Colchester, for Mr. J. Topsfield. Mr. WALTER SCARGILL, Architect, Colchester. Quantities not supplied.

F. DUPONT (*accepted*)	£295 0 0
S. Gorwood	288 0 0
W. Pitt & Son	284 16 0

All of Colchester.

CARNARVON.

For Additions to No. 5 Church Street, Carnarvon. Mr. A. INGLETON, Architect, Carnarvon.

JOHN HUGHES (*accepted*)	£266 0 0

For Villa Residence, St. David's Road, Carnarvon, for Mrs. Lloyd. Mr. A. INGLETON, Architect, Carnarvon.

DAVID WILLIAMS (*accepted*)	£884 0 0

CHELTENHAM.

For Erection of Public Baths at Upper Alstone Mill, Cheltenham.

A. C. & S. Billings	£3,000 0 0
Jones	2,990 0 0
COLLINS (*accepted*)	2,965 0 0

CHISLEHURST.

For Stables, &c., near Chislehurst, Kent. Mr. ST. PIERRE HARRIS, A.R.I.B.A., Architect and Surveyor, 1 Basinghall Street, and Orpington.

Otway, Chislehurst	£1,087 0 0
Knight, Sidcup	1,057 0 0
Hart Bros., St. Mary Cray	850 0 0
Coleman, Poplar	837 0 0
F. WOOD, Chislehurst (*accepted*)	797 0 0

DUBLIN.

For Building Fifteen Labourers' Cottages, for the Dublin Catholic Cemeteries Committee. Mr. RICHARD W. WALSH, C.E., Architect, 7 Lower Ormond Quay, Dublin.

J. & W. Becket, Dublin	—
Connelly, Dublin	—
Pemberton & Sons, Dublin	—
Sexton, Kingstown	—
G. Dixon, Kingstown	—
J. Donnelly, Dublin	—
R. Worthington	—
Glynn & Fannin	—
HAMMOND & Co. (*accepted*)	£1,387 0 0

FOLKESTONE.

For Building Public Library and Museum, Folkestone. Mr. BRIGHTWEN BINYON, Architect, Ipswich. Quantities supplied.

J. E. Hughes, South Ashford	£5,025 0 0
Hayward & Paramour	4,412 0 0
Tilden Tunbridge, Folkestone	4,122 0 0
William Brooks, Folkestone	4,100 0 0
Daniel Baker, Folkestone	4,075 0 0
H. M. Moody, Folkestone	4,062 16 0
George C. Couley, Folkestone	3,997 0 0
W. H. Holdoun, Folkestone	3,889 0 0
W. G. G. Prebble, Folkestone	3,859 0 0
Robert Webster, Folkestone	3,833 0 0

JOHNSTONE.

For Forming Cemetery at Johnstone, N.B.

J. A. SHARP, Johnstone (*accepted*)	£2,800 0 0

KING'S LYNN.

For Drainage and Sanitary Arrangements at the West Norfolk and Lynn Hospital. Mr. E. G. MAWBEY, Borough Surveyor, King's Lynn.

Bardell Bros.	£545 0 0
J. Spriggs	540 0 0
J. F. Dennis	494 16 0
H. Collinson	469 3 7
W. H. BROWN (*accepted*)	459 16 6

All of Lynn.

LEYTON.

For Making up Roads, &c., Leyton.

J. W. Neave	£3,457 8 0
J. Reeve	3,409 8 10
E. Wilson	3,387 7 7
J. Jackson	2,999 0 0

Kerbing and Paving.

J. W. & L. Neave	8,665 16 6
Beevers	8,412 9 1
Farrow	8,315 6 3
Trickett & Sons	8,190 5 0
J. J. Griffiths	7,899 19 9

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

KNOWLES & ESSEX
(Late W. CUNNINGTON & Co.),
Manufacturers of
ARTISTIC WALL-PAPERS,
Park Walk, Chelsea, London, S.W.
Specialities—Patent Frosted Gold, Crystal Damask and Raised Flock Decorations.

ACCIDENT ASSURANCE TRANSACTED BY THE ATLAS FIRE AND LIFE OFFICE. Established 1808
West End Office, 32 COCKSPUR STREET.
Head Office, 92 CHEAPSIDE. Secretary, SAML. J. PIPKIN.

JOHN BRINSMEAD & SONS' PIANO.
Entirely New Construction throughout.
Highest awards at principal Exhibitions.
For Sale, for Hire, and on the Three Years' System.
JOHN BRINSMEAD & SONS, 18, 20, and 22 Wigmore Street, London, W. Illustrated Lists and Descriptions post free.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

BEST BLUE
PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.
Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

GRUNDY'S PATENT
WARM-AIR
VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this paten consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
'DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

KINGSAND.

For Reseating and Renovating Wesleyan Chapel, Kingsand. Mr. S. P. HOSKING, Architect, Landrake, St. Germans.

J. Pearce, St. Mellins	£230 0 0
W. Harris, Millbrook	223 0 0
W. B. Carne, Kingsand	217 0 0
THOMAS KING, Plymouth (*accepted*)	200 17 0

LONDON.

For Building Workmen's Dwellings, Thrawl Street, Whitechapel, for the East End Dwellings Company, Limited. Messrs. DAVIS & EMANUEL, Architects, 2 Finsbury Circus, E.C. Quantities by Mr. F. Downing, 7A Whitehall Yard, S.W.

Thomas Boyce	£14,100 0 0
Samuel Chafen	14,060 0 0
William Shurmur	13,491 0 0
F. & F. J. Wood	12,583 0 0
George Shaw	12,564 0 0
Wall Bros.	12,390 0 0
Colls & Sons	12,350 0 0
Mowlem & Co.	12,200 0 0
E. Lawrance & Sons	11,989 0 0
G. S. S. Williams & Son	11,989 0 0
S. J. Jerrard	11,939 0 0
John Grover & Son	11,673 0 0
HARRIS & WARDROP (*accepted*)	11,663 0 0

For Rebuilding Premises, Nos. 42 and 43 Brewer Street, for Messrs. Batson & Sons.

Clemence	£4,895 0 0
Oldrey	4,867 0 0
Love	4,697 0 0
Conder	4,584 0 0
Patman & Fotheringham	4,277 0 0
Bywaters	4,262 0 0
Scrivener	4,174 0 0
Gentry	4,121 0 0
Grover	3,973 0 0

For Alterations at the Blind School, St. John's Wood. Mr. CHAS. BELL, Architect. Quantities by Mr. H. Lovegrove.

Langridge	£931 0 0
Burford	909 0 0
Boden	907 0 0
Allen & Sons	790 0 0
Scrivener & Co.	745 0 0

LONDON—*continued.*

For the Erection of Building, Oxford Street. Mr. GEORGE EDWARDS, Architect, 11 Queen Victoria Street, E.C. Quantities by Mr. Henry Lovegrove, 26 Budge Row, E.C.

Martin, Wells & Co.	£10,300 0 0
Higgs & Hill	9,940 0 0
C. Wall	9,300 0 0
Patman & Fotheringham	8,963 0 0
Perry & Co.	8,930 0 0
Stimpson & Co.	8,830 0 0
Mark	8,790 0 0
Scrivener & Co.	8,781 0 0
Shepherd	8,682 0 0
Brass & Son	8,673 0 0
Ward & Lamble	8,643 0 0
G. & J. GREEN (*accepted*)	7,995 0 0

For Alterations and Decorative Work to Macartney House, Blackheath, for the Rev. Walford Green. Messrs. DUNK & GEDEN, Architects, 36 and 37 Leadenhall Street, E.C.

Colls & Sons	£1,585 0 0
S. J. JERRARD (*accepted*)	1,374 0 0

For New Conservatory to above.

ARTHUR DASHWOOD & CO. (*accepted*)	£181 0 0

For Warehouse and Office Fixtures and Fittings at Nos. 49 to 52 Jewin Street and Nos. 1 to 3 Jewin Crescent, for Messrs. Dalton, Barton & Co. Messrs. DUNK & GEDEN, Architects, 36 and 37 Leadenhall Street, E.C.

F. Sage & Co.	£1,431 0 0
J. & J. Greenwood	1,220 0 0
D. KING & SON (*accepted*)	1,200 0 0

For Crane and Hoist Work to above.

R. WAYGOOD & Co. (*accepted*)	£102 10 0

For New Stabling at Eagle Chemical Works, Poplar, E., for Messrs. J. F. Johnstone & Co. Messrs. DUNK & GEDEN, Architects, 36 and 37 Leadenhall Street, E.C.

W. STUBBS (*accepted*)	£685 0 0

For Alterations at the Cambridge Arms, Bethnal Green, for Mr. F. Garner. Mr. E. BROWN, Surveyor, 18 Hanbury Street, Spitalfields.

Marr	£270 0 0
Hawkings	211 0 0
Buckle	200 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

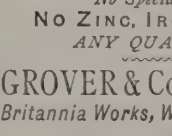
PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Desins.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 5 Great St. Helen's, E.C.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

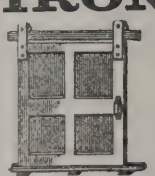
STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, ******** ****** SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL ***** PARTICULARS (SENT POST FREE). *****

WHITLAND ABBEY GREEN SLATE QUARRIES.
REDUCTION IN PRICE.
THESE Stout, Durable SLATES, which are so much sought after by Architects for Mansions, Churches, Chapels, and other Public Buildings on account of the permanency of their beautiful colour, are now offered by the Proprietor, Mr. MUSCOTT (whose name is so well known in connection with these Green Slates for the last twenty years), at a reduction of Twenty per Cent.—For Testimonials, Samples, Price Lists, &c., apply to the old address, as under.
Mr. MUSCOTT, (Whitland Abbey Green Slate Quarries Clynderwen R.S.O., South Wales.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all Descriptions.—GUY & STEVENS, Ceres Ironworks, Kingston-on-Thames.

ANCASTER STONE QUARRIES.
THE ANCASTER STONE COMPANY continue to work the Old Ancaster Stone Quarries formerly worked by Messrs. KIRK & PARRY, and to supply Stone of the same fine quality as heretofore.
OFFICES:—JERMYN STREET, SLEAFORD.

LONDON—*continued.*

For Erecting Factory at Upper Clapton, for Mr. Alfred Puckridge. Mr. G. Bartleet, Architect. Messrs. Stoner & Sons, Surveyors.

Parsons	£9,870 0 0
Wood	8,983 0 0
Godfrey	8,889 0 0
Hearle & Son	8,830 0 0
Bywaters	8,675 0 0
Conder	8,497 0 0
Colls	8,470 0 0
Greenwood	8,397 0 0
Brass	8,153 0 0

For Painting, Cleaning, and Repairing Board Schools.

Bryon Street.

Kearley	£325 0 0
Tait & Co.	314 10 0
Maud	269 0 0
T. W. Smith	251 0 0
Robson	219 0 0

Gifford Street.

Stephens	347 0 0
Bendon	200 10 6

Gillespie Road.

T. W. Smith	233 0 0
Williams & Son	225 0 0
Dearing Bros.	223 0 0

Bowman's Place.

Williams & Son	407 0 0
Kirby & Chase	398 10 0
Barber	350 0 0
Pritchard	282 0 0
Smith & Son	265 0 0
Dearing & Son	262 0 0

Blundell Street.

Stephens	216 0 0
Dearing	145 17 0
Earsdon	140 0 0

Cottenham Road.

Barber	139 10 0
Dudley	105 0 0

Laxon Street.

McCarthy	178 0 0
Davis Bros.	106 0 0
T. W. Smith	98 0 0

Caledonian Road.

Stephens	£223 0 0
Coote	148 18 0
Pritchard	109 0 0
Dudley	104 0 0

Shap Street.

Shurmur	134 0 0
Stevens Bros.	123 0 0
Smith & Son	112 0 0
Hayworth	107 0 0
Smith Bros.	102 0 0
Flaxman	99 0 0
Robey	96 0 0
Tait & Co.	87 0 0

Portobello Road.

Petchey	87 10 0
Martin	87 0 0
Oldrey	73 10 0
Pardoe	58 0 0
Green	53 15 0
Kearley	49 0 0

Brackenbury Road.

Petchey	105 0 0
Martin	93 0 0
Kearley	73 0 0
Oldrey	66 0 0
Pardoe	40 0 0

Tanner's Hill.

Stacey	167 0 0
Roy	105 0 0
F. Johnson	86 0 0

Victoria Road.

Martin	£146 0 0
Petchey	91 6 8
Oldrey	88 10 0
Pardoe	85 0 0
Kearley	84 0 0

St. John's Lane.

Davis Bros.	117 0 0
Barrett & Power	90 0 0
Johnson & Co.	69 0 0
Pritchard	60 0 0
Oldis	58 0 0
Stevens Bros.	58 0 0
Williams & Son (*accepted*)	58 0 0

Saffron Hill.

Davis Bros.	270 0 0
Oldis	200 0 0
Pritchard	99 17 0
Williams & Son	96 0 0
Johnson	86 0 0

(Excluding Art School.)

Sydenham Hill Road.

Jerrard	127 0 0
Tullett	99 7 0
Pearce	93 0 0
Knight & Walden	85 0 0
Bellamy	80 0 0
Groom & Son	78 10 0

Regent Street.

Hammond	148 0 0
Masters	123 10 0
F. Johnson	119 0 0
Holding & Son	118 10 0
Hughes	97 10 0

Gainsborough Road.

Barrett & Power	130 0 0
Sargeant	129 0 0
Snewin Bros.	120 0 0
Robey	105 0 0
Atherton & Latta	104 0 0
Flaxman	96 0 0

Rolls Road.

McCarthy	200 0 0
Roy	96 0 0

Fleet Road.

McCarthy	£290 0 0
Pugh	278 10 6
Hornett	218 0 0
Lilly	204 0 0
Knight & Walden	194 0 0

Gloucester Road.

Rice	253 0 0
Mallett	250 0 0
Nightingale	229 0 0
Ash	219 0 0
J. Holloway	195 0 0
Roy	195 0 0
Castle	175 0 0
Ellis	169 9 0

Westcott Street.

Hornett	129 0 0
Walkley	120 0 0
Lathey Bros.	119 0 0
Castle	108 0 0
Johnson & Co.	94 0 0

Keeton's Road.

Jerrard	169 0 0
Castle	168 0 0
Hammond	115 10 0
Pritchard	113 15 0
Mallett	113 0 0
Lathey Bros.	99 0 0
Lilly	94 0 0

Berger Road.

Hatching & Co.	160 0 0
Taylor	123 0 0
Flaxman	120 0 0
Howard	97 0 0
Webb	95 0 0
Pritchard	94 0 0

Camberwell Road.

Mallett	115 0 0
Roy	108 0 0
Pearce	106 0 0
Ash	95 0 0
Tait & Co.	93 0 0

Hawley Crescent.

Pugh	198 10 6
Hornett	164 0 0

MELLOWES & DARBY,
FORMERLY PRIMROSE & Co. CHURCH ST. SHEFFIELD.
"ECLIPSE" PATENT ROOF GLAZING
NO PUTTY, PAINT. ZINC OR OTHER PERISHABLE MATERIAL.
IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c.
NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.
PRIZE MEDAL AWARDS: KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882-3.
THE ONLY GLAZING AWARD, INTERNATIONAL HEALTH EXHIBITION, 1884.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.



PAIN'S SMOKE ROCKETS FOR TESTING DRAINS.
Cheapest, Simplest, and most Efficient Test yet invented.
Burn from Ten to Fifteen Minutes and emit a dense volume of Smoke.
6s. per dozen. 48s. per gross.
MANUFACTURED ONLY BY
JAMES PAIN, 9 ST MARY AXE, LONDON, E.C.

Southampton Street.

Barton	£260	0	0
Brown	240	0	0
Treweeke	237	8	0
Dicksee	217	0	0
Kearley	214	0	0
Millard	203	0	0
Parker	173	0	0
Beadle	163	2	0
Newton & Idle	149	0	0

Victory Place.

Ransom	238	0	0
Davis Bros.	211	0	0
McCarthy	170	0	0

Boundary Lane.

McCarthy	200	0	0
Dicksee	160	0	0
Treweeke	148	8	0
Davis Bros.	127	0	0
Millard	119	0	0

South Lambeth Road.

Richens & Mount	193	0	0
Higgs & Hill	188	0	0
J. Holloway	148	0	0
Nightingale	128	0	0

Church Street, Hoxton.

Yallop	103	0	0
Kirby & Chase	99	10	0
Shurmur	99	0	0
T. W. Smith	89	0	0
McCormick	79	15	0
Dearing & Son	74	0	0
Grover	67	0	0
Green	57	0	0

Canal Road.

Barratt & Power	190	0	0
Pritchard	91	18	6
Dearing	88	0	0
Hayworth	85	0	0
Smith Bros.	81	0	0

Rushmore Road.

Barratt & Power	90	0	0
Sargeant	68	0	0
Shurmur	54	0	0
Steel Bros.	52	0	0

Albany Road.

Jerrard	£249	0	0
Nightingale	238	0	0
Higgs & Hill	234	0	0
Roy	210	0	0
J. Holloway	197	0	0
Pearce	165	0	0
Roper & Son	118	0	0

Sumner Road.

Groom	225	0	0
Ash	179	0	0
Roper & Son	164	0	0
Castle	150	0	0
Basham	146	16	0
Pearce	134	10	0
Hammond	123	10	0

High Street, Stoke Newington.

Oldis	105	0	0
Kirby & Chase	97	10	0
Shurmur	96	0	0
Sargeant	91	0	0
Dearing	86	0	0
Green	81	0	0
McCormick	80	0	0

Clifton Road.

Stacey	186	0	0
Roy	147	0	0
Wenboro	135	8	9
Beadle	107	0	0

Brentwood Industrial School.

Winter Bros.	254	0	0
F. & F. J. Wood	242	0	0
Robey	125	0	0
Hammond	110	0	0

Westmoreland Road.

Richens & Mount	154	0	0
Hobson	118	0	0

Ann Street.

T. W. Smith	112	0	0
Davis Bros.	107	0	0

Vittoria Place.

Stephens	219	0	0
Davis Bros.	125	0	0

Powis Street.

F. Johnson	397	0	0

Turin Street.

North	£329	0	0
Smith & Son	277	0	0
Webb	275	0	0
Flaxman	273	0	0
Kearley	251	0	0
Taylor	240	0	0
Howard	209	10	0
Pritchard	208	0	0
Robson	199	10	0

Monteith Road.

Kearley	590	0	0
North	415	0	0

Ben Jonson School.

Hale & Twitchell	224	0	0
Pritchard & Son	167	0	0

Old Castle Street.

Flaxman	153	0	0
Howard	149	10	0
Pritchard & Son	129	0	0

Fleet Road.

Hornett	128	0	0
Riley Bros.	78	0	0
Williams	52	0	0
Wall Bros.	45	0	0

Alexis Street.

H. L. Holloway	100	0	0
Roy	69	0	0
Davis Bros.	66	15	0

Monnow Road.

H. L. Holloway	50	0	0
Davis Bros.	28	5	0
Roy	23	17	0

Nynehead Street.

H. L. Holloway	45	0	0
Jerrard	22	10	0
Roy	17	18	0

Gideon Road.

J. D. Hobson	75	0	0
J. Holloway	68	0	0
Mallett	62	0	0

Clifton Road.

H. L. Holloway	27	0	0
Roy	12	8	0
Jerrard	9	9	0

Orange Street.

Walkley	£134	0	0
Lilly	113	0	0
Castle	110	0	0
Hobson	108	0	0
Hammond	98	10	0

Cayley Street.

Wood	163	0	0
Reed	125	0	0
Atherton & Latta	114	0	0
Limm	110	0	0
Howard	98	10	0
Flaxman	98	10	0
Robey	93	0	0
Calmer & Co.	84	15	0
Tait & Co.	75	0	0

Everington Street.

Oldrey	25	0	0
Bodker	19	10	0
Stimpson	17	18	0
Cruwys	16	0	0
Dowling	12	12	0

Duncombe Road.

Sargeant	27	10	0
Davis Bros.	18	8	0
Cruwys	16	0	0
Troughton	14	7	0
Vincent	13	10	0

Morden Terrace.

H. L. Holloway	24	0	0
Holding & Son	21	15	0
Roy	15	18	0
Jerrard	14	19	0

Park Street, Greenwich.

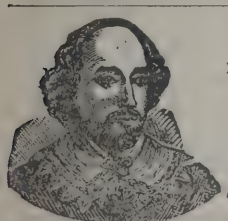
H. L. Holloway	48	0	0
Holding	21	15	0
Roy	17	12	0

Woolmore Street.

Howard	98	10	0
Holland	98	0	0
Flaxman	93	0	0
Atherton & Latta	87	0	0
Howard	86	0	0
Limm	76	0	0
Driscoll	69	10	0

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



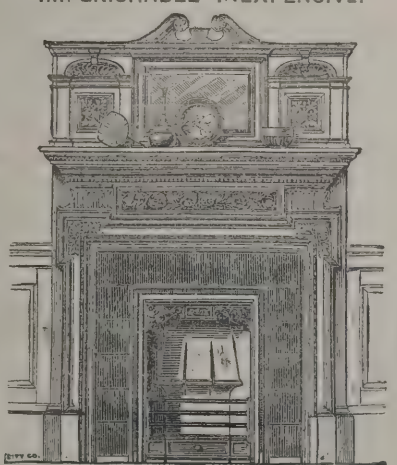
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
OUR ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.



IN PLAIN COLOURS OR VARIEGATED, AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

LOUGHBOROUGH.

For Laying Water Mains in Park Lane, Paget Estates, and Lower Cambridge Street, Loughborough.

G. F. Todd, Derby	£632 7 6
C. Fisher, Loughborough	620 0 0
J. PERKINS, Loughborough (*accepted*)	567 1 4

MANSFIELD.

For the Erection of a Residence on the Lindley Estate, Mansfield, for Mr. W. F. Sanders. Mr. R. FRANK VALLANCE, Architect, Mansfield. Quantities by the Architect.

	For House.	For Boundary Walls, &c.
J. Sadler, Nottingham	£2059 9 0	£133 14 0
Reeve & Tomlinson, Bulwell	1,754 0 0	214 0 0
H. Vickers, Nottingham	1,605 0 0	185 0 0
F. Jay, Nottingham	1,597 0 0	222 0 0
J. Moss, Mansfield	1,508 0 0	153 18 5
J. Greenwood, Mansfield	1,420 0 0	140 0 0
H. Alsop, Mansfield	1,391 0 0	80 0 0
S. & G. Frisby, Mansfield	1,349 0 0	112 0 0
Fisher Bros., Mansfield	1,337 0 0	179 0 0
F. Shaw, Ilkeston	1,295 0 0	168 0 0
W. A. VALLANCE, Mansfield (*accepted*)	1,245 0 0	107 11 0
E. Cuddy, Mansfield	1,192 0 0	92 10 0

For Building Business Premises, Market Place, Mansfield, for Mr. W. Taylor. Mr. R. FRANK VALLANCE, Architect, Mansfield. Quantities by the Architect.

F. Jay, Nottingham	£1,137 0 0
Reeve & Tomlinson, Bulwell	1,135 14 0
G. Bradder, Mansfield	1,092 0 0
E. Cuddy, Mansfield	1,079 0 0
W. A. Vallance, Mansfield	1,056 0 0
H. Alsop, Mansfield	999 0 0
J. Greenwood, Mansfield	995 0 0
S. & G. Frisby, Mansfield	990 0 0
H. Vickers, Nottingham	980 0 0
Fisher Bros., Mansfield	968 0 0
J. Moss, Mansfield	967 3 3
G. Sadler, Nottingham	957 6 6
F. SHAW, Ilkeston (*accepted*)	900 0 0

OPENSHAW.

For Enlarging the Congregational Schools in Lees Street, Openshaw. Mr. J. H. BURTON, Architect, Warrington Street, Ashton-under-Lyne.

Hannah Fielding, Droylsden	£1,017 0 0
Thomas Benson, Openshaw	1,002 0 0
William Neal, Ashton-under-Lyne	883 0 0
E. & C. Jackson, Higher Openshaw	850 0 0
Thomas Dean, Ashton-under-Lyne	849 0 0
Allen Holmes, Ashton-under-Lyne	847 0 0
J. W. Williamson, Ashton-under-Lyne	833 0 0
J. McFarlane, Manchester	826 0 0
Davison & Carr, Manchester	815 0 0
Butters & Carson, Manchester	812 0 0
William Holt, Manchester	806 0 0
John Smith, Openshaw	800 0 0
John Robinson, Ashton-under-Lyne	798 0 0
Jabez Gibson, Dukinfield	797 0 0
R. H. Grason, Bradford	750 0 0
JOHN ROSS, Manchester (*accepted*)	743 0 0

ORPINGTON.

For Stables at Orpington, Kent. Mr. ST. PIERRE HARRIS, Architect.

Knight, Sidcup	£216 0 0
Treadwell, Orpington	193 0 0
Laslett, Farnborough (*accepted*)	187 0 0

OXFORD.

For Building "Cutler Boulters" Provident Dispensary, in Worcester Street, Oxford. Mr. E. G. BRUTON, F.R.I.B.A., Architect, 17 New Inn Hall Street, Oxford. Quantities not supplied.

Charles Claridge, Banbury	£2,047 0 0
Wilkins & Son, Eynsham and Oxford	2,045 0 0
C. J. Hill, Coventry	2,000 0 0
Colston & Plumridge, Oxford	1,931 0 0
A. Kimberley, Banbury	1,865 0 0
CHARLES CURTIS, Oxford (*accepted*)	1,772 10 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY. RIVERSIDE, NINE ELMS.

H. W. COOPER & COMPANY, LIMITED,

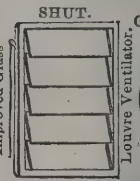
HEALTH EXHIBITION, MEDAL AWARDED, 1884.



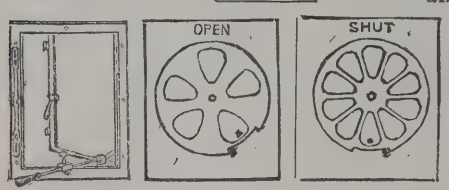
Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.

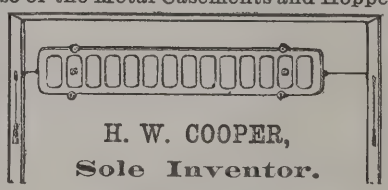
H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.



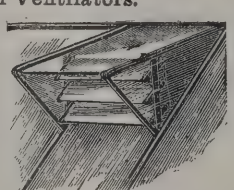
GLASS SELLERS' COMPANY EXHIBITION, MEDAL AWARDED, 1876.



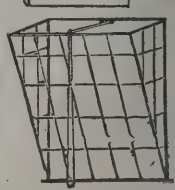
mproved Casement. Circular Glass Revolving Ventilator.



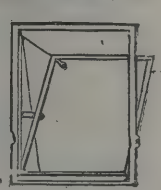
Glass Sliding Ventilator.



Improved Hopper for Skylights.



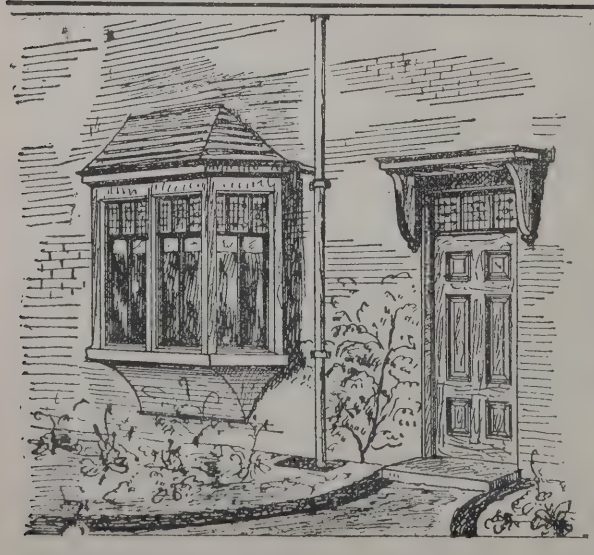
Hopper Venti



Casement.

Steam Works: Little Queen St., Upper George Street, Edgware Road, W.

Office: 28a UPPER GEORGE STREET, EDGWARE ROAD. W.



PROVISIONALLY PROTECTED.

FIRTH'S

Improved Disconnecting Trap,

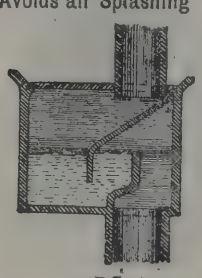
FOR FALL PIPES, &c.

COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.

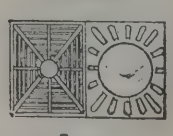
FOR PARTICULARS APPLY TO

GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing



SECTION.



PLAN.

YNYSYBWL.

For Building Chapel, Ynysybwl.

C. Jenkins & Son, Porth	£1,585 0 0
J. Davies, Treorky	1,485 0 0
D. Jenkins, Merthyr Tydfil (*accepted*)	1,426 0 0

TRADE NOTES.

We have had intimation of change of name of the patentees of the well-known "Eclipse" glazing, from "Primrose & Co." to "Mellowes & Darby," Sheffield and Hull, the partnership heretofore existing between Messrs. Primrose and Mellowes having been dissolved by mutual consent, Mr. Primrose retiring. No alteration takes place in the conduct of the business, Mr. Mellowes having been the acting partner for many years, and Mr. Darby, the Hull manager of the former firm, is now admitted to partnership.

During the octave of St. Peter, there has been erected in the church of St. Andrew, Monkton Wyld, Dorset, a complete set of exquisitely carved oak chancel stalls and prayer desks. They are very rich in elaborate and delicate carving, and have been erected at the sole expense of the rector, the Rev. J. B. M. Camm. Against the south pier of the chancel arch a brass, in the form of "An angel bearing a scroll," beautifully engraved, has been placed, with the following inscription :—"To the glory of God, and in loving memory of Anna Maria Camm, who fell asleep March 30, 1879, these stalls were dedicated by her son, John B. M. Camm, M.A., Rector of this Parish, June 29, 1886. 'Be thou faithful unto death, and I will give thee a crown of life.'" The whole of the work has been most excellently done by Messrs. Luscombe & Son, carvers and art workers, of Exeter, from the designs of Messrs. Hayward & Son. The Rev. J. B. M. Camm has now commissioned Messrs. Luscombe & Son to prepare an elaborately carved oak pulpit with marble pedestal to replace the present stone pulpit.

Messrs. Rottmann, Strome & Co., of St. Mary Axe, London, have just opened offices and show rooms at 46 Gordon Street, Glasgow. We are informed that this arrangement has been rendered necessary owing to the increased demand for Japanese leather paper in Scotland and the north.

We have received from Messrs. Bryant, Powis & Bryant, of Leadenhall House, E.C., eleven sheets of specifications of pine and other timbers which have just arrived from Quebec, and are now lying in various docks. We recommend those of our readers requiring timber to apply to Messrs. Bryant, Powis & Bryant at once for a copy of specifications, or a copy can be seen at the office of *The Architect and Contract Reporter*.

We understand that Messrs. Marshall & Co., Campbell Works, Stoke Newington, have just completed some fine windows for Victoria Park Congregational Church. The subjects treated are—"The Prodigal Son," "Christ Blessing Little Children," "The Good Shepherd," and "The Good Samaritan."

On Tuesday last a number of gentlemen, including some naval engineers, assembled at Messrs. Fraser & Fraser's steam-engine boiler works at Bromley-by-Bow, for the purpose of witnessing an exhibition of the "Marchant" engine, which the inventor, Mr. R. M. Marchant, claims, can effect a saving of no less than 80 per cent. of fuel, as compared with ordinary engines. The patent embodies the result of the return to the boiler, by means of a condenser, of the latent heat—that is, the steam which is usually wasted. The test proved satisfactory, and no doubt this invention will open up a new field to all interested in economy in the use of steam-power.

In connection with the festivities on the occasion of the recent royal marriage in Portugal, numerous nocturnal displays of illumination were made. The one which attracted most attention was the electric lighting of the Royal Palace of Ajuda, carried out by Messrs. Woodhouse & Rawson, electric light engineers, of London. On either side of the wide approach to the palace were fixed poles covered with crimson cloth, and with gilt spear-head tops, from which were suspended six powerful arc lamps, besides two suspended over the arcade at the entrance of the palace. The dynamo and engine were fixed in an outhouse behind the large quadrangle of the palace. Thanks to the elevated position which the palace enjoys, the lights were witnessed not only from the bar of the Tagus for several miles of its length, but also from the greater part of the city, and even from the village of Cacilhas and Barreirs, and the historic castle of Palmella far up the river. The lighting gave general satisfaction, and was very favourably spoken of by the Spanish press. The confusion which must inevitably have been caused by the thousands of carriages which conveyed visitors to the state dinners and balls would, but for the services of Messrs. Woodhouse & Rawson, have been indescribable. His Majesty the King graciously expressed his satisfaction at the perfect steadiness and general effect of the light.

WALTER JONES, MAGNET WHARF, BOW BRIDGE,



MANUFACTURER OF

GALVANIZED IRON HOUSES,

OFFICES, | CHURCHES,
WAREHOUSES, | STABLES,

&c., &c.

IRON OR WOOD FRAMES.

Apply for Designs and Prices.

M. C. DUFFY & SON'S Improved and Perfectly "Immovable Acme" System of

WOOD BLOCK FLOORING

(W. DUFFY'S PATENT)

OBTAINED THE

HIGHEST AWARDS

AT ALL THE

International Exhibitions, 1885.

SUITABLE FOR

Churches, Schools, Warehouses, Basements, Railway Station Booking Offices and Platforms, Mansions, Hospitals, Banks, AND Public Buildings Generally.



PRICES and full PARTICULARS on application to the Manufacturers,

M. C. DUFFY & SON,

At their Chief Office,

66 STORKS ROAD, S.E.

ALSO AT

GLASSHOUSE STREET, Albert Embankment, S.E.

UNION ROAD, Rotherhithe, S.E.;

STATION ROAD, Spa Road, S.E.;

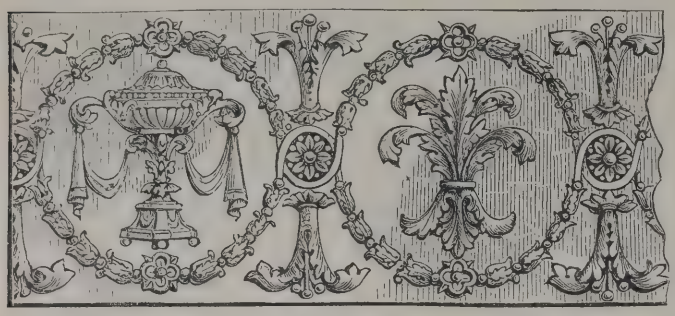
VAUXHALL WALK, S.E.;

AND AT

GREAT YARMOUTH.

NOTES ON NOVELTIES.

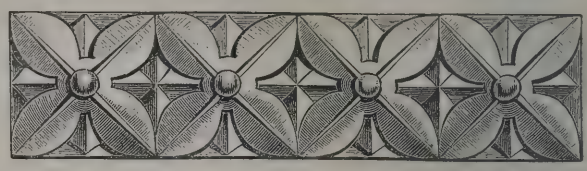
WE subjoin a few illustrations of brickwork taken from the catalogue of Mr. Mark Gentry, of Hedingham and Wormwood Street, E.C., which will be seen to be of a good architectural character. These designs have been much appreciated and extensively used, and, judging by the large selection in the catalogues, it should not be a difficult matter to fix upon any





required design. Mr. Gentry lays claim to the possession of an excellent brick earth at his works at Hedingham, Essex, of natural colour, fineness and density. It is evidently one of the best veins of clay in the country, and extends over 35 acres. Provision is made for winter operations by drying sheds covering 1½ acres. The rubbers turned out from these works, being made of very fine earth, have a great weight and durability. They are made, too, of the natural earth, without washing or the addition of sand and colouring. These rubbers have gained a reputation and have secured a great demand. We have inspected Mr. Mark Gentry's store-rooms in Wormwood Street, which have an excellent variety of nearly everything that can be made out of clay, and are glad to call attention to





the rich colour and fineness of the bricks and their excellence of design. Mr. Gentry is enabled to supply customers from special orders in three weeks, and to follow any design submitted to him.

The Imperial Fire Extinguisher.—The "Imperial Fire Extinguisher" has been recently introduced into this country by Mr. T. H. Tilton, of Queen Victoria Street, E.C., after a successful "run" in the United States, and it starts its career under the great recommendation of having been practically tested and approved as a hand grenade reliable for extinguishing incipient fires. On Friday last a number of experts in the art of fire extinguishing assembled on a plot of waste ground on the Thames Embankment, in response to an invitation to witness "an Exhibition and Practical Test of the Imperial Hand Grenade Fire Extinguisher." A large attendance evinced the interest in the test. The object was to show how effectually the hand grenade in question could extinguish fire. For this purpose wooden buildings, including a section of a room, were erected, to represent the various forms of fire to which the "Imperial Fire Extinguisher" could be applied. The wood was made as inflammable as possible, being coated with pitch and well wetted with kerosene. Indeed, the managers of this "exhibition" left nothing wanting to make it an absolutely fair test

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co's
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST,
BENTLEY PRIORY, ROYAL, LANGHAM,
GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S,
BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

of the merits of the hand grenade in extinguishing a strong fire. While these preparations were being made, the visitors had the advantage of an explanation of the claims made for this special extinguisher, which they were soon able to confirm. Now everything was ready, and operations commenced. The first fire consisted of strong boards nailed together, of square shape, covered with pitch and kerosene. After being allowed to get "well hold," the grenade was thrown upon it from a distance of five or six yards. Two grenades sufficed to extinguish it, but as a stiff wind was blowing across the erection, the result was not so complete. This was conclusively proved in the succeeding tests, for in the remaining five or six erections—larger fires than the first—the grenade had the desired result. In one case a chimney of wood was allowed to burn until the flames came out at the top for 6 or 8 feet in height, but was similarly extinguished by the hand grenade. But the most decisive test was yet to come. The last erection would well represent the interior of a room. By means of pitch and kerosene it was made highly inflammable, a large quantity of shavings and wood being piled up inside, which was also saturated with kerosene. The immense volume of fire issuing from it seemed to be quite irresistible, and the general impression of the spectators seemed to be that it was rather too much to expect this grenade with its pound of chemicals to get it under. There seemed work enough for a fire-engine. Yet it was completely suppressed at the expense of only one grenade. Few who were present were prepared for such a sweeping test, and, needless to say, the exhibition was considered most satisfactory and conclusive as to the merits of the Imperial Hand Grenade Fire Extinguisher. After the effect of the grenade the fire at once died out in the most thorough fashion. The special advantages of this little extinguisher seem to be that instead of an ordinary thick glass—making its breakage difficult—the glass is thin, and the least effort breaks it. It is thin without the least liability of bursting through air acting on the chemicals. This difficulty has been got over by introducing a vent in the neck of the bottle, which thus prevents, by admitting and emitting air, the generation of gas in the bottle — the ordinary cause of explosions. It is evident that this is a great improvement over the thick bottle effecting the same purpose, but which it is very difficult for an unmuscular person to break in case of fire. The chemicals in the "Imperial" are claimed to maintain their power for any length of time. At a subsequent meeting at the Oriental Restaurant, Mr. T. H. Tilton presiding, Mr. Hill, chairman of the Fire Committee of the Metropolitan Board of Works, in seconding the toast of "Success to the Firm," proposed by Mr. Gilbert Wood, gave his testimony to the great value of hand-grenades in extinguishing incipient fires. He instanced their use at a recent fire at the Langham Hotel—extinguished before any alarm could be raised. He thought the "Imperial" was a perfect grenade, and, judging from the successful tests he had seen that day, was confident that it could extinguish an incipient fire of more than ordinary strength. The tests had taken place under the disadvantage of a stiff wind, but the success had been complete. Mr. T. H. Tilton, the enterprising manager of the "Imperial" in this country, in response to the congratulation of his visitors, expressed his pleasure at the large attendance to witness the tests, with which he was thoroughly satisfied. He alluded to the improvements introduced in the grenade, and anticipated a successful experience in this country on its merits.

THE BIRMINGHAM EXHIBITION.

THE Exhibition at Bingley Hall, which will be opened on August 26, promises to be a success. Many applications for space have been declined. Along the side of the walls there are to be erected, as designed by Mr. J. A. Cossins and executed by Mr. Bernasconi, old Birmingham shops, and near the north gallery the old "Crown Inn," Deritend, will be reproduced and used as a refreshment house. In the centre of the hall, which will be redecorated throughout, Messrs. Chance Brothers & Co. will erect a lighthouse. The building will be lighted with electricity by the Gulcher Company, of London—the main part with arc lamps, and the remainder with incandescent lamps. The various processes to be shown will be carried on upon the ground floor. The following local firms will be among the exhibitors :—

Engineering—Messrs. Tangye, Piggott & Co., J. Watt & Co., Belliss & Co., W. & J. Player, Patent Shaft & Axletree Co. (Limited). Tools—Mr. J. Chatwin. Railway Plant—The Metropolitan Railway Carriage & Wagon Co. (Limited). Cycles are represented by half a dozen of the most prominent firms. Electroplate and white metal—Messrs. Elkington & Co., H. Wiggin & Co. Art Metalwork—Messrs. Hart & Sons, Peard & Co., Hardman, Powell & Co., Winfield & Co., Jones & Willis. Brass—Messrs. J. Russell & Sons (Limited) (Wednesbury), Martineau & Smith, Winfield & Co. Copper—Muntz's Metal

COMYN CHING & CO.,

22 & 23 LITTLE SAINT ANDREW ST., and 54, 56, & 58 CASTLE ST., UPPER SAINT MARTIN'S LANE, W.C., LONDON,

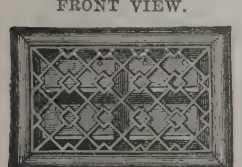
WHOLESALE IRONMONGERS.

MANUFACTURERS OF EVERY DESCRIPTION OF BRASS AND IRON WORK ON THE PREMISES.

Large Stock of Builders', Cabinetmakers', and Upholsterers' BRASSFOUNDRY. LOCKS of every description.

SPECIALITIES IN ORNAMENTAL BRASS DOOR FURNITURE, PICTURE RODS, STAIR RODS, CORNICE POLES, STAIR NOSINGS in BRASS or IRON, ESPAGNOLETTE BOLTS, and IMPROVED SELF-ACTING WATER-BAR, or WEATHERING for FRENCH CASEMENTS.

FRONT VIEW.



BACK VIEW.



Gasfitters, Bellhangers, Hot Water, and Ventilating Engineers. Sole Proprietors of

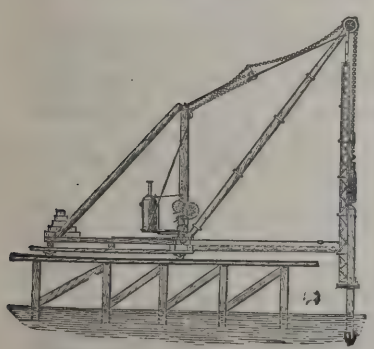
THOMAS BOYLE'S PATENT CHIMNEY-BREAST VENTILATORS.

Prices and Estimates on Receipt of Business Card.

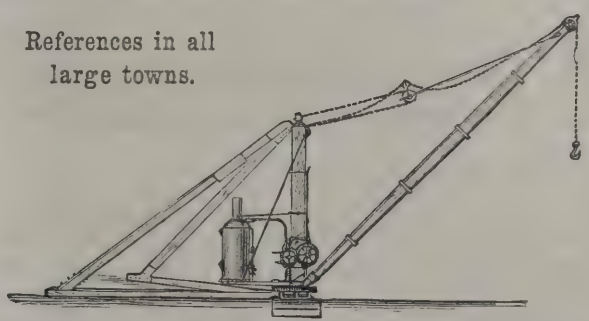
BUTTERS BROTHERS, ENGINEERS, GLASGOW.

PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

References in all large towns.



Crane used for Piling.



SCOTCH BUILDERS' CRANES.

Large Stocks. Send for List.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard . £8 10 0
¾ „ . 9 10 0
1 „ . 10 10 0

FOR SALE HIRE OR HIRE-PURCHASE.

Co., Elliott's Metal Co., E. B. Wilkes. Steel—Staffordshire Steel Ingot Co. (Limited), Messrs. F. H. Lloyd & Co., and Nettlefold Co. (Limited). Iron—Messrs. P. Wright & Sons, Alldays & Onions (Limited), G. Jones, Patent Shaft & Axletree Co. (Limited), Hassall & Singleton. Tin and Lead—Messrs. J. H. Hopkins & Sons, M. J. Hart & Sons, Stock, Sons & Taylor. Pewter—Messrs. J. Yates & S. Mason. Weights and Measures—Messrs. W. Avery, Day & Milward, P. Rogers & Co., J. Rabone & Sons, E. Preston & Sons. Screws—Messrs. Nettlefold (Limited). Nails—Messrs. F. Hadley. Needles—Messrs. Henry Milward & Sons, Alcock & Co., Warner & Sons (all of Redditch). Pins—Messrs. Harrison & Cook. Locks and Keys—Messrs. E. Cotterill & Co., F. Whitfield & Co., Phillips & Son, Walker & Worsey. Edged Tools—Messrs. Yates & Co. and W. A. Lyndon. Heating and Lighting—Messrs. J. Wright & Co., Eagle Range and Foundry Co., Marsh & Sons. Electric Light Apparatus—Messrs. Chamberlain & Hookham (Limited). Gas Fittings—Messrs. Winfield & Co. Lamps—Messrs. J. Hinks & Sons (Limited). Arms and Ammunition—Messrs. Westley, Richards & Co., S. B. Allport, Birmingham Small Arms Co., Webley & Son, G. Lewls, W. W. Greener. Military Accoutrements—Messrs. W. Middlemore, Bent & Parker. Ammunition—Messrs. Kynoch & Co. (Limited). Jewellery—A number of the Birmingham jewellers are combining together to exhibit high-class Birmingham jewellery in one large trophy case. In addition, Messrs. Spencer & Sons will exhibit the process of diamond-cutting, &c., and Messrs. N. C. Reading & Co., Walton & Co., Levi & Solomon, and Levetus Bros. will exhibit jewellery. Silversmiths' Work—Messrs. Elkington & Co., J. Thomason and F. Derry. Watches—The English Watch Co. (Limited). Clocks—Messrs. Swinden & Son. Glass—Messrs. Thomas Webb & Sons. Optical Glass—Messrs. Chance Bros. Stained Glass—Messrs. Winfield & Co. and Perry & Co. (Limited). Artificial Eyes—Messrs. Pache & Son. Silvered Glass—Messrs. J. & O. C. Hawkes. Bricks and Fireclay—Messrs. G. King Harrison, Wood & Ivery (Limited). Paper—Messrs J. W. Mitchell, Macallum & Hodson. Printing—Messrs. Houghton & Co. (Limited). Pens—Messrs. Perry & Co. (Limited) and Hinks, Wells & Co. Harness and Saddlery—Messrs. Middlemore, J. B. Brooks & Co., H. Neale. Saddlers' Ironmongery—Messrs. B. Cope, Hampson & Co., and Charles Peters. Furniture—Messrs. Marris & Norton, Chamberlain, King & Jones. Metallic Bedsteads—Messrs. Winfield & Co., J. & J. Taunton. Baskets and Brushes—General Institution for the Blind, Messrs. R. Chase & Son. Indiarubber—Birmingham Indiarubber Co. and the Midland Indiarubber Co. Woodwork—Messrs. J. Parker, Jones & Willis, Taylor & Baker. Ropes and Twine—Messrs. Thomas Oliver & Co. Buttons—Messrs. J. Aston & Co. and Smith & Ryde. Chemicals—Messrs. Peyton & Son, Austin & Son, Patent Borax Co., Wiggin & Co., Birmingham Colour Co., Corporation of Birmingham (Gas Department), Lambley & Co., Southall Bros. & Barclay. Scientific Instruments—J. Parkes & Son, W. W. Rolston. Musical Instruments—Messrs. Rossward & Sons, Roberts Bros., J. Holt, Processe.

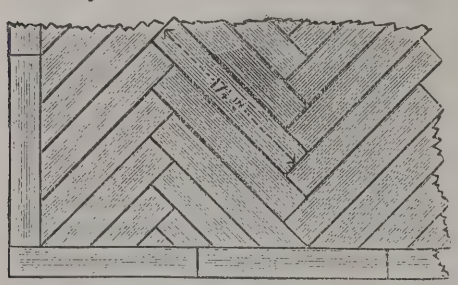
COLONIAL AND INDIAN EXHIBITION.

WE have been requested to give the following arrangements for the conferences up to the end of the present month. The following papers were announced:—July 12, Sir Robert Biddulph, G.C.M.G., "Cyprus," General Lord Wolseley, K.P., G.C.B., G.C.M.G., in the chair; July 14, Professor Leone Levi, F.S.S., "Wages of Labour in relation to Cost of Living;" July 15, G. Wall, "Capabilities of Ceylon," Right Hon. Sir W. H. Gregory, K.C.M.G., in the chair; July 16, Dr. Brandis, "The Forests of India," Lieutenant-General R. Strachey, C.S.I., F.R.S., in the chair; July 19, R. W. Murray, "Table Bay as a Harbour of Refuge," H. M. Stanley, F.R.G.S., in the chair; July 20, D. Morris, "Tropical Fruits" (illustrated with specimens and diagrams); July 27, Rev. W. G. Green, lecture, "The Alps of New Zealand" (with lime-light illustrations), 8.30 P.M.; July 28, Stephen Bourne, "Colonial Tariffs," 8.0 P.M.; July 30, F. W. Pennefather, "New Zealand, Historically and Socially," 4.0 P.M. Conferences will also be held by the Geologists' Association, the Anthropological Institute, the British Beekeepers' Association, and National Fish Culture Association.

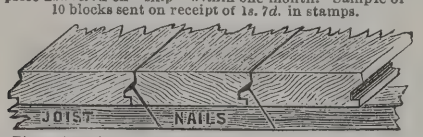
TECHNICAL EDUCATION.

THE aim and purpose of the Crystal Palace directors in their department of technical education has always been to promote an union of the scientific with the artistic spirit in practical art. To quote an example:—The works of engineering, grand as some of them are as mere expressions of scientific strength, are mostly unnecessarily inartistic, and deficient in adornment; while works, the result of an unscientific pursuit of beauty and of artistic adornment, are apt to be deficient in scientific

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



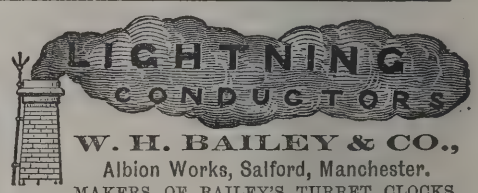
Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¾ × 4¾ Dry Wainscot Oak, 51s. 9d. per square; 1×4½ ditto, 45s.; 1¼×4 Pitch Pine, 36s. 6d.; 1×4 ditto, 22s. 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone, 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES,
STOVES, TILES, ETC.
WILKINS and SONS
88-92 PENTONVILLE ROAD, N.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

Building Paper. LIGHT—STRONG—WATERPROOF. In 10 yard rolls, 40 in. wide, 2d. per yard. Sample roll, post free. 2/6. *Use under slate and tiles, under weather boarding, for temporary roofs, and as lining paper for damp walls.* For home and export.—EASTWOOD AND CO., LIMITED, Dealers in Building Materials. BELVEDERE ROAD, LONDON, S.E.
Chemical Papers Co.,

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market:—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.



W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

To Architects, Builders, Ironmongers, and the Building Trades generally.
BLAKEY'S PATENT
SELF-FIXING STEP PROTECTORS
Are Cheap, Elegant, & Durable.
ANY DESIGN MADE WITHOUT EXTRA COST.
Apply to the Patentee
JOHN BLAKEY, LADY LANE LEEDS,
Or to any Ironmonger.

NOW READY.
J. & W. KIRKWOOD'S
NEW PATENT
SPRAY BATH.
Write to Leith for Particulars.

strength. The study of beauty should be applied to dignify the work of the engineer—the study of scientific practice should be utilised to strengthen the position of the practical artist. An important development in this direction has just been made by the addition to the educational institutions of the Crystal Palace of a new division for the artistic and economic improvement of estates and landscape gardening. The directors have secured Mr. H. E. Milner, whose beautiful works are so well known and so famous, as principal. The delightful and lucrative profession that undertakes the improvement of land by artistic and scientific treatment, other than agricultural, can now be learnt by ladies as well as gentlemen at the Crystal Palace.

THE EMPLOYERS' LIABILITY ACT.

In the Queen's Bench Division on Friday the case of Pegram *v.* Dixon was heard. It was an appeal by the defendant from a judgment of the judge of the Marylebone County Court, awarding 50*l.* damages to the plaintiff in an action under the Employers' Liability Act. The defendant was a builder, and at the time of the accident which led to the present action was building a house at Finchley, where the plaintiff was working for him. During the building the workmen obtained access to the upper part of the house by ladders placed in the well intended for the staircase. There was another well throughout the height of the house intended for a lift, and this was used during the building for throwing rubbish down. While the staircase was being fixed the ladders used by the workpeople were transferred to this second well. The plaintiff was in the act of ascending one of these ladders when a boy on the third floor threw down a plank, which fell upon him, and caused the injuries complained of. No general notice had been given to the workpeople to desist from throwing things down the well when the ladders were placed there, but it was proved that the boy had been warned not to throw the planks down immediately before the accident. On these facts, His Honour, though doubting, held that there was a "defect in the condition of a way" within the meaning of those words in the Act, because no proper precautions had been taken to prevent people continuing to throw things down the well. There were other points in the case, but this was the only one raised in the present appeal. For the respondent it was contended that the well, being used with the defendant's approval as a means of access from one part of the house to another, came within the definition of a "way," and that the failure to take precautions to stop the practice of throwing things down, either by stationing someone to watch or otherwise giving notice, was a "defect" in the place, and clearly negligence on the part of the employer.

The Court allowed the appeal, and ordered judgment to be entered for the defendant, Mr. Justice Wills observing that it would be a preposterous abuse of language to hold that a mere negligent act of a fellow servant could be called a defect in the condition of a way.

R. ADAMS'S PATENT REVERSIBLE SASHES.

It will be seen from an announcement in this number of our journal that a company is about to be formed for the manufacture of Adams's well-known patent reversible sashes. We have no doubt that the company will be a great success, as it is within our knowledge that Mr. Adams has one contract, amongst many in hand at this moment, for the supply of fanlight-openers for not less than 2,600 sashes to the St. Saviour's Infirmary, Champion Hill, and we have no doubt that the architect and all parties concerned would have greatly preferred that the sashes should have been supplied by the same maker as the fittings.

BOYLE'S PATENT LATEST IMPROVED SHIP VENTILATORS.

Mr. Robert Boyle, of Robert Boyle & Son, Limited, Holborn Viaduct, has recently patented an improvement in his well-known downcast ventilator for ships which, in conjunction with the air-pump ventilator, has been so successfully introduced into the principal steamship lines in this country and the Continent.

The downcast ventilator, as shown in diagram fig. 1, can be adapted, so far as the height is concerned, to meet the requirements of naval architects and shipbuilders, which could not well be done with the old pattern, as a certain height in proportion to the diameter had always to be maintained with it. Extended experiment has demonstrated the new pattern to be a more powerful and reliable downcast, besides being absolutely watertight, it being found impossible to force water down the ventilator, though there is not a single valve employed, and

A. SANDERSON & SONS
PAPER STAINERS
IMPORTERS OF FRENCH PAPER-HANGINGS

TRADE MARK.

Sole Importers of the
NEW
IVORY DECORATIONS.



SPECIALITÉ
INGRAIN.

PRESS OPINIONS.

Messrs. Sanderson & Sons have been awarded for their Wall Decorations the only Gold Medal at the New Orleans International Exhibition. This Medal may be considered the highest ever awarded to a paper stainer, as it was not obtained, as usual, in competition with other English firms only, but with the whole world—English, French, German, and American firms being all in one class.

Warehouse
52 BERNERS St. W. LONDON. Manufactory
PAPER-STAINING WORKS
CHISWICK.

the air passes down freely and unobstructedly. The ventilator is a fixture, there being no movable part about it to get out of order, and it never requires trimming, acting with equal efficiency with the wind blowing from any quarter. It never requires to be removed or closed up during stormy weather, as is the case with the ordinary ship ventilator, so that the ventilation of a ship is never stopped or interfered with even though seas may be sweeping it from stem to stern. It has a

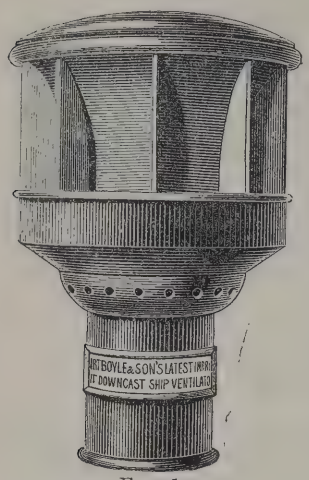


FIG. 1.

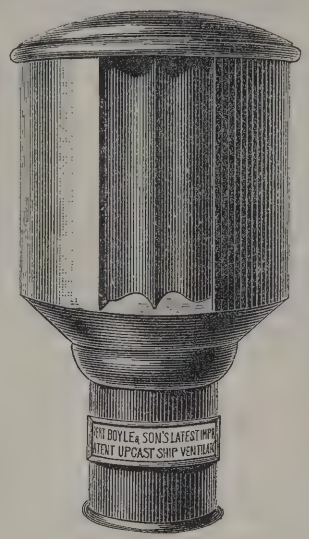


FIG. 2.

good appearance on board ship, and the price is such as is likely to induce shipowners, even during these bad times, to adopt it in preference to the old-fashioned and comparatively useless bell-mouth ventilator which is at present used in ships. Fig. 2 is a diagram of the latest improved air-pump upcast ventilator for ships which, besides creating a powerful and constant upward current, and being entirely free from down-draught, is perfectly watertight, so that it can always be kept in action. The two ventilators combined form a complete system of ventilation, with which the company are prepared to guarantee the ventilation of any ship which may be entrusted into their hands.

When such a competent naval expert as Sir Edward Reed, the naval engineer to the company, has the superintendence of the work, we think there should be little doubt of its success.

BUILDING BY-LAWS.

AT the last meeting of the Wellingborough Rural Sanitary Authority a letter was read from the Local Government Board relative to the by-laws proposed to be considered by the Guardians of the Wellingborough Union, acting as the Rural Sanitary Authority, with regard to new streets and buildings. The Board had considered the reasons adduced by the Rural Sanitary Authority for the omission from the by-laws of the various clauses comprised in the model by-laws relating to the structure of the roofs and chimneys, and the walls and foundations of new buildings, but having regard to the general importance of these clauses in securing the prevention of fires, the Board were unable to regard the reasons as satisfactory. The Board pointed out that in the absence of any such regulation, there would be nothing to prevent the construction of rooms of houses without any party walls above the levels of the ceilings of the uppermost storeys, the improper placing of timbers in party walls and near fireplaces and flues, and many other defects. As regards the objection of the Rural Sanitary Authority that the adoption of the completed series of by-laws would involve the appointment of a special surveyor, if such an appointment was found to be necessary and proper for the efficient execution of by-laws, the Rural Sanitary Authority should proceed to make such an appointment. After some discussion, it was proposed that the matter be referred back to the Rushden Parochial Committee, for that body to report to the next meeting of the Authority.

THE Comedy Theatre is doing good business under the auspices of Miss Violet Melnotte, who has revived "Erminie" in place of "The Lily of Leoville." The bright and merry opera is interpreted by the original cast and "goes," if possible, better than ever. Miss Florence St. John, who is in splendid voice, has, of course, the title rôle, the music of which she sings charmingly, while her acting is full of grace and vivacity. She is admirably supported by Messrs. Paulton, Wyatt, Mervin, Percy Compton, &c., and Misses Violet Melnotte, Minnie Bell, M. A. Victor, &c.

Price 21s. POST FREE. **HARNESS' ELECTROPATHIC (BATTERY) BELT.** Will last for years.

Over a quarter of a million Patients have been successfully treated for Rheumatism, Lumbago, Sciatica, Gout, Kidney Complaints, Epilepsy, Paralysis, Indigestion, Constipation, Female Complaints, General and Local Debility, Functional Disorders, &c. The following are selected from upwards of 25,000 reports received. The originals may be seen at the Company's Rooms, 52 OXFORD STREET, LONDON, W.

GOUT.
"Completely cured me."—*Major Pakenham, Armagh.*

HYSTERIA.
"The Belt has done wonders."—*Mrs. M. Oriel, Dowlais.*

LUMBAGO.
"It has been an untold comfort to me."—*Miss Hudson, Twyford.*

RHEUMATIC FEVER.
"I can speak positively of its advantages."—*Dr. C. Lempriere, D.C.L., Senior Fellow, St. John's College, Oxford.*

SCIATICA.
"Worth fifty pounds."—*Mr. R. J. Watson, Harwich.*

KIDNEY DISORDERS.
"I am like a new man."—*Mr. W. P. Pougher, Plymouth.*

BRONCHITIS.
"A wonderful change."—*Rev. E. Aubrey, Ystrad, Pontypridd.*

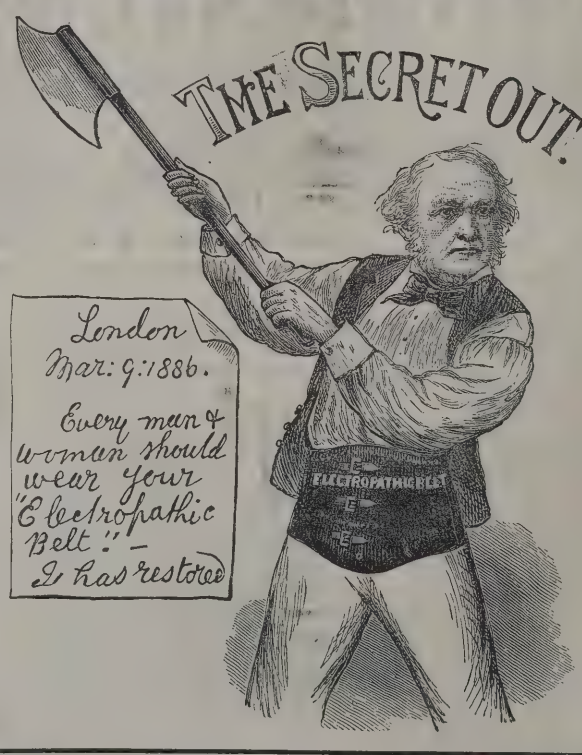
NEURALGIA.
"A most complete success."—*M. A. Langdale, Esq., Leacroft.*

RHEUMATISM.
"Found wonderful relief."—*Dr. A. Dresser, Norwood.*

NERVOUS HEADACHE.
"Derived much benefit."—*Mr. Wm. Holt, New Stofford.*

INDIGESTION.
"It has saved me hundreds of pounds. I wish I had purchased one before."—*Mr. C. Hitchcock, Bicester.*

NERVOUS DEBILITY.
"My health is quite restored."—*Dr. Bouracier, Garfield House, Burgess Hill, Sussex.*



LIVER COMPLAINT.
"I have no pain now."—*Mr. T. Smith, Hey, Lees.*

EPILEPSY.
"Wonderfully improved."—*Mrs. Godwin, Andoversford.*

SHORTNESS OF BREATH.
"Greatly relieved."—*Mrs. C. Frayer, 72 Elm Park Gardens, S.W.*

ASTHMA.
"Quite left me."—*Mrs. J. Low, Stirling, N.B.*

CONSTIPATION.
"A wonderful effect."—*Mr. H. T. Stokes, Demerara.*

FEMALE IRREGULARITIES
"Quite restored to health."—*Mrs. Hawkey, 16 Matilda Street, Barnsbury.*

DYSPEPSIA.
"A new man."—*Mr.*

PILES.
"Better in every way."—*Mr. R. Stringer, East Bradenham.*

BAD CIRCULATION.
"Feel like a different person."—*John Algar, Esq., Campsey Ashe, Wickham Market.*

PALPITATION.
"Quite free."—*Mr. G. Gate, St. Helier, Jersey.*

PARALYSIS.
"Very great benefit."—*Mrs. Sharp, Maidstone.*

WRITERS' CRAMP.
"A complete cure."—*Miss E. Hastings, Eastbourne.*

SPINAL WEAKNESS.
"Rapid improvement."—*Mr. Wm. Watson, Newspynie, N.B.*

MR. C. B. HARNESS, the Eminent Consulting Medical Electrician, has been specially retained by the Company, and may be consulted daily (without charge), on all matters relating to health and the application of Curative Electricity. Residents at a distance, and those unable to avail themselves of a personal consultation, are invited to write for a PRIVATE ADVICE FORM, which will be forwarded POST FREE, on application to THE MEDICAL BATTERY COMPANY, LIMITED, 52 OXFORD STREET, LONDON, W.

On receipt of Post Office Order or Cheque, value 21s., crossed London and County Bank, THE MEDICAL BATTERY COMPANY, LIMITED, 52 Oxford Street, London, W., undertake to forward the ELECTROPATHIC (BATTERY) BELT, as described above, for either Lady or Gentleman, free by post to any part of the United Kingdom.

"ELECTROPATHY; or HARNESS' GUIDE TO HEALTH," will be sent post free on application to the

The MEDICAL BATTERY CO., Ld., 52 OXFORD STREET, LONDON, W.

NEW SUMMER PATTERNS OF PATENT 'GLACIER.'

NEW DESIGN.



No. 169.—The Madonna. Size 11 by 11. 2/6 each.



No. 87.—Autumn. Size 14 by 14. Price 4s. each.



No. 110.—Ecce Homo Size 11 by 11. 2/6 each.



No. 18. Size 10½ by 10½. Price 2s. each.

MANUFACTURED BY

McCAW, STEVENSON, & ORR,
BELFAST.

THIS is a series of transparent designs, from the simplest to the most elaborate and complex, enabling any person with a reasonable amount of taste and ingenuity to produce patterns on windows, having all the beauty of the real stained glass, at a very small cost. The advantages of this invention will be appreciated when it is considered that so many windows have a disagreeable outlook, which can now by means of the Patent Decoration, be shut out from view, and the beauty of the interior enhanced, while the labour of affixing the design is no more than a pleasant pastime and exercise of skill, in which ladies and children can take part. In cases where no disagreeable view exists, there may be portions of the house where there is an excess of light, and the covering of part of the glass with these designs will be found to be an improvement. Windows on stair-landings are particularly good subjects for treatment by the Glacier Decoration; while almost all windows, in whatever position, will be improved in appearance by having a portion of the glass at top or sides covered with suitable designs. Unlike many things invented for the purpose of window decoration, this cannot be rubbed off the window or defaced by cleaning.

A variety of Windows fitted with the latest Designs of Patent "Glacier" can be seen at PERRY & CO.'S Establishment, Holborn Viaduct, London.

"CURVED BORDERS,"
For Oval, Circular, and Spear-shaped Windows, &c.



No. 535 XX 5s. 6d. per dozen.

WITH THESE BORDERS WINDOWS WITH CURVED TOPS CAN BE FITTED WITH THE GREATEST EASE.

RELIGIOUS SUBJECTS.
Suitable for Church Decoration.

A NEW SERIES OF CENTRE-PIECES.

With Suitable Borders for Windows of Churches and Chapels.



Nos. 65 545, 69.

ILLUSTRATED
BOOK OF DESIGNS.

No. 1, containing about 300 Illustrations, a Sample of the Material, and Instructions for combining and affixing the Design.

Post-free, Sixpence.

No. 2, COLOURED BOOK OF DESIGNS, with Instructions for combining and affixing the material.

Post-free, 1s.

NEW DESIGN.



No. 92.—West Wind. 14 by 14. Price 4s. each.



No. 90.—South Wind. Size 14 by 14. Price 4s. each



No. 96.—Earth. Size 14 by 14. Price 4s. each.



No. 23. Size 11 by 11. Price 2s. 6d. each.

PERRY & CO., LIMITED,
Steel Pen Makers, Sole Agents for Great Britain,
18, 19, & 20 HOLBORN VIADUCT, LONDON.

PERRY & CO.'S Viaduct Watch.
Price 21s. each.

Solid Silver Case, Keyless Action, Horizontal Movement, Jewelled.

SHIPPERS AND THE TRADE SUPPLIED.



SILVER KEYLESS Watch.
Price 21s. each.

White Enamelled Dial, Gold Hands, Sunk Seconds, Crystal Glass.

PERRY & CO.'S VIADUCT WATCH.
PRICE 10s. 6d. each.

This is the cheapest REAL Watch ever offered to the Public.

It has a Nickeled Horizontal Movement, quick-winding Keyless Action, setting hands from outside the Case, Jewelled in Four Holes, well finished throughout, Enamelled Dial, Sunk Seconds, in Stout Nickeled Cases.

Price 10/6 each.

Special terms for Watch Clubs.

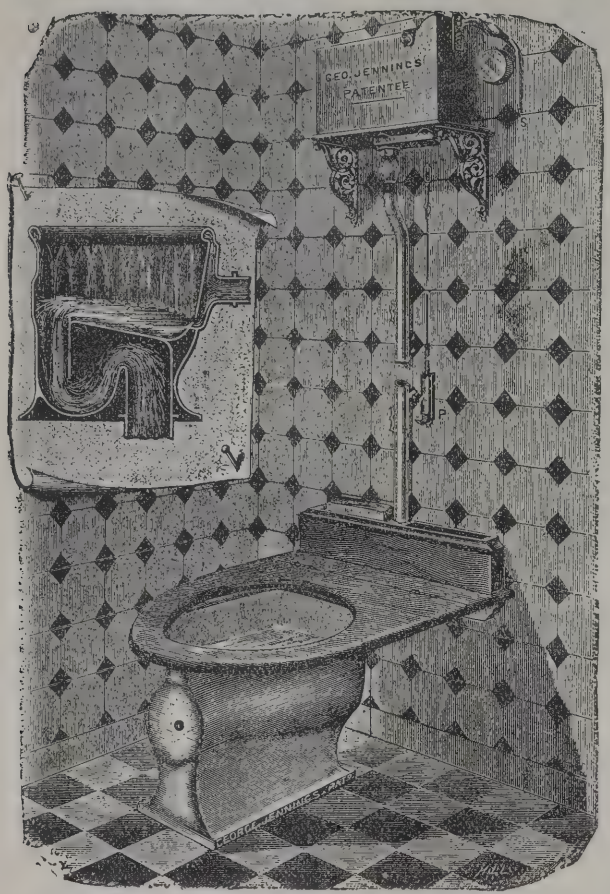
Shippers and the Trade supplied.



Advantages of PERRY & CO.'S "VIADUCT" WATCH over the American Toy Watches which wind up like a clock: 1. Any watchmaker can repair it. 2. It does not require a machine to wind it. 3. The hands are set from the outside of the case, instead of being liable to be broken by turning them with the fingers. 4. It is Jewelled in Four Holes. 5. It has a hinged back, instead of being loose. 6. It has an Enamelled Dial, instead of a paper one.

PERRY & CO., LIMITED, HOLBORN VIADUCT, LONDON.

"THE PEDESTAL VASE,"
JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

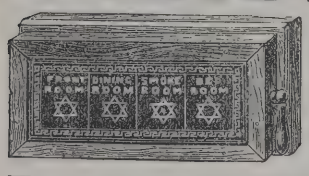
GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,
SANITARY ENGINEER, STANGATE, LONDON.

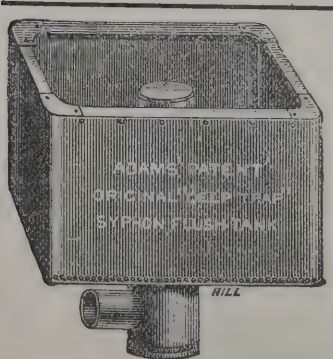
A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



ELECTRIC & PNEUMATIC BELLS.
NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.
MECHANICAL TELEPHONES. Everything for a line complete for £3.
PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

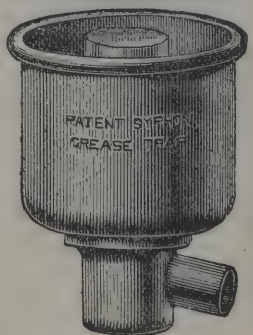


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, July 16, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, JULY 23, 1886.

L'ART,

Price Two Shillings, can be ordered from all newsagents, and at any railway bookstall; or through the publishers for Great Britain, Messrs. GILBERT WOOD & Co., 175 Strand, W.C.

The scale of charges for Advertisements is as follows, and Advertisements intended for insertion in the following Number must reach the Office not later than the 24th or 8th of the month:—

ADVERTISEMENT SCALE.

	£	s	d
For Two Lines and under (nine words to the line)	0	5	0
For every additional Line	0	1	6
Per Quarter Page	6	0	0
Per Half Page	11	0	0
For a Page	21	0	0
For 1 inch deep by 2½ wide	0	15	0

Special arrangements may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 Strand, London, W.C.

NOTICE.

We have appointed Mr. JOHN BERGER, *of New York, our agent for the United States and British North America, for receipt of Advertisements and Subscriptions to* THE ARCHITECT AND CONTRACT REPORTER.

CONTRACTS OPEN.

ABERGAVENNY.—For Building Crescent of Nine Villas and Four Shops. Mr. E. A. Johnson, Architect, Abergavenny and Newport, Mon.

ALDERSHOT CAMP.—July 27.—For Building Post Office. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

ARMLEY.—July 24.—For Building Three Through Houses. Mr. C. F. Wilkinson, Architect, 8 Infirmary Street, Leeds.

BARNET.—July 28.—For Repairs to Workhouse. Mr. D. Dickinson Byfield, Clerk, Union Offices, Barnet.

BARNET.—July 28.—For Building Infirmary at Workhouse. Mr. John Ladds, Architect, 4 Chapel Street, Bedford Row, W.C.

BELFAST.—July 27.—For Building Church and Schoolhouse. Mr. J. J. Phillips, Architect, 21 Arthur Street, Belfast.

BATH.—Aug. 3.—For Conversion of Auckland House into Poor Law Offices. Mr. C. E. Davis, F.S.A., Architect, 55 Great Pulteney Street, Bath.

BELFAST.—July 24.—For Aisle and Transept to Presbyterian Church. Messrs. Young & Mackenzie, Architects, Donegall Square East, Belfast.

BERKHAMSTED.—July 26.—For Enlargement of Board Room at Workhouse. Mr. W. Huckvale, Architect, Tring.

BLACKPOOL.—July 24.—For Additions to National Schools. Mr. Gorst, Architect, Clifton Chambers, Blackpool.

BRADFORD.—July 29.—For Reconstruction of Drying Shed. Messrs. Milnes & France, Architects, Bradford.

BRADFORD.—July 26.—For Building Branch Co-operative Stores, Lidget Green. Mr. J. Drake, Architect, Winterbank, Queensbury.

BRADFORD.—July 24.—For Building Stabling and Storerooms. Mr. W. Rycroft, Architect, Bank Buildings, Manchester Road, Bradford.

BURNLEY.—July 26.—For Co-operative Premises and Five Houses. Mr. T. Dean, Architect, 21 Nicholas Street.

CAMBRIDGE.—For Building Model Machine Bakery and Corn Stores. Mr. F. Waters, Architect, 1 Sidney Street, Cambridge.

CARLISLE.—July 31.—For Erection of Grand Stand. Mr. J. J. Bowman, City Chambers, English Street, Carlisle.

CHESHAM.—July 27.—For Building Shoe Manufactory and Two Dwelling-houses. Mr. G. H. Green, Temperance Hotel, Chesham.

CONWAY.—July 23.—For Addition to Workhouse. Mr. T. B. Farrington, Architect, Conway.

DEWSBURY.—July 27.—For Building Town Hall, Municipal Offices, Police Court, Cells, &c. Mr. H. Holton, Architect, Dewsbury.

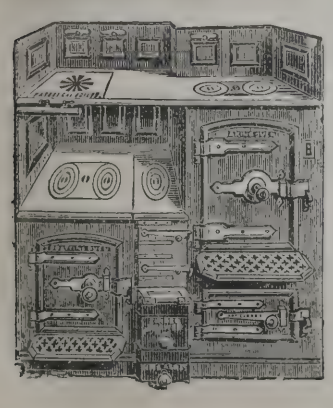
DEWSBURY MOOR.—July 23.—For Building Twenty-one Dwelling-houses and Outbuildings. Mr. P. Spencer, Architect, Batley Carr.

DUBLIN.—July 24.—For Building Church of Crosserlough Mr. W. Hague, Architect, 62 Dawson Street, Dublin.

ELLAND.—July 31.—For Building Six Dwelling-houses. Mr. J. Mortimer, Architect, Elland.

GRAYS.—For Building Coffee Tavern. Mr. F. T. Mullett, Architect, Gracechurch Street Buildings, E.C.

GUILDFORD.—July 27.—For Pulling Down and Re-erecting Buildings. Mr. H. Peek, Surveyor, 3 Market Place, Guildford.



GOLD MEDAL, Health Exhibition, 1884, after the most careful and exhaustive tests.

THIS KITCHENER (CRABTREE'S PATENT) is the most effective and economical of any in the Market. Obtain List, post free, and read through the various Testimonials.

All ARCHITECTS should have our Catalogue, post free, of INVENTIONS in WINDOW APPLIANCES.

SILVER MEDAL AT INVENTIONS,

☞ AND NOTE

Their Patent Chain Fan and Hopper Light Opener, which has no rival.

" " Skylight Lifters and Iron Skylights.

" " Reversible Pivot Windows for Cleaning outside from inside.

" " Epicycloidal Action for Opening one or any number of Lights.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C.; 54, 56 58 CALL LANE, LEEDS; 58 HOPE ST., GLASGOW.

HALIFAX.—July 27.—For Building Two Houses, Stump Cross. Mr. J. F. Walsh, Architect, Waterhouse Chambers, Crossley Street, Halifax.

HALIFAX.—July 29.—For Building Ten Through Houses. Mr. Joseph Wilson, Architect, Queen's Road, Halifax.

HARROGATE.—July 24.—For Foundations of the Bath Hospital. Messrs. Worthington & Elgood, Architects, 110 King Street, Manchester.

HARROGATE.—For Stabling, Gardener's and Coachman's Lodges, Fence Walls, &c., Globe Estate. Messrs. H. E. & A. Bown, Architects, James Street, Harrogate.

HARTLEPOOL.—July 24.—For Building Church, Parish of St. Hilda. Mr. G. D. Irvine, Quantity Surveyor, 32 Fawcett Street, Sunderland.

HAVANT.—July 31.—For Building Petty Sessions Room. Mr. J. Robinson, C.E., County Architect, County Hall, Winchester.

HEREFORD.—July 28.—For Restoration of Wellington Church. Messrs. Nicholson & Son, Architects, Hereford.

HUDDERSFIELD.—July 31.—For Additions to Fire Station, Princess Street. The Borough Surveyor, Huddersfield.

LEEDS.—July 27.—For Roof to Newspaper Offices. Mr. C. Fowler, C.E., Britannia Buildings, Leeds.

MARCHINGTON WOODLANDS.—For Erection of Farm Buildings. Mr. W. Holland Woolley, Architect, Stapenhill.

PENZANCE.—July 24.—For Building Schoolroom and Minister's House. Mr. H. White, Architect, 1 Parade Passage, Penzance.

PETERBOROUGH.—July 30.—For Building Two Small Houses. Mr. H. M. Townsend, Architect, Peterborough.

PORTSMOUTH.—Aug. 25.—For Building Town Hall, Municipal Offices, Police Court and Cells, Reading Room, and Library. Mr. W. Hill, Architect, 25 Park Square, Leeds.

TUNBRIDGE WELLS.—July 24.—For Asphalte Lining to Storage Reservoir. Mr. W. Brentnall, C.E., Town Hall, Tunbridge Wells.

WALSALL.—July 23.—For Taking Down and Rebuilding Queen's Head as Church House. Mr. J. Davis, Architect, Westbourne Road, Walsall.

WIGSLEY.—July 23.—For Building Wesleyan Chapel. Rev. J. Jones, 112 High Street, Lincoln. Mr. J. Gibson, secretary, Wigsley, near Harby.

TENDERS.

BANGOR.

For Building House and Shop, Bangor. Mr. RICHARD DAVIES, Architect, Bangor.

Thomas Wm. Garth, Bangor	£620 0 0
R. & J. Williams, Upper Bangor	560 0 0
EVAN GARTH WILLIAMS, Bangor (*accepted*)	490 0 0
Hugh Evans, Port Dinorwic	362 0 0

BRECHIN.

For Building Episcopal Church, Brechin. Mr. A. ROSS, Architect, Inverness.

Accepted Tenders.

D. Harrow, mason, Inverness	£4,199 0 0
Braud & Waddie, carpenters, Montrose	599 0 0
W. Sinclar, slater, Brechin	137 2 7
Kinnear & Son, plumbers, Brechin	107 0 0
J. Gibson, plasterer, Brechin	23 13 9
W. Mathers, glazier, Montrose	82 9 3

BOURNEMOUTH.

For Alterations to Side Bar, Victoria Hotel, for Messrs. Styring & Co. Messrs. KEMP-WELCH & PINDER, Architects.

DAVIS & LAMBERT (Bournemouth) (*accepted*)	£125 0 0

For Repairs and Painting South-Western Hotel, for Messrs. Eldridge, Pope & Co. Messrs. KEMP-WELCH & PINDER, Architects.

Hoare Bros. & Walden	£65 0 0
A. H. Stroud	63 10 0
JENKINS & SON, Bournemouth (*accepted*)	61 15 0

For Repairs and Painting Prince of Wales Hotel, for Messrs. Eldridge, Pope & Co. Messrs. KEMP-WELCH & PINDER, Architects.

W. Stanley	£99 11 6
Jenkins & Son	88 0 0
Davis & Lambert	79 15 0
A. H. STROUD, Bournemouth (*accepted*)	76 0 0

For Alterations to No. 75 Commercial Road, for Mr. C. G. Dacre. Messrs. KEMP-WELCH & PINDER, Architects and Surveyors.

W. Stanley	£46 0 0
A. H. Stroud	42 0 0
Davis & Lambert	30 10 0
GOULD, Bournemouth (*accepted*)	29 15 0

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

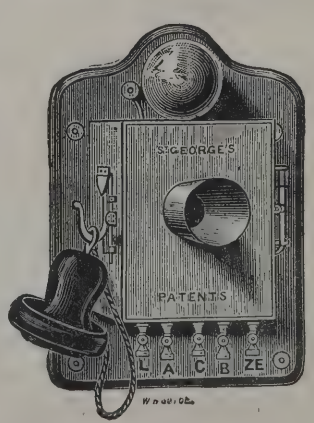
A. F. ST. GEORGE,

Electrician.

Telephone Manufacturer and Patentee.

Electric Light Contractor and Patentee.

85 Chancery Lane, London, W.C.



Price £12 12s. per pair.

TELEPHONE SYSTEM (St. George's Patents), ON RENTAL FROM £5 PER ANNUM, OR ON PURCHASE OUTRIGHT.

GOWER-BELL PATENT TELEPHONE SYSTEM, ON RENTAL OR PURCHASE.

ESTIMATES FOR ELECTRIC LIGHTING ON ST. GEORGE'S PATENTS or OTHER SYSTEMS FREE.

BEVERLEY.

For Building Congregational Church, Lairgate, Beverley. Mr. T. BROWNLOW THOMPSON, Architect, Hull. Quantities by Mr. W. Hoffman Wood, Leeds.

RICHARD POTTS, Beverley (*accepted*)	£1,978 19 0

CARDIFF.

For Building New Premises in St. Mary Street, for the Proprietors of the *South Wales Daily News*, Messrs. D. Duncan & Sons. Mr. S. ROONEY, Architect, 16 Crockherbtown, Cardiff. Quantities by the Architect.

F. S. Lock, Cardiff	£3,958 0 0
J. Allen, Cardiff	3,950 0 0
Jones Bros., Cardiff	3,900 0 0
D. J. Davies, Cardiff	3,795 0 0
E. Howard, Cardiff	3,700 0 0
W. SYMONDS, Cardiff (*accepted*)	3,650 0 0
Stephens & Bastow, Bristol	3,490 0 0
C. Shepherd & Son, Cardiff	3,234 0 0

DEWSBURY.

For Altering and Enlarging School Premises, Dewsbury, for the Society of Friends. Mr. FREDERICK W. RIDGWAY, A.R.I.B.A., Architect, Dewsbury. Quantities by the Architect.

Garthwaite & Blackburn, Dewsbury	£556 5 0

EAST STONEHOUSE.

For the Reconstruction of Sewers in Adelaide Lane and Clarence Lane, East Stonehouse.

R. D. Rowe, Stoke	£483 11 0
H. Hill & Co., Compton Gifford	429 0 3
G. H. Smith & Son, Devonport	379 15 0
W. Shaddoch & Sons, Saltash	373 19 0
G. Shellabear, Plymouth	366 0 0
J. PARSONS, Plymouth (*accepted*)	340 0 0

FENTON.

For Building Houses, Victoria Road, Fenton, Staffs, for Mr. W. M. Baker. Messrs. R. SCRIVENER & SONS, Architects, Surveyors, and Valuers, Hanley. Quantities supplied by the Architects.

Hancock & Tipping, Stoke-on-Trent	£2,144 0 0
C. Cornes, Hanley	2,050 0 0
T. Godwin, Hanley	2,030 0 0
N. Barlow, Stoke-on-Trent	2,000 0 0
J. Breeze, Stoke-on-Trent	1,840 0 0
H. WETTON, Fenton (*accepted*)	1,750 0 0

GLOUCESTER.

For Building Workshops, Bristol Road, Gloucester, for the Gloucester Waggon Company. Messrs. MEDLAND & SON, Architects, 15 Clarence Street, Gloucester.

W. Lean & Son, Gloucester	£4,165 0 0
T. Freeman, Gloucester	3,899 0 0
H. A. Forse, Bristol	3,350 0 0
W. Jones, Gloucester	3,180 0 0
E. Meredith Gloucester	3,144 0 0
E. Clutterbuck, Gloucester	2,940 0 0
D. C. Jones & Co., Gloucester	2,884 0 0
A. KING, Gloucester (*accepted*)	2,854 0 0
Gurney Brothers, Gloucester	2,795 0 0

Iron Stanchions, Girders, and Roofing.

Gardner, Anderson & Clark, London	5,068 0 0
J. & W. Harbon, Smethwick	4,955 0 0
Eastwood, Swingler & Co., Derby	4,639 10 0
Goddard & Massey, Nottingham	4,533 12 8
H. A. Forse, Bristol	4,400 0 0
Hill & Smith, Brierley Hill	4,390 0 0
T. Tildesley, Willenhall, Staffordshire	4,338 0 0
A. D. Dawnay, London	4,333 0 0
E. C. & J. Keay, Birmingham	4,251 10 0
A. Handysides & Co., Derby	4,160 14 3
W. Lean & Son, Gloucester	4,105 0 0
Clayton, Son & Co., Leeds	3,894 5 2
Newton, Chambers & Co., Sheffield	3,884 10 0
F. F. Leach & Co., London	3,789 6 0
E. Finch & Co., Chepstow	3,712 3 0
J. Lysaght & Co., Bristol	3,615 1 2
W. H. LINDSAY & Co., London (*accepted*)	3,600 0 0
Carter, Ford & Co., Darlaston	3,563 5 3
Gloucester Waggon Co.	3,225 0 0
Phœnix Foundry Co., Derby (if in Belgian iron)	3,835 18 6

Joiners' Work to Roofs.

W. Lean & Son, Gloucester	2,038 0 0
H. A. Forse, Bristol	1,590 0 0
A. King	1,488 0 0
E. Meredith	1,394 0 0
W. Jones	1,290 0 0
D. C. Jones & Co.	1,198 0 0
E. Clutterbuck, Gloucester	1,075 0 0
GLOUCESTER WAGGON CO. (*accepted*)	1,000 12 3

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,

Is admitted to be the best ever put before the Public.

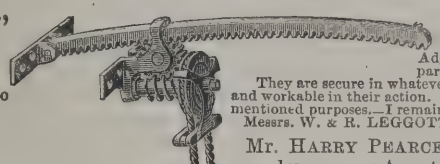
From 5s. each.

Write for REDUCED PRICE LIST and Testimonials to

W. & R. LEGGOTT,

70 Park Road, Bradford, Yorkshire.

N.B.—Size and height of window no object.



TESTIMONIAL.

BANGOR, N. Wales: September 14, 1885.

Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.

Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention.

W. & R. L.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.

Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS AND MANUFACTURERS,

14 ELM STREET, GRAY'S INN ROAD,

LONDON, W.C.

Designers and Manufacturers

of all kinds of ART WORK

for Ecclesiastic and Domestic Purposes,

in Silver, Copper, Brass, and Iron.

SPECIALITE:

DOOR FURNITURE AND LOCKS.

Write for Illustrated Catalogue.

EXETER.

For Detached Chapel, Farm Buildings, and Storage Reservoir, for the City of Exeter Lunatic Asylum. Mr. R. STARK WILKINSON, A.R.I.B.A., Architect, 14 Furnival's Inn, E.C.

HENRY PHILLIPS, Exeter (*accepted*)	£7,590 0 0

GREAT HARWOOD.

For the Erection of New Chapels for the Cemetery, for the Local Board of Great Harwood, Lancashire. Mr. A. W. R. SIMPSON, Architect, Richmond Chambers, Blackburn. Quantities by the Architect.

Entire Works.

*John Gibbons, Manchester	£2,998 0 0
John Knowles, Darwen	2,080 0 0
Thomas Craven, Blackburn	1,979 0 0
Robert Ibbotson, Blackburn	1,926 0 0

* Amended Tender afterwards sent in at £1,998; error in summary of £1,000.

Separate Trades.

Excavator, Mason, and Bricksetter.

W. Ramsbottom & Sons, Accrington	1,417 11 0
John Knowles, Darwen	1,300 0 0
James Whittaker, Blackburn	1,259 10 0
John Fecitt, Blackburn	1,250 0 0
EDWARD LEWIS & SON, Great Harwood (*accepted*)	1,150 0 0
John Gibbons, Manchester	1,139 18 2

Flagger and Slater.

Evans & Co., Accrington	140 1 9
R. T. Eastwood, Blackburn	138 0 0
J. Dyson & Son, Blackburn	134 0 0
John Gibbons, Manchester	133 13 6
John Knowles, Darwen	130 0 0
Whittaker & Schofield, Burnley	129 19 0
John Dean, Blackburn	122 0 0
PICKLES BROS., Leeds (*accepted*)	112 0 0

Painter.

Hartley & Hartley, Great Harwood	45 0 0
John Gibbons, Manchester	36 12 9
John Knowles, Over Darwen	35 0 0
William Henry Cunliffe, Blackburn	31 0 0
J. Squires & Son, Great Harwood	25 0 0
R. J. Duerden, Blackburn	24 0 0
JOHN HARTLEY, Great Harwood (*accepted*)	20 0 0

GREAT HARWOOD—*continued.*

Carpenter and Joiner.

James Parker, Blackburn	485 0 0
Marshall & Dent, Blackburn	443 0 0
B. Abbott & Son, Blackburn	430 0 0
Robert Ibbotson, Blackburn	425 0 0
Daniel Birtwistle, Great Harwood	427 0 0
John Knowles, Darwen	400 0 0
Thomas Craven, Blackburn	397 10 0
KENYON & MOULDING, Blackburn (*accepted*)	381 10 0
John Gibbons, Manchester	364 19 8

Plumber and Glazier.

John Gibbons, Manchester	237 17 11
James Chadburn, Blackburn	153 0 0
J. Squires & Son, Great Harwood	139 6 6
W. H. Law, Blackburn	138 0 0
John Hartley, Great Harwood	135 0 0
Hartley & Hartley, Great Harwood	135 0 0
John Knowles, Over Darwen	135 0 0
Edwin Cunliffe, Blackburn	128 0 0
JOHN SHAW, Blackburn (*accepted*)	125 0 0

Plasterer.

Edward Hodgson, Great Harwood	96 10 0
John Gibbons, Manchester	84 18 0
John Knowles, Darwen	80 0 0
ALEXANDER AIREY, Blackburn (*accepted*)	80 0 0

GUILDFORD.

For Building Washhouses, &c., for Mr. Colebrook. Messrs. PEAK, LUNN & PEAK, Architects, Guildford.

E. Elliott	£420 0 0
G. & R. Smith	370 0 0
T. E. Downes	367 0 0
D. COKER (*accepted*)	283 0 0

All of Guildford.

HALBERTON.

For Erection of Dairy Farm Buildings, East Manley, and Additions to West Manley Farm Buildings, for Mr. C. Hill. Messrs. PACKHAM, CROOTE & STUART, Architects, Exeter and Tiverton.

Deering & Sons, Tiverton	£1,090 0 0
Tucker & Son, Tiverton	1,055 0 0
T. S. & H. Steer, Clyst St. George	787 0 0
W. GRAINGER, Clyst Hyden (*accepted*)	720 0 0

PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.

GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

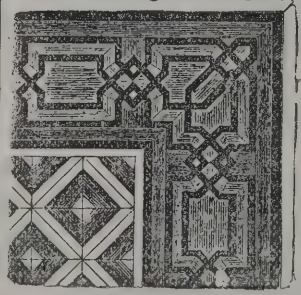
THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

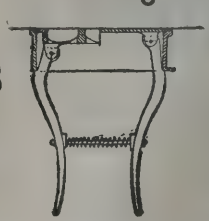
KNOWLES & ESSEX
(Late W. CUNNINGTON & Co.),
Manufacturers of
ARTISTIC WALL-PAPERS,
Park Walk, Chelsea, London, S.W.
Specialities—Patent Frosted Gold, Crystal Damask and Raised Flock Decorations.

ACCIDENT ASSURANCE TRANSACTED BY THE ATLAS FIRE AND LIFE OFFICE. Established 1808.
West End Office, 32 COCKSPUR STREET.
Head Office, 92 CHEAPSIDE. Secretary, SAML. J. PIPKIN.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered.
PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

A. J. SHAW,
58 & 60 Gower Street, Sheffield,
MANUFACTURER OF
Coloured Varnishes & Wood Stains,
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT.

NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON

HULL.

For Building Business Premises, Osborne Street, Hull, for Mr. J. Dunlop. Mr. T. Brownlow Thompson, Architect, Hull.

D. Robinson, Hull	£700 0 0
B. Musgrave, Hull	698 0 0
Walker Bros., Castleford	688 0 0
T. Siminson, Hull	671 0 0
W. H. Atkinson, Hull	653 14 0
T. Goates, Hull	651 0 0
H. Anderson, Hull	646 10 0
F. Blackburn, Hull	642 10 0
J. Dawes, Hull	629 7 0
Geo. Houlton, Hull (*accepted*)	629 0 0

KINTBURY.

For Additions and Alterations to the Mill House, Kintbury, Berks, for Sir Richard Sutton, Bart. Mr. James H. Money, Newbury, Berks, Architect. Quantities not supplied.

H. Bronsdon, Kintbury	£554 19 0
Samuel Elliott, Newbury (*accepted*)	475 0 0

J. S. Bunce, Kintbury, too late.

Proprietor finds bricks, tiles, sand and gravel.

LEE.

For Building a House and Shop situate at No. 8 High Road, Lee, for Mr. F. W. Warmington. Mr. Walter J. Ebbetts, F.R.I.B.A., Architect, Savoy House, 115 Strand, W.C. Quantities supplied by Mr. T. E. Mundy.

W. Holt, Croydon	£795 0 0
H. Baylis, Highbury	760 0 0
G. F. Havell, Lee	760 0 0
J. Bowdidge, Greenwich	749 0 0
Dorrell & Co., London	747 0 0
T. Powell, Lee	730 0 0
D. R. Kennard, Lee	720 0 0
Chas. Robson, Lewisham	698 0 0
Steel Bros., Dalston (*accepted*)	660 0 0
H. Barber, Lewisham	630 0 0

You will really enjoy yourself if you smoke the excellent cigars supplied direct to consumers, at wholesale prices, by Helmcke & Co., 32 Great St. Helen's, London, E.C. Write for price list. Sample collections sent on receipt of 10*s.* 6*d.* or 21*s.*

LINCOLN.

For Building Pair of Semi-detached Villas, Wragby Road. Mr. Watkins, Architect, Lincoln.

W. Wright	£1,444 0 0
George Morgan	1,440 0 0
J. M. Harrison	1,398 0 0
Cowen & Lansdown	1,345 0 0
Crosby & Sons	1,325 0 0
J. B. Harrison	1,299 10 0

LONDON.

For the Erection of the new Great Northern Central Hospital, Holloway Road. Mr. Keith D. Young and Mr. Henry Hall, Architects, 17 Southampton Street, Bloomsbury, W.C. Quantities by Messrs. Hovenden Heath & Berridge.

Hall, Beddall & Co.	£52,945 0 0
Dove Bros.	49,896 0 0
H. L. Holloway	49,127 0 0
Mowlem & Co.	48,139 0 0
Mattock Bros.	48,036 0 0
T. Rider & Co.	47,177 0 0
Patman & Fotheringham	46,768 0 0
John Grover	46,444 0 0
Perry & Co.	46,437 0 0
L. H. & R. Roberts	46,287 0 0
Holland & Hannen	45,828 0 0
Peto Bros.	45,327 0 0
E. Lawrence & Sons	45,180 0 0
Brass & Son*	44,787 0 0

* Accepted at £40,334 17*s.* after the omission of certain works.

For Alterations and Addition at No. 288 Brockley Road, S.E. Mr. J. B. Wall, A.R.I.B.A., Architect, Walbrook.

Kennard Bros.	£265 0 0
C. Goad	249 0 0
W. Smith	238 0 0
M. Redman, Brockley (*accepted*)	222 0 0

For Works to Houses, Britannia Street, City Road, E.C. Mr. J. B. Wall, A.R.I.B.A., Architect, Walbrook.

F. Head, Hackney (*accepted*)	£325 10 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
Bills of Quantities, Specifications, Reports Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
Plans of Estates, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
Certificate Books for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream. Sprague's Tables, upon application.

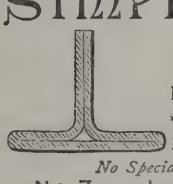
PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Desins.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply Berry, 6 Great St. Helen's, E.C.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., Ld.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, * * * * * * * * * SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL * * * * * PARTICULARS (Sent Post Free). * * * * *

WHITLAND ABBEY GREEN SLATE QUARRIES.
REDUCTION IN PRICE.
THESE Stout, Durable SLATES, which are so much sought after by Architects for Mansions, Churches, Chapels, and other Public Buildings on account of the permanency of their beautiful colour, are now offered by the Proprietor, Mr. Muscott (whose name is so well known in connection with these Green Slates for the last twenty years), at a reduction of Twenty per Cent.—For Testimonials, Samples, Price Lists, &c., apply to the old address, as under.
Mr. MUSCOTT, { Whitland Abbey Green Slate Quarries Clynderwen R.S.O., South Wales.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK.
PICTOR & SONS, Box, Wilts.



IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

SHOP SHUTTER SHOES.
NO SHUTTER BARS REQUIRED.
HARRISON'S PATENT SELF-FASTENING BEST MALLEABLE IRON SOLID BEAD SHOES. Extensively specified, and used by Architects, Surveyors, and Builders. The Solid Bead greatly protects the Corners of Shutters from wear in removal. Terms Cash. Illustrated List on application.
JAMES HARRISON, 35 Union Street, { BOROUGH, LONDON.

LONDON—*continued.*

For Erection of a New Carmelite Priory in Duke Street, Kensington. Messrs. Goldie, Child & Goldie, Architects; Mr. W. H. Brayshaw, Surveyor.

Hussey	£14,000 0 0
Roberts	13,387 0 0
Patman & Fotheringham	13,263 0 0
Sheppard	12,882 0 0
Parmenter	12,636 0 0
Conder	12,555 0 0

For Works required to be done at St. John's Institute, Upper Holloway. Messrs. Woodthorpe & Hammond, Architects; Messrs. Franklin & Andrews, Surveyors.

Ashby & Horner	£2,930 0 0
Brass	2,905 0 0
Higgs & Hill	2,824 0 0
Roberts	2,654 0 0
Conder	2,645 0 0
Dove	2,635 0 0
Lawrance	2,525 0 0
Beale	2,400 0 0

For Drainage and other Works to No. 5 Greville Place, Kilburn Priory, for Mr. Frederick Sherry. Mr. Walter J. Ebbetts, F.R.I.B.A., Architect, Savoy House, 115 Strand, W.C.

R. Y. Yerbury (*accepted*)	£190 0 0

For sundry Repairs at No. 27 Longridge Road, Earl's Court Road, S.W., under the superintendence of Messrs. Morley & Letts, Surveyors, 185 Earl's Court Road.

Bradford, Richmond (*accepted*)	£140 0 0

For Building Board School, Purrett Road. Mr. Bailey, Architect.

F. Johnson	£15,093 0 0
T. L. Green	14,514 0 0
H. R. Holloway	14,180 0 0
Stimpson & Co.	13,615 0 0
Wall Bros.	13,496 0 0
H. Hart	13,470 0 0
W. Johnson	13,292 0 0
S. J. Jerrard	13,239 0 0
Kirk & Randall	13,135 0 0
Lonergan Bros.	12,932 0 0

LONDON—*continued.*

For Building Board School, Dulwich Hamlet. Mr. Bailey, Architect.

H. L. Holloway	£4,583 0 0
Stimpson & Co.	4,580 0 0
Wall Bros.	4,464 0 0
Howell & Son	4,381 0 0
S. J. Jerrard	4,369 0 0
J. Holloway	4,340 0 0
W. Johnson	4,317 0 0
H. Hart	4,298 0 0

For Enlargement of Board School, Waldron Road. Mr. Bailey, Architect.

H. Brown	£548 0 0
T. L. Green	522 0 0
Stimpson & Co.	510 0 0
G. Parker	497 0 0
J. Holloway	490 0 0
S. J. Jerrard	489 0 0
H. Knight	487 10 0
W. Johnson	478 0 0

For Alterations, &c., to Board School, Hawley Crescent. Mr. Bailey, Architect.

G. Stephenson	£1,585 0 0
E. Toms	1,457 0 0
W. Johnson	1,445 0 0
Staines & Son	1,386 0 0
J. Holloway	1,300 0 0
Stimpson & Co.	1,300 0 0
Wall Bros.	1,293 0 0
S. J. Jerrard	1,247 0 0

For New Water-closets, Barrow Hill Road.

Staines & Son	£1,086 0 0
J. Holloway	969 0 0
W. Johnson	914 0 0
Cowley & Drake	835 0 0

For New Schoolkeeper's House, Queen's Gardens.

Stimpson & Co.	£1,070 0 0
J. Holloway	1,012 0 0
W. Johnson	964 0 0

For Water-closets, Lyham Road.

W. Johnson	£420 0 0

HOLDEN & CO.'S PATENT ZINC ROOFING
WITH THEIR
PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,
Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.
Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.
ZINC AND IRON WORKERS AND COPPERSMITHS.
Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.
HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

THE ÆOLUS WATERSPRAY
SYSTEM OF
HEATING, COOLING, & VENTILATING
IS THE
CHEAPEST AND BEST.
For Particulars apply to
MANAGER, 235 HIGH HOLBORN, LONDON, W.C.
Applications for Agencies invited.

SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.
LONDON DEPOT: Kinson Wharf, Albert Embankment, LAMBETH, S.E.
CARTER, JOHNSON & CO., ENCAUSTIC TILE MANUFACTORY, St. George's Works, WORCESTER.
20 Victoria Buildings, Victoria Street, MANCHESTER.
Agents:—STURGEON & SMITH, 3 Cross Lane, Eastcheap, E.C.

LONDON—*continued.*

For Building Board School, Rendlesham Road. Mr. BAILEY, Architect.

W. T. Williamson	£7,084 0 0
W. Shurmur	5,284 0 0
J. Hicks	4,995 5 0
T. Taylor	4,948 0 0
Stimpson & Co.	4,813 0 0
Godfrey & Son	4,800 0 0
Atherton & Latta	4,600 0 0
W. Johnson	4,579 0 0

For Entire Reconstruction of Underground Drainage System, Fittings, &c., and sundry Repairs, No. 51 Earl's Court Square, for Mr. David Martineau, under the superintendence of Messrs. MORLEY & LETTS, Surveyors, 185 Earl's Court Road.

E. K. WILSON, London (*accepted*)	£281 19 2

The entire work to be finished in eighteen days.

NOTTINGHAM.

For the Erection of Two Houses, Shops, Coach-house, Stables, &c., Bulwell, Notts, for Mr. J. Monk. Mr. F. BAILEY, Architect, Pelham Street, Nottingham. Quantities by the Architect.

J. Henshaw	£916 5 0
W. Bramley	871 0 0
J. F. Price	870 0 0
J. Shaw	869 0 0
J. Hollingworth	855 0 0
Cuthbert Bros.	835 0 0
John Cooper	828 0 0
L. Scattergood	820 0 0
J. Priestley	793 0 0
J. Price	793 0 0
G. Sadler	787 0 0
W. Baines	786 0 0
J. Turton	785 0 0
Baynes & Dawson	780 0 0
Reeve & Tomlinson	772 0 0
A. Wilson	769 0 0
James Cooper	759 0 0
Tilley & Mellors	757 10 0
J. Carlin	718 5 0
T. Sills	718 0 0
GILBERT & GABBITAS, Nottingham (*accepted*)	679 0 0

LYMINGTON.

For Alterations and Additions, Angel Hotel, for Messrs. Eldridge, Pope & Co. Messrs. KEMP-WELCH & PINDER, Architects, Bournemouth.

Davis & Lambert, Bournemouth	£620 0 0
Jenkins & Son, Bournemouth	518 0 0
Pardey & Leroy, Lymington	432 17 0
RASHLEY BROS., Lymington (*accepted*)	398 0 0

ORPINGTON.

For Residence at Orpington, Kent, for Mr. Wm. Vinson. Mr. G. ST. PIERRE HARRIS, A.R.I.B.A., Architect, 1 Basinghall Street, E.C. Quantities by Mr. C. Stanger, 21 Finsbury Pavement, E.C.

Durtnell	£3,384 0 0
F. Higgs	3,332 0 0
D. Payne	3,253 0 0
Taylor & Son	3,162 0 0
F. Wood	3,132 0 0
T. Knight	3,080 0 0
W. & F. Croaker	3,039 0 0
H. Somerford & Son	2,897 0 0

OSWESTRY.

For Building Villa Residence, Oswestry. Mr. RICHARD DAVIES, Architect, Bangor.

W. & G. THOMAS, Oswestry (*accepted*)	£837 0 0

PARKSTONE-ON-SEA.

For Making New Road on the Chaddesley Glen Estate, for Mr. G. J. Piercy. Messrs. KEMP-WELCH & PINDER, Architects and Surveyors.

	Roads.	Catchpits, each.
E. Elliott	£510 0 0	£5 13 6
Saunders & White	216 0 0	4 0 0
Candy & Lock	210 10 0	2 5 0
G. Troke	145 0 0	2 11 6
S. White	132 0 0	3 7 6
W. Guy	127 0 0	2 10 0
R. Watton	113 0 0	3 5 0

Ham Hill Stone! Ham Hill Stone!!! For Ham Hill Stone of best quality and workmanship, apply to JOHN HANN & SON, Quarry Owners, Montacute, Ilminster. Established 1837. Agents, MATTHEWS & GEARD, Albany Wharf, Regent's Park Basin, N.W. ADVT.]

MELLOWES & DARBY,

FORMERLY PRIMROSE & Co. CHURCH ST. SHEFFIELD.

"ECLIPSE" PATENT ROOF GLAZING

NO PUTTY, PAINT. ZINC OR OTHER PERISHABLE MATERIAL.

IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c.

NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.

PRIZE MEDAL AWARDS: KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882-3.

THE ONLY GLAZING AWARD, INTERNATIONAL HEALTH EXHIBITION, 1884.

NOW READY,

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.

OFFICE: 175 STRAND, LONDON, W.C.

COLES, STEWART & CO.,

STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;

And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

PITSEA.

For Building Cottage, Pitsea, Essex. Mr. W. J. WOOD, A.R.I.B.A., Architect, Southend.

Butcher, Stanford-le-Hope	£227 0 0
Darke & Son, Southend	217 0 0
Woodhams, Southend	215 0 0
Shelley, Thundersley	198 10 0
SPENDELOW, Southend (*accepted*)	167 5 0

PORTHCAWL.

For Building Villa Residence, Coach-house, Stable, &c., Porthcawl, for Dr. P. James. Mr. D. L. HARRIS, C.E., Architect and Surveyor, Cardiff. Quantities by the Architect.

J. & L. Rees, Talbach	£1,642 17 5
D. C. Jones & Co., Gloucester	1,589 0 0
Charles James, Porthcawl	1,414 0 0
Evans Bros., Cardiff	1,186 0 0
JOHN DAVIES, Aberavon (*accepted*)	1,156 0 0

READING.

For Additions to Lower Redlands, Reading, for Mr. Herbert Sutton. Mr. G. W. WEBB, A.R.I.B.A., Architect, 14 Friar Street, Reading.

Higgs, Reading	£495 0 0
Margetts, Reading	412 0 0
Bottrill, Reading	380 0 0
SEARLE, Reading (*accepted*)	380 0 0

For Pumping Machinery, &c., at the Roebuck Hotel, Tilehurst, near Reading, for Messrs. Blandy & Hawkins. Mr. G. W. WEBB, A.R.I.B.A., Architect, 14 Friar Street, Reading.

STROUD, Wantage (*accepted*)	£56 0 0
MARGETTS, Reading (*accepted*)	30 0 0

RINGWOOD.

For Alterations and Additions, Railway Hotel, for Messrs. Eldridge, Pope & Co. Messrs. KEMP-WELCH & PINDER, Architects, Bournemouth.

R. Tuck	£133 15 0
TUCK & CARLEY (*accepted*)	132 0 0

For Alterations to Crown Hotel Tap, for Messrs. Eldridge Pope & Co. Messrs. KEMP-WELCH & PINDER, Architects.

Tuck & Carley, Ringwood	£58 10 0
Alexander, Ringwood	£58 0 0
R. Tuck, Ringwood	51 10 0

SOUTHEND.

For Building Warehouse, Offices, &c., Southend. Mr. W. J. WOOD, A.R.I.B.A., Architect. Quantities by Messrs. Vinall & Kennedy.

Bentley, Lee, Kent	£794 0 0
Wood, Chelmsford	719 0 0
Darke & Son, Southend	735 0 0
Bullock, Southend	766 4 3
Woodhams, Southend	668 0 0
BAKER & WISEMAN, Southend (*accepted after reductions made*)	699 13 0

SOUTHAMPTON.

For Building Offices, Town Quay, Southampton, for the Harbour Board. Mr. J. G. POOLE, Architect, 9 St. Michael's Square, Southampton.

J. W. Roe, Southampton	£1,297 0 0
Honeychurch & Mitcheldever, Southampton	1,186 0 0
Stevens & Sons, Southampton	1,097 0 0
Bull & Sons, Southampton	1,094 0 0
Franklin, Portswood	1,080 0 0
CROOK & SON, Southampton (*accepted*)	1,048 0 0

STOKE-ON-TRENT.

For House and Outbuildings, Wharf Lane, Shelton, Stoke-on-Trent, for Mrs. Eliza Scarratt. Messrs. R. SCRIVENER & SONS, Architects, Surveyors, and Valuers, Hanley.

Nathan Barlow, Stoke-on-Trent	£290 0 0
Thomas Minks, Fenton	275 0 0
Joseph Breeze, Stoke-on-Trent	263 0 0
John Edwards, Hanley	255 0 0
THOMAS GODWIN, Hanley (*accepted*)	250 0 0

SWAY.

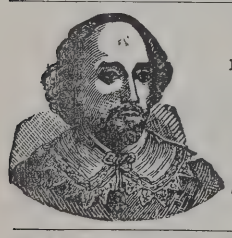
New Chancel to the Church of St. Luke, Sway, near Lymington. Messrs. KEMP-WELCH & PINDER, Architects, Bournemouth.

W. Hoare, Bournemouth	£791 0 0
F. Reeks, Lymington	725 0 0
W. Franklin, Southampton	690 0 0
McWilliam & Son, Bournemouth	688 0 0
Jenkins & Son, Bournemouth	668 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

PARKINSON'S
BEST QUALITY LOWEST PRICES
WET & DRY
COTTAGE LANE CITY RD LONDON
GAS METERS

50,000 FEET OF GILT ROOM BORDERING,
From One Halfpenny per Foot.
Regilding to the Trade. Men sent on the shortest notice to all parts of the country.
GEO. REES, 41, 42, 43 Russell St., Covent Garden.
Established 30 years.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered, price 12s. 6d.
Office: 175 Strand, London, W.C.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

SUTTON.

For Alterations to House, Cheam Road, Sutton, Surrey, for Mr. C. Pantin. Mr. J. B. WALL, A.R.I.B.A., Architect, Walbrook.

T. D. Leng	£324 0 0
M. Redman	290 0 0
W. Hickinbotham, Teddington	213 13 0

SWINDON.

For the Erection of Sacristy at Holy Rood Roman Catholic Church, Swindon. Mr. W. H. READ, Architect, Corn Exchange, Swindon.

BARRETT, Swindon (*accepted*).

No competition.

For Alterations and Additions at 49 Bridge Street, New Swindon. Mr. W. H. READ, Architect, Corn Exchange, Swindon.

Barrett	£258 18 0
Chambers	249 10 0
Wiltshire	249 10 0
PHILLIPS (*accepted*)	205 0 0

All of Swindon.

WARWICK.

For Construction of Pumping Well, and other Works, at the Waterworks, Hassley, for the Warwick Town Council. Mr. E. PRITCHARD, C.E., Engineer, 37 Waterloo Street, Birmingham.

G. F. Smith, Milverton, Warwickshire	£297 0 0
Hughes, Gornal, Dudley	200 0 0
LAW, Kidderminster (*accepted*)	200 0 0

WELLINGBOROUGH.

For Building House in Church Way, Wellingborough, for Mr. W. E. Askham. Mr. E. SHARMAN, Architect, Wellingborough.

W. Stevens, Wellingborough	£943 0 0
J. Morris, Wellingborough	940 0 0
W. J. Harrison, Wellingborough	906 0 0
J. Slinn, Wellingborough	900 0 0
J. Underwood, Wellingborough	876 0 0
G. Glenson, Wellingborough	875 0 0
E. Brown, Wellingborough	865 0 0
G. Hacksley, Wellingborough	808 0 0
Claydon Bros., Cogenhoe	777 0 0
R. MARRIOTT, Wellingborough (*accepted*)	750 0 0

WELLINGTON.

For Additions to Stable Buildings, &c., to Nowers House, Alterations to Lower Nowers, and Building Entrance Lodge, Wellington, Somerset, for Mr. J. Pope. Messrs. PACKHAM, CROOTE & STEWART, Architects, Exeter and Tiverton.

H. Grainger, Clyst Hyden	£1,775 0 0
W. Gibson, Exeter	1,740 0 0
H. J. Spiller, Taunton	1,710 0 0
W. B. BERRY, Crediton (*accepted*)	1,650 0 0

WHITCHURCH.

For Building a Small House at Whitchurch, Hants. Mr. J. HILLARY, Architect, Longparish, Hants.

G. Batten, Overton	£379 0 0
Batten & Kersley, Overton	317 13 0
Pike & Hutchence, Whitchurch	290 0 0
F. BEALE, Andover (*accepted*)	286 0 0
Hedge, Whitchurch	276 13 0

WIDNES.

For Building Infectious Diseases Hospital, for the Widnes Local Board. Mr. HIGGINSON, Surveyor, Widnes.

	Administrative Buildings.	Fever Pavilion.	Boundary Wall.
A. Kimberley	£1,725	£2,298	£335
Morrison & Son	1,693	1,918	314
J. Ward	1,550	2,050	298
H. J. Hampson & Co.	1,531	2,071	313
J. Gibbons	1,499	2,064	298
T. & W. Meadows	1,476	1,872	326
Crake & Marsh	1,466	1,956	271
W. Holt	1,465	1,964	306
G. Parkinson	1,456	1,962	352
Thos. Sadler	1,454	1,935	297
Sayce & Randle	1,451	2,009	269
J. Rothwell	1,425	1,970	273
S. Warburton	1,400	1,900	300

Amended Tenders.

	Fever Pavilion.	Boundary Wall.	Total.
A. Kimberley	£2,383	£335	£2,718
Sayce & Randle	1,931	269	2,200
Thos. Sadler	1,930	290	2,220
J. ROTHWELL (*accepted*)	1,930	269	2,199

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER 700 ENGRAVINGS OF DIFFERENT PERIODS, AND NOTICES.

BY PAUL ROUAIX.

NEW EDITION. Price, Single Volume, 5*s.*; Complete Series, 12 Volumes (by Subscription), £2 8*s.*

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

LONDON: GILBERT WOOD & CO., 175 STRAND.

WOOLWICH.

For Widening the Hill at Market Head, Woolwich.

Mowlem & Co.	£695	0	0
Baker, Deptford	645	0	0
G. Ossenton, Erith	540	0	0
Woodham & Fry	459	0	0
J. G. MARSHALL, Brighton (*accepted*)	420	0	0

TRADE NOTES.

MESSRS. EDGAR KEELING, TEALE & CO., art-metal workers, of 14 Elm Street, Gray's Inn Road, London, W.C., have just supplied the locks and door furniture for the alterations being carried out, under the superintendence of Mr. Arthur Wells, architect, Hastings, at Sir Thomas Brassey's seat, Normanhurst, near Battle, Sussex.

WE understand that Messrs. Jameson & Co., of Dashwood House, Broad Street, are commencing the first of their periodical sales of timber by public auction on July 27 at the Baltic Sale Rooms.

THE directors of Raffety, Thornton & Co., Limited, announce an interim dividend at the rate of 7 per cent. per annum, payable on August 5 next.

THE American Elevator Company, of 38 Old Jewry, E.C., have been awarded the contract for a Standard hydraulic passenger elevator to be erected in the new offices of the New York Life Insurance Company in Berlin. The carrying out of this contract was at first prevented by an old municipal regulation prohibiting, on the ground of safety, the erection of any passenger-lift other than those of the direct-acting type. A full investigation, however, of the construction of the Standard elevator led the authorities to give the desired permission for erection.

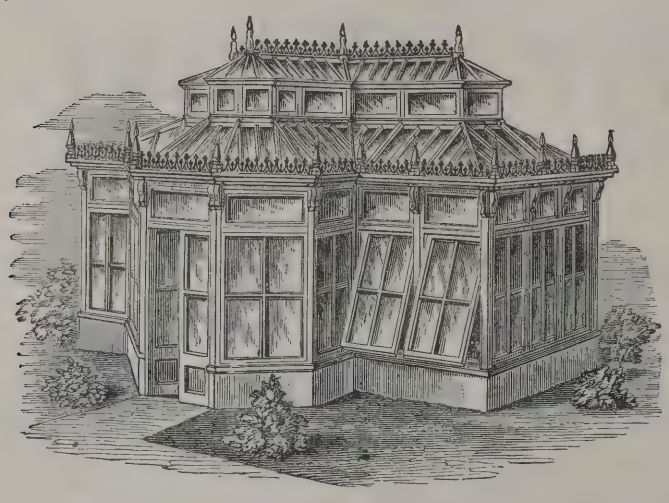
MESSRS. COLLINSON & LOCK have fitted up a new entrance-hall at their establishment in the premises lately occupied by Messrs. Jackson & Graham. The outer vestibule is in grey Sicilian marble. The staircase, balustrade, and rail is in white enamel beautifully decorated with bas-reliefs in the style of Italian Renaissance. The dado of entrance-hall is panelled in same style, and the upper portion of the wall is in embossed leather solidly gilt. Messrs. Collinson & Lock have made a speciality of ornamental plaster-work, and some of their ceilings are the finest specimens of the kind we have seen. There are some fine specimens of carved chimneypieces, beautifully proportioned, well detailed, and executed with a perfection of workmanship that could not be surpassed.

AT the waterworks now in progress for the Corporation of Southampton, Messrs. Legrand & Sutcliffe have just completed the first artesian boring of 6 feet in diameter. We are informed that these are the largest borings in the world that have ever been made in one operation and without any pumping. During the sinking of the large shaft it was necessary to employ very powerful centrifugal pumps, as the superficial area of it is 949·875, and extensive concrete, brickwork, and masonry foundations were built by Messrs. Legrand & Sutcliffe, the greater portion of which are under water. The artesian borings will be lined for their whole depth with perforated steel tubes of 5 feet 11 inches diameter. As a contrast to this gigantic work, Messrs. Legrand & Sutcliffe have in progress one of $4\frac{3}{4}$ inches only, at East Horsley Towers, the country seat of the Earl of Lovelace, which has reached the depth of 785 feet, and is still in progress. This boring is one of special interest, as it commenced upon the base of the Thanet sand, and will penetrate and prove the whole thickness of the chalk stratum in the district. The thickness here of the chalk with flints is now known, and also that of the grey chalk. As soon as the upper greensand is touched, the thickness of the chalk marl will be demonstrated. As the leading geologists have determined by different colouring on the geological maps to show these three great divisions in the chalk, this boring possesses features of some importance, and cores are being carefully preserved for microscopical examination by experts.

TO travellers intending to visit the Continent for the Bank Holiday the Great Eastern offer very inexpensive tours *viâ* Harwich. A tour to the most picturesque parts of the Belgian Ardennes is offered at 35*s.*, *viâ* Antwerp and Brussels; and the old cities of the Zuyder Zee, the Rhine, and Switzerland can be reached at a very little increased cost. The company's new steamers, the *Ipswich* and *Adelaide*, will leave Parkeston Quay on the 31st inst., and return from Antwerp and Rotterdam early the next week.

MODEL DWELLINGS IN CLERKENWELL.

A SPECIAL meeting of the Clerkenwell Vestry was held lately to consider the refusal of the Metropolitan Board of Works to acquire the sites of the disused Coldbath Fields and Clerkenwell prisons, or either of them, for the purpose of erecting thereon blocks of artisans and labourers' dwellings, and like-



R. HOWARD,
Horticultural Works,
DONCASTER.

HORTICULTURAL BUILDINGS erected, with hot-water apparatus complete, in any part of the Kingdom, by experienced workmen. All the newest improvements in machinery for ventilation.

SILVER MEDAL awarded by the Society of Architects at the Architectural and Building Trades Exhibition, Sheffield, February 1886.

Also PRIZE MEDAL and CERTIFICATE, the highest and only award for excellency of Horticultural Buildings and Machinery for Ventilation, at the International Architectural Trades Exhibition, London, April 1886.



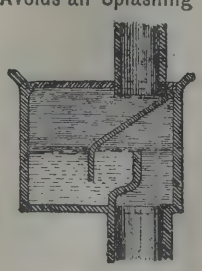
PROVISIONALLY PROTECTED.

FIRTH'S
Improved Disconnecting Trap,
FOR FALL PIPES, &c.

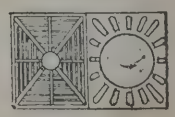
COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.

FOR PARTICULARS APPLY TO
GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing



SECTION.



PLAN.

wise the desirableness of the vestry negotiating with the Home Secretary as to the terms upon which that body could purchase the eight acres covered by the former gaol, for this object or the provision of an open space for the public use and recreation upon at least a portion of the land. The vestry clerk read communications from the rate collectors of the vestry, which were to the effect that many blocks of industrial dwellings already built in the parish let very badly, and they served to deprive householders of lodgers who had enabled them to pay their rent and taxes. The secretary of the Industrial Dwellings Company wrote that 5 per cent. of that company's houses in Clerkenwell were empty, and that the supply of such abodes generally in the metropolis exceeded the demands. The City Commissioners of Sewers had not been enabled to fill more than half the dwellings recently erected by them, and even if full they would not pay more than one or two per cent. The secretary of the Metropolitan Association for the Improvement of the Dwellings of the Industrial Classes wrote that the average vacancies in the Farringdon Road block were from 15 to 18 in the last 12 months. On the other hand, the secretary of the Peabody Trustees wrote that the demand for rooms in the Clerkenwell Peabody buildings "is still very large, and the buildings are now fully occupied." It was decided to ask the Home Secretary at what price the land could be acquired for the purposes of artisans' dwellings and a recreation ground, for both or either.

LANDOWNERS AND BUILDERS.

In the Court of Appeal, before Lord Esher (Master of the Rolls), Lord Justice Bowen, and Lord Justice Fry, the case of Platt *v.* Parker has lately been heard. The case has arisen out of one of those agreements which are so common in the form of building leases, but in this instance took the form of a sale of the land for the purpose of building upon it by the purchaser. It was a case, as Lord Esher put it, of the owner of land in the neighbourhood of a populous town who desired to develop his property by building upon it, and with that view sold a quantity of the land to a builder, taking a covenant from him to build upon it, the owner making advances to him for the purpose, with a condition that if he did not complete the purchase by December 31, 1885, the owner should be at liberty to re-enter and retake possession. The purchaser did not complete at the time fixed, but the owner went on making advances, yet he afterwards re-entered and took possession of the unfinished houses, and also of all the plant and materials upon the premises. The other creditors of the builder disputed his right to take possession under these circumstances, contending that by going on to make advances the owner had waived the forfeiture. Hence an issue tried at Liverpool before Mr. Justice Denman, who decided it, however, in favour of the owner. This was an appeal from that decision. After a long argument the Court gave judgment for the appellant.

Lord Esher, in giving judgment, said it was clear enough what the case was. If it were for the benefit of the owner to do so, he would have re-entered and taken possession on the failure to complete at the time appointed, and then he would have been entitled to take the materials. But he had not done so, and had gone on making advances under the agreement; and (as doubtless he thought it would be for his benefit to do, with reference to his object to convert his land into building land) he had waived the forfeiture, and could not now go back to it, and as it was a breach by failure to complete at a particular day, which was past, it was not a "continuing" breach, so that a continuance of the default to pay did not constitute a fresh forfeiture. The issue, therefore, ought to have been decided against the owner, and judgment must be against him. Lord Justice Bowen and Lord Justice Fry concurred. Judgment accordingly.

THE BUILDERS' ACCIDENT INSURANCE, LIMITED.

The fifth annual general meeting of this Company was held at the registered offices on Wednesday, the 7th instant, Mr. Stanley G. Bird in the chair. The following report of the directors and statement of accounts for the year ending the 31st May, 1886, were presented to the meeting:—

"In presenting their fifth Annual Report the directors have great satisfaction in stating that the Company is in a sounder financial position than it has ever been in, in spite of the large number of accidents which they have had to deal with and the continued depression in trade. The directors have in the course of the year had under consideration no less than three hundred and fifty-six accidents, and they have thought it right to contest liability in ten cases, in seven of which they have been successful. In the case of one accident, involving injuries to five workmen, the Company were unsuccessful, and the amounts payable in this case, in addition to the consequent costs, con-

A. SANDERSON & SONS
PAPER STAINERS
IMPORTERS OF FRENCH PAPER-HANGINGS

TRADE MARK.

Sole Importers of the
NEW
IVORY DECORATIONS.



SPECIALITÉ
INGRAIN.

PRESS OPINIONS.

Messrs. Sanderson & Sons have been awarded for their Wall Decorations the only Gold Medal at the New Orleans International Exhibition. This Medal may be considered the highest ever awarded to a paper stainer, as it was not obtained, as usual, in competition with other English firms only, but with the whole world—English, French, German, and American firms being all in one class.

Warehouse
52 BERNERS St. W. LONDON. Manufactory
PAPER-STAINING WORKS
CHISWICK.

stitute 1,180*l.* of the total of 3,281*l.* paid during the year. The sum reserved in last year's accounts has not been affected by the claims, and the Company have at the present time a larger amount in hand than last year, with an estimated liability considerably less. The directors regret that there has not been that increase in the business which the northern committee expected would accrue from extending the Company's policy to cover sub-contractors' workmen without any increased premium; but notwithstanding this, and although there has been a falling off in the ordinary premiums, it has been more than counterbalanced by the additional premiums received for the risk to the public. The accounts show that after reserving 2,023*l.* for unsettled claims and unexpired risks, there remains a sum of 1,200*l.* for future bonus to be paid to members of the past year on renewal of their insurance, and to meet other known liabilities. It has been considered advisable to discontinue the working of the Bristol District Agency as a separate branch. During the past session of Parliament two Bills to amend the Employers' Liability Act, introduced into the House of Commons, were referred to a select committee. The chairman gave evidence before that committee, and they have now made a report to the House which recommends that 'with certain amendments the Act should be renewed and made permanent.' Should any legislation embodying its terms be introduced into Parliament it will have the careful attention of your board. The following six directors retire from the board in accordance with the Articles of Association:—Messrs. Thomas Barnsley, J. T. Chappell, J. Howard Colls, Robert Dennett, James Greenwood, and J. H. Marsden, all of whom are eligible and offer themselves for re-election."

The Chairman said:—In presenting the report of the directors for the past year, I may say that we do so with mingled feelings of regret and satisfaction; of regret that the business has not increased to the extent we were led to hope might result from the issue of the new form of policy, covering the risks for personal injuries caused to or by the workmen in the service of the insured, by or to sub-contractors' workmen engaged with them as defined in the Company's policies, and we also hoped that as the Company became better known our business would have increased, but the general depression has had such a disastrous effect upon the building trade that it has been reflected upon this Company. When I tell you that over 10 per cent. of the premium received has been returned for unexpended wages, it is a sure criterion of the great depression in trade. As every care is taken by the secretary in obtaining these returns, you may be quite satisfied that the insurers are fully justified in asking for this *bonâ fide* rebate off the amounts that have been paid for premium during the past year; still, I think we ought to be thoroughly satisfied that we have been able to hold our own, and have a balance in hand notwithstanding these bad times, and the exceptionally large amounts that the Company has had to pay for compensation and law costs. Due allowance has been made for any claims that may be made upon us either in the way of debts or liabilities. At present we only insure our own trade and those trades connected with building, and do not go into other trades where probably there might not be so many risks and which would therefore be more profitable. The building trade is usually looked upon as a risky one; we know when we insure our own lives that we all have to pay extra premium, therefore I think when we show that this Company can insure its members at equally low rates to those charged by other companies we may congratulate ourselves. As you will notice in the report we propose to pay a bonus of 10 per cent.; if you agree to pass a resolution to that effect it will bring the rate of premium that we charge on renewal to about the minimum rate charged by other companies. Considering the mutual character of this Company and the short time it has been in existence, and the great cost of working a new company, I think we may consider this a source of satisfaction. You will see by the report that during the past session two Bills were introduced into parliament for amending the Employers' Liability Act, and at the request of the Board of this Company and the Councils of the Institute of Builders and the National Association, Mr. W. H. Cowlin and myself gave evidence before the Select Committee of the House of Commons. Certain provisions we did not oppose, in fact some of them we did not think at all objectionable. We, however, opposed the Bills, but I think the result will be that the Act will be made permanent with certain amendments, and it is quite clear from the tone of the report that has been made that those amendments will not be in favour of the builder. I think therefore you should take the matter into consideration, and the chances being that the risks run will be very much intensified, it behoves all members to support their own Company by bringing to the notice of their brother builders the great risks they run, and advise them to insure with this Company, especially pointing out that it is a strictly mutual Company, and that any profit will be returned to insurers. I beg to move that the report and balance sheet as audited and presented to the meeting be

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2*s.* per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, General Manager.

HILL & HEY,
Inventors, Patentees, and Sole Makers of their Patent
"EXCELSIOR" Syphon and Outlet VENTILATORS,
For the Ventilation of Schools, Churches, Mission Rooms, Staircases of Residences, Stables, Billiard Rooms, &c.
WORKS, HALIFAX
SUCCESSORS TO THE
ORIGINAL "WATSON'S" VENTILATOR WORKS. ESTAB. 1852
Prices, Descriptive Pamphlets, Testimonials, &c., on application.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
Legal and Commercial Stationery.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely Bound in Cloth, Gilt Lettered, price 12*s.* 6*d.*
Office: 175 Strand, London, S.W.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

Building Paper. LIGHT—STRONG—WATERPROOF. In 10 yard rolls, 40 in. wide, 2d. per yard. Sample roll, post free, 2/6. *Use under slate and tiles, under weather boarding, for temporary roofs, and as lining paper for damp walls.* For home and export.—EASTWOOD AND CO., LIMITED, Dealers in Building Materials, BELVEDERE ROAD, LONDON, S.E.
Chemical Papers Co.,

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market:—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS,

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

To Architects, Builders, Ironmongers, and the Building Trades generally.
BLAKEY'S PATENT
SELF-FIXING STEP PROTECTORS
Are Cheap, Elegant, & Durable.
ANY DESIGN MADE WITHOUT EXTRA COST.
Apply to the Patentee
JOHN BLAKEY, LADY LANE LEEDS,
Or to any Ironmonger.

NOW READY.
J. & W. KIRKWOOD'S
NEW PATENT
SPRAY BATH.
Write to Leith for Particulars.

adopted. This having been seconded by Mr. F. J. Dove, the motion was carried unanimously.

Moved by Mr. H. H. Bartlett, seconded by Mr. Thomas Patrick, and resolved :—"That a bonus of 10 per cent. upon last year's premiums be paid in the form of rebate to such members as renew their insurances, and that in cases where insurances have already been renewed since May 31, 1886, the bonus be forthwith paid."

Moved by Mr. H. Densham, seconded by Mr. J. Franks, and resolved :—"That the sum of five hundred pounds be apportioned for the remuneration of directors for their services during the past year."

Moved by Mr. Thomas Patrick, seconded by Mr. J. S. Jones, and resolved :—"That the following six directors, who retire from the board under the Articles of Association and have signified their willingness to stand, be and they are hereby re-elected, viz. Mr. Thomas Barnsley, Mr. J. F. Chappell, Mr. J. Howard Colls, Mr. Robert Dennett, Mr. James Greenwood, and Mr. J. H. Marsden."

Moved by Mr. Thomas Patrick, seconded by Mr. Southern, and resolved :—"That Mr. Charles Fox be and is hereby re-appointed auditor."

Moved by Mr. F. J. Dove, seconded by Mr. Thomas Patrick, and resolved :—"That the thanks of the meeting be tendered to the chairman for his able services during the past year and in presiding over this meeting."

MONKS' PARK STONE.

THE case of Sumsion *v.* Pictor & Sons has been again before the Chancery Division upon an application by the plaintiff for an order to discontinue the action. The plaintiff in the action, Mr. Isaac Sumsion, carries on business at Bath as a stone merchant, and the defendants are Messrs. Pictor & Sons, Bath stone merchants, Box, Wilts. The question in dispute in the action had reference to the use of the words "Monks' Park" as a description of the Bath stone raised from the quarries of the respective parties on the Monks' Park estate, Corsham, belonging to Sir Gabriel Goldney, Bart., M.P. The plaintiff claimed in the action that he had the only quarry in Monks' Park, Corsham ; that he alone was able to supply the genuine Monks' Park stone ; that Monks' Park stone had acquired a high reputation, and was a mineral specially adapted for weight-bearing purposes and for resisting carbonic acid gas and atmospheric influences, and was in great demand for large buildings ; that he had registered a trade-mark, of which the words "Monks' Park" formed a prominent part ; that he had first adopted the words "Monks' Park" as applied to his stone ; and that the defendants had no quarry at Monks' Park ; and that they had been selling stone as Monks' Park which was in fact not Monks' Park stone ; and he claimed the exclusive right to the words "Monks' Park" as applied to Bath stone. The defendants contended they had a right to use the words "Monks' Park" ; that they had ninety-six acres of the minerals of the Monks' Park estate, whilst the plaintiff had only thirty acres ; that the plaintiff had no exclusive right to work the mineral at Monks' Park, or to use those words ; that their minerals were within 300 yards of the plaintiff's ; that they were working the same deposit of stone, and that it was in every way equal in quality to the plaintiff's. They also said they had not infringed the plaintiff's trade-mark, and that they had been selling their stone for two years under the name of Pictor's Monks' Park, with the knowledge of the plaintiff.

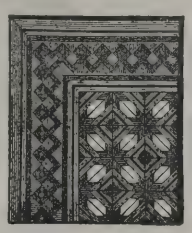
The plaintiff originally moved to restrain the defendants from selling or offering for sale any stone under the name "Monks' Park" or "Monks' Park Stone," other than stone obtained from the plaintiff's quarry, and to restrain them from using the words "Monks' Park" as the name or description of any of the defendants' stone, and also that the defendants might be restrained from infringing the plaintiff's registered trade-mark.

The motion was argued at considerable length, and was before Vice-Chancellor Bacon for several days, Mr. Horton Smith, Q.C., and Mr. Bradford (instructed by Messrs. Moges) then appearing for the plaintiff, and Mr. Millar, Q.C., and Mr. E. W. Byrne (instructed by Mr. B. A. Dyer) for the defendants.

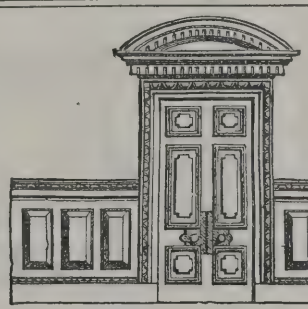
Vice-Chancellor Bacon, in giving judgment, said the plaintiff's case utterly failed. The evidence of Sir Gabriel Goldney and others showed that the name of the whole estate in which both parties had quarries was Monks' Park. The defendants had as much right to use that name as the plaintiff. They were working the same deposit of stone, held of the same landlord under the same title. It was proved that the bed of stone under the Monks' Park Estate, which the plaintiff quarried as well as defendants, was of the same kind and quality, being of the same bed. A most grave and serious charge had been made against them of palming off stone as Monks' Park stone when it was not so. That charge was unsupported by any evidence, and was entirely disproved. The evidence showed

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD., 22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.
150,000 ft. super. in Stock, ready for Laying.
RIGA INCH OAK FLOOR BOARDS,
Tongued and Grooved, VERY CHEAP.
Immense Stock always ready for Laying.



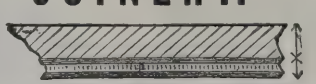
THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction



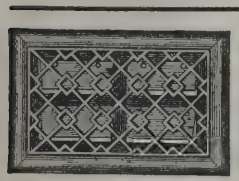
WOOD CARVINGS.
All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.
Estimates and Designs on Application.



ARTISTIC JOINERY.



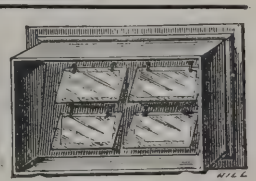
ORNAMENTAL PARQUET.
DEAL BACKING.



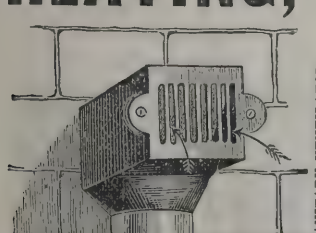
FRONT VIEW.

VENTILATION. Practical! Perfect! Natural!
(Thomas Boyle's Original Patent.)
COMYN CHING & CO., Sole Proprietors,
FOR PRIVATE HOUSES, PUBLIC HALLS, CHURCHES, SCHOOLS, SANITATION.

BACK VIEW.



HEATING, VENTILATING, & GAS ENGINEERS.
ALL SYSTEMS.
MANUFACTURING IRONMONGERS.
Special Manufacturers of Ornamental Brass Work of every Description.
PRICES AND ESTIMATES ON APPLICATION.



SANITARY VENTILATOR.

COMYN CHING & CO.,
54, 56, & 58 Castle Street, Long Acre, and 22 & 23 Little St. Andrew Street, London, W.C.



INLET VENTILATOR.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.—Office : 175 Strand, London, W.C.

that the defendants had been selling and advertising largely their stone as Monks' Park, and the plaintiff knew it. He (the Judge) refused the motion. He could not give costs at that stage, as it was an interlocutory motion, but when the costs had to be dealt with, there would be no difficulty in deciding who should pay them.

The plaintiff afterwards continued proceedings, and applied for a further affidavit of discovery by the defendants, but the application was refused by the Vice-Chancellor. The plaintiff thereupon appealed, and the matter was argued before Lords Justices Cotton and Lindley, who dismissed the appeal with costs. Upon the present application an order was made that the action be discontinued, the plaintiff not to bring another action against the defendants in respect of the same subject matter, or relief sought, and it was also ordered that the plaintiff should pay to the defendants their costs of the action.

ORNAMENTAL BRICKWORK.

MOST conclusive evidence of the large increase in the use of brick and terra-cotta enrichments, and of the great development of architectural design for this material, will be found in turning over the plates of "Brick Ornament and its Application" (Parts 1, 2, 3, and 4), which we have received from Mr. James Brown, brick merchant, of 103 Cannon Street, E.C. This work will be all the more valued from the co-operation of architects, whose assistance by way of suggestions, and also of drawings by Mr. G. Sherrin, architect, Mr. James Brown acknowledges in his preface. The four parts altogether comprise little short of one hundred plates. Among these are a few drawings of ancient brickwork, which not only show the perfection attainable in this material, but are handy, enabling one to judge of the various effects of detail when combined in a whole. Design, however good, is wasted without the material that is to receive it is also good, and we need not say a word as to the excellence of Mr. Brown's brickwork. Those who visited the late Building Exhibition will remember the porch for the church at Catford put up by Messrs. Randell, Saunders & Co. The admirable brickwork in the porch was the work of Mr. James Brown, and the effect produced by it was, it will be remembered, particularly pleasing. Mr. Brown in these plates gives us illustrations of moulded bricks—strings, panel borders, jamb bricks, architraves, chimney bricks, and copings; ornamental bricks—bands and strings, including cornice bricks, panel borders, architraves, friezes, and flat bands; pateræ and squares, diapers; shield panels, Gothic panels, and other panels of all varieties; swags, pilaster enrichments, arch bricks, key bricks, chimney divisionals, chimney-pots, balusters, air-bricks, spandrils of special designs, flower vases, &c. The sections given have the advantage of being full size. Mr. Brown must be congratulated for the wonderful amount and variety of really excellent designs, and for illustrating the application along with the materials, which gives as truthful a guide as can be arranged on paper to assist the judgment of those who consult its pages. The old work illustrated is from Layer Marney Tower, an old house at Enfield, and great Baddon Church, reproductions of excellent measured drawings of the greatest merit.

MURAL HANGINGS.

MESSRS. FISHER & CO., of 33 Southampton Street, Strand, W.C., have just arranged a sample pattern-book of artistic, sanitary, and washable wall-hangings. About fifty patterns are included, and these are not intended as a catalogue from which to select wall-hangings, but to show the style of manufacture. In other words, the whole of the colours and designs in stock are not to be considered limited to the samples before us, as they are far too numerous to come within so small a compass. In addition, it frequently happens now that clients require their own ideas in regard of colour and design carried out, which Messrs. Fisher & Co. are often called on to do, and have not failed to give satisfaction. The duro-textile is manufactured to any design or colour—the samples, indeed, are a pleasing example of what may be expected from Messrs. Fisher & Co.—as a washable, damp-proof, sanitary, indesctructible wall covering, which admits of being freely scrubbed with soap and water. More elaborate enrichments will be got by the use of another hanging, the patent embossed tapestry. A special feature of this last is that the raised or embossed figure is filled in the back with waterproof cement, rendering it indestructible. The muraline is a high-class wall covering finished in oils. It is non-absorbent, printed with non-poisonous materials, and freely washable. The jurors at the Inventions Exhibition showed their approbation by conferring a prize on these specialities. An inspection of these samples show the very beautiful wall coverings that are turned out by Messrs. Fisher & Co., and which would do credit to any firm, and, besides, are a marvel of cheapness.

BRYANT, POWIS & BRYANT LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT LIMITED,

WARMING! COOLING! VENTILATING!

WHEN rooms containing from 2,000 up to 40,000 cubic feet of space, or two or three rooms, say bedrooms, in addition to that in which the fire is situate, are thoroughly warmed and ventilated by one of SHORLAND'S PATENT MANCHESTER OPEN FIRE-GRATES, which are made in every design, what more is there to be reasonably desired in connection with the Warming and Ventilating of our Schools, Colleges, and Dwellings? And to convince the most prejudiced and uninitiated that this (to them, impossible feat) is not only possible, but an accomplished fact, Illustrated Prospectus, with Testimonials confirming this statement, will be sent to anyone interested, on application to the Patentee, G. L. SHORLAND, Imperial Buildings, Ludgate Circus, E.C., or to Mr. E. H. SHORLAND, SANITARY, WARMING, AND VENTILATING ENGINEER, ST. GABRIEL'S WORKS, MANCHESTER.

ESTIMATES FOR WARMING AND VENTILATING EVERY DESCRIPTION OF BUILDINGS, AND SUCCESS GUARANTEED.

TO ARCHITECTS.

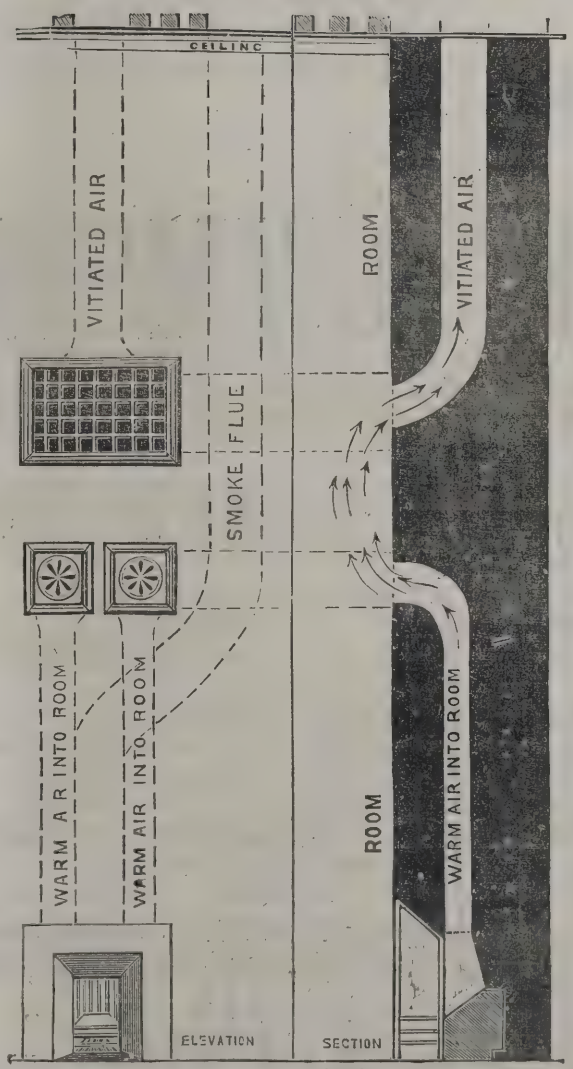
GENTLEMEN,—An erroneous impression is current that the Patent Manchester Warm-Air Generating Grate Backs, or, as they are more generally styled,

MANCHESTER GRATES,

are only suitable for School purposes, which is misleading; the fact is that the Patented Arrangement, being hermetically sealed and complete in itself, is applicable to every design of Front Grate; and being made in every size to suit Grate Fronts with from 15-inch to 25-inch Fire-bars, you have only to give, when ordering, the width of Fire-bars for which you require the

PATENT MANCHESTER FIRE GRATE BACK.

The whole of the Patent Backs are supplied with Fire-boxes lined with Fire-clay Blocks, which cause a bright Fire, and at the same time prevent the Warm Air Generated becoming burnt. These Fire-clay Blocks are easily accessible when Grates are in use, and readily replaced.



As at Leeds and some other places, which is not Shorland's System.

P.S.—(Extract.)—"I have found the **MANCHESTER GRATES** during the past ten years a great comfort in maintaining an equable and warm temperature throughout my House during the Winters. . . . The four Manchester Grates fixed on the Ground-floor Rooms Warming and Ventilating Eight Rooms and the Entrance Hall."

"The three Patent **MANCHESTER GRATES** you fixed to my order at the Croydon Workhouse, to Warm and Ventilate Seven Rooms, answer the purpose admirably, Warming them in Winter and Cooling them in Summer.—Yours truly, JOHN BERNEY, Architect, Croydon."

Another gentleman writes:—"I am so satisfied with the **MANCHESTER GRATE** that I send you an order for **Seventy more.**"

Book of Testimonials on application, from all parts of the United Kingdom, and Model sent, carriage paid.

G. L. SHORLAND, Patentee and Sole London Agent, IMPERIAL BUILDINGS, LUDGATE CIRCUS, E.C.; or to Mr. E. H. SHORLAND, St. Gabriel's Warming and Ventilating Works, MANCHESTER.

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

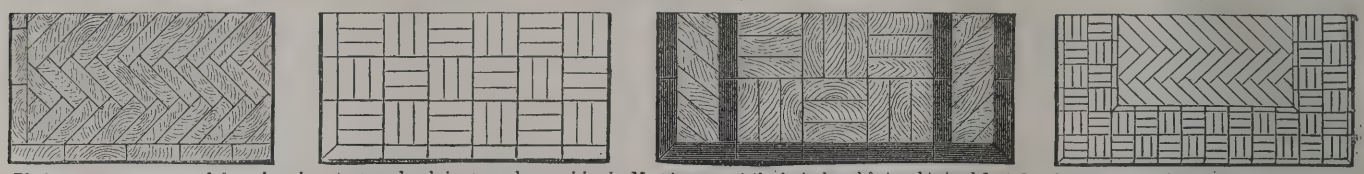
SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

No. 1. No. 2. PATTERNS. No. 3. No. 4.



Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS,

ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus

ESTABLISHED 1844.

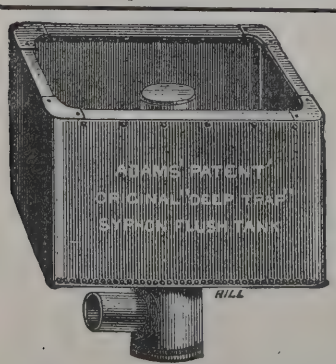
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL	**St. Philip's Marsh.**	**READING**	**Caversham Road.**
EXETER	**Basin Head.**	**DUBLIN**	**14 St. Andrew's Street.**
SOUTHSEA	**Beaufort Road.**	**MANCHESTER**	**20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

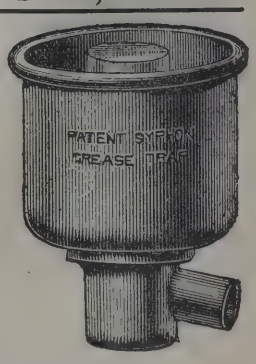


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London
Friday, July 23, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, JULY 30, 1886.

Terms, Post Free.
SIX MONTHS, 10/-.
TWELVE MONTHS, 20/-.

Price Fourpence.
EVERY FRIDAY.

SPECIAL NOTICE.

On receipt of this Memorandum, signed, **THE ARCHITECT AND CONTRACT REPORTER** will be forwarded regularly.

..... 188

To Messrs. GILBERT WOOD & CO., Proprietors of

The Architect and Contract Reporter,

175 STRAND, LONDON, W.C.

Please forward a Copy of THE ARCHITECT AND CONTRACT REPORTER weekly to

NAME.

ADDRESS.

OBSTRUCTION IN THE STRAND.

MR. J. W. PALMER, of 281 Strand, writes us as follows:—"A scene in the narrow part of the Strand is nothing unusual, for a 'horse down' will collect a mob in the best-regulated thoroughfare, and here accidents continually block the way. Still I think a protest ought to be raised against such a scene as I have just witnessed—a crowd of newspaper boys and men having gathered outside a printing-office which is just publishing a version of a recent sensational trial. A posse of police is now stationed in front of the door, and the road is to all intents and purposes blocked by the poor and offensive creatures who wish to invest their pence in this kind of stock, which is now being sold broadcast in the streets, where the traffic, however, is not affected as it is here, whatever the public morality may be." We can add our testimony to Mr. Palmer's complaint. On Monday and Tuesday last the part of the Strand to which our correspondent refers was almost completely blocked by a large number of street-pamphlet sellers, and it required the efforts of not less than nine policemen to keep the road clear. There is no probability of improvement until this part of the Strand is widened.

CONTRACTS OPEN.

ABERGAVENNY.—Aug. 3.—For Building Shop and House. Mr. Edwin Foster, Architect, Woodstock House, near Abergavenny.

ASHTON-UNDER-LYNE.—For Building 21 Houses, also 32 Houses. Messrs. J. D. & J. Lindley, Architects, Henry Square, Ashton-under-Lyne.

BATH.—Aug. 3.—For Conversion of Auckland House into Poor Law Offices. Mr. C. E. Davis, F.S.A., Architect, 55 Great Pulteney Street, Bath.

BOOTLE.—Aug. 4.—For Building Lodge, North Park. The Borough Surveyor, Bootle-cum-Linacre.

BOSTON.—Aug. 4.—For Alterations to Market Stead House. Mr. Herbert Hodgson, Architect, 63 High Street, Queensbury, Bradford.

BRADFORD.—July 31.—For Erection of Foundry and Warehouse. Messrs. Empsell & Clarkson, Architects, Tyrrell Chambers, Bradford.

BRADFORD.—Aug. 3.—For Building Board Schools, Drummond Road. Mr. E. P. Peterson, Architect, Bradford.

BRADFORD.—Aug. 5.—For Enlarging Detached House. Mr. T. C. Hope, Architect, 27 Kirkgate, Bradford.

BRAY.—Aug. 4.—For Building Dispensary House. Mr. William Stirling, Architect, 107 Stephen's Green, Dublin.

BURY.—Aug. 3.—For Additions, &c., to Abattoirs. The Borough Engineer, Bank Street, Bury.

CARLISLE.—July 31.—For Erection of Grand Stand. Mr J. J. Bowman, City Chambers, English Street, Carlisle.

CATTERICK.—Aug. 2.—For Additions, &c., to Farmhouse. Messrs. Clark & Moscrop, Architects, Feethams, Darlington.

CUDWORTH.—Aug. 4.—For Additions to National Schools. Mr. H. Crawshaw, Architect, 1 Regent Street, Barnsley.

ELLAND.—July 31.—For Building Six Dwelling-houses. Mr. J. Mortimer, Architect, Elland.

EPPLETON, HETTON.—July 31.—For Building Church. Names and Addresses to Messrs. Austin & Johnson, 3 Arcade, Newcastle-on-Tyne.

EXMOUTH.—Aug. 17.—For Building Public Hall, &c. Mr. J. Johnson, Architect, 9 Queen Victoria Street, E.C.

FAILSWORTH.—Aug. 4.—For Building Mortuary, &c. Mr. S. E. Trapp, Architect, 88 Mosley Street, Manchester.

GLASGOW.—Aug. 2.—For Building Goods Shed. Mr. J. Deas, Engineer to the Clyde Navigation Trustees, 16 Robertson Street, Glasgow.

HAVANT.—July 31.—For Building Petty Sessions Room. Mr. J. Robinson, C.E., County Architect, County Hall, Winchester.

HAVERSTOCK HILL.—July 30.—For Restoring Roofs at North-Western Hospital. Mr. W. F. Jebb, Norfolk House, Norfolk Street, W.C.

HUDDERSFIELD.—July 31.—For Additions to Fire Station, Princess Street. The Borough Surveyor, Huddersfield.

INGATESTONE.—For Building Working Men's Club and Hall. Mr. H. A. W. Reeves, Architect, 14 Devonshire Square, E.C.

KENDAL.—Aug. 3.—For Abutments and Retaining Walls for Bridge. Mr. D. Goddard, Borough Surveyor, Kendal.

LEEDS.—Aug. 5.—For Building 16 Through Houses. Mr. C. Wilkinson, Architect, 8 Infirmary Street, Leeds.

LEEDS.—Aug. 9.—For Building Houses and Shops. Mr. T. B. Wilson, Architect, 12 East Parade, Leeds.

LYNN.—Aug. 10.—For Building House, Offices, and Warehouse. Mr. D. Clack, Surveyor, Southgates, Lynn.

MAIDSTONE.—Aug. 3.—For Erection of Buildings at Sewage Tanks. Mr. Ruck, Borough Surveyor, Maidstone.

MENAI BRIDGE.—Aug. 9.—For Building Presbyterian Chapel. Mr. R. G. Thomas, Architect, Menai Bridge.

NEWBRIDGE.—Aug. 2.—For Enlarging Church. Mr. W. H. Byrne, Architect, 20 Suffolk Street, Dublin.

NEWPORT.—Aug. 2.—For Additions to School. Mr. G. Rosser, Architect, Newport, Mon.

PRESCOT.—Aug. 5.—For Bakehouse and Storeroom, and Drying-room to Laundry. Mr. S. H. Hartley, Clerk to the Union, Whiston, Prescot.

PETERBOROUGH.—July 30.—For Building Two Small Houses. Mr. H. M. Townsend, Architect, Peterborough.

PORTSMOUTH.—Aug. 25.—For Building Town Hall, Municipal Offices, Police Court and Cells, Reading Room, and Library. Mr. W. Hill, Architect, 25 Park Square, Leeds.

RASTRICK.—Aug. 3.—For Building Two Houses. Messrs. G. Hepworth & Son, Architects, Brighouse.

SEVENOAKS.—July 31.—For Building Baptist Chapel. Mr. J. Wills, Architect, Market Head, Derby.

SHEFFIELD.—Aug. 4.—For Building House, Weigh Office, &c. Mr. R. Davidson, Borough Surveyor, Bower Spring, Sheffield.

SHILDON.—Aug. 4.—For Two Engine Stables. Mr. W. Bell, Architect, Central Station, Newcastle-on-Tyne.

SOUTHOWRAM.—Aug. 10.—For Additions to Sunday School. Messrs. Petty & Ives, Architects, Waterhouse Street, Halifax.

SOUTH QUEENSFERRY, N.B.—Aug. 4.—For Building House. Mr. J. Aitken, Architect, West Terrace.

SOUTH STONEHAM.—Aug. 9.—For Additions, &c., at the Workhouse. Mr. W. H. Mitchell, Architect, 9 Portland Street, Southampton.

STOKE.—Aug. 14.—For Building Bridge, Cemetery Road. Mr. M. Smallpiece, Clerk to the Highway Board, 138 High Street, Guildford.

TYNEWYDD, OGMORE VALLEY.—Aug. 7.—For Building Wesleyan Chapel. Mr. W. Cooke, 25 Dunraven Place, Bridgend.

ULVERSTON.—Aug. 4.—For Building Infant School. Mr. Barber, jun., Architect, Greenbank, Ulverston.

YARMOUTH.—Aug. 7.—For Building House. Mr. S. Rivett, Hall Quay, Yarmouth.

TENDERS.

BERKHAMSTED.

For Enlarging Board Room at Workhouse, Berkhamsted. Mr. WM. HUCKVALE, Architect, Tring.

Nash, Berkhamsted	£73 0 0
H. & J. MATTHEWS, Berkhamsted (*accepted*)	70 0 0

For Boys' School, Aston Clinton. Mr. WM. HUCKVALE, Architect, Tring.

FINCHER, Tring (*accepted*)	£716 0 0

For Alterations and Additions to Baptist Chapel, Chipping Norton. Mr. WM. HUCKVALE, Architect, Tring.

BURDEN BROS., Chipping Norton (*accepted*).

For Assembly Room, Conservative Club, &c., Tring. Mr. WM. HUCKVALE, Architect, Tring.

Accepted Tenders.

Honour & Son, bricklayer, mason, and carpenter.
E. C. Knight, plumber and glazier.

BROMYARD.

For Taking Down and Rebuilding Broad Bridge, Bromyard. Mr. WILLIAM CHEIAKE, County Surveyor, Hereford.

Rouse Bros., Bromyard	£285 0 0
Charles J. Huckson, Hereford	266 9 6
ROBERT LEWIS, Bromyard (*accepted*)	244 10 0

BURY.

For Building Caretaker's Lodge at the Recreation Ground of Bury. Mr. J. CARTWRIGHT, Borough Engineer.

J. Byrom, Bury	£539 0 0
J. Comfort, Bury	517 0 0
T. & L. Wilde, Bury	515 0 0
J. TINLINE, Bury (*accepted*)	495 15 0

DEWSBURY.

For Building Twenty-one Dwelling-houses and Outbuildings, Dewsbury Moor. Mr. PAGE SPENCER, Architect, Batley Carr, Dewsbury. Quantities by the Architect.

J. Oakland, Dewsbury, mason (*Contract No.* 7).
C. Anty, West Audsley, mason (*Contract No.* 8).
Land & Nettleton, Ossett, joiner.
Hepworth & Spurr, Ossett, plumber.
W. Parker, Heckmondwike, plasterer.
J. Lodge, Batley Carr, painter.
W. Thompson, Dewsbury, slater.
W. James & Sons, Dewsbury, ironfounder.
G. Smith, Batley Carr, pulling down, &c.

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

HEALEY.

For the Erection of a House at Healey, Batley, for Mr. John Oldroyd, Blanket Manufacturer, Healey. Mr. J. T. LAW, Architect, No. 64 Commercial Street, Batley.

Masons.

J. & B. Farrar, Birstall	£138 0 0
John Firth, Heckmondwike	125 0 0
J. & T. Oldroyd, Batley	119 9 0
Solomon S. Baines, Batley	105 10 0
Henry Crabtree, Batley	105 10 0
G. F. Hepworth, Batley	104 10 0
Charles Goodall, Batley	104 0 0
Edward Goldthorpe, Batley	100 0 0
Samuel Y. North, Batley	97 0 0
JOE WEBSTER, Batley (*accepted*)	96 10 0

Joiners.

W. J. Wadsworth, Heckmondwike	75 0 0
Richard Field, Batley	58 10 0
Fothergill & Schofield, Batley-Carr	58 0 0
Kaye & Scates, Batley	53 0 0
George Elliott, Hanging-Heaton	52 0 0
W. & T. Milnes, Heckmondwike	51 5 0
George Mann, Heckmondwike	48 10 0
Christopher Illingworth, Batley	48 0 0
J. RICHARDSON & SONS, Staincliffe (*accepted*)	45 0 0

Slaters.

Thomas Brear, Dewsbury	19 5 0
Pickles Bros., Leeds	15 0 0
George Hargreaves, Dewsbury	14 10 0
William Atkinson, Leeds	12 0 0
JONAS M. THORNTON, Batley (*accepted*)	9 0 0

Plasterers.

Samuel Crawshaw, Batley	15 15 0
James Broadbent, Dewsbury	15 10 0
Grange & Cookson, Heckmondwike	15 0 0
John Richardson, Dewsbury	14 10 0
Harry Kitchingman, Staincliffe	14 10 0
William Parker, Heckmondwike	13 17 0
James Wigglesworth, Staincliffe	12 10 0
METCALF & LOCKWOOD, Staincliffe (*accepted*)	12 0 0

Plumbers.

T. D. Boddy, Dewsbury	10 0 0
John Brooke, Heckmondwike	4 17 6
John Henry Senior, Batley	4 10 0
JAMES WALSHAW, Batley (*accepted*)	4 0 0

IRVINE.

For Extension of Reservoir at Munnoch, near Dalry.

Amended Tenders.

Walter Maclachlan & Son, Irvine	£6,386 11 0
Gall, Alloa	6,274 0 0
SHANKS, Motherwell (*accepted*)	6,264 13 9

JARROW.

For Building Infectious Diseases Hospital, Jarrow. Mr. J. PETREE, Borough Surveyor. Quantities by Mr. G. Connell, Newcastle-on-Tyne.

J. E. Middlemiss, Newcastle	£4,875 10 0
Smith & Son, Jarrow	4,456 0 0
W. Kennedy, Jarrow	4,439 0 0
C. Rioch, Jarrow	4,380 18 0
J. Yeeles, Jarrow	4,373 12 0
Chipchase & Dobson, Jarrow	4,355 19 0
T. White, Walker-on-Tyne	4,341 12 0
J. Taylor, Jarrow	4,316 19 0
W. W. & T. Wylam, Jarrow	4,307 2 0
G. Douglas, Sunderland	4,218 0 0
T. Fortune, Jarrow	4,184 0 0
Williams & Weir, Howdon	4,184 0 0
R. Aitkin & Co., South Shields	3,973 0 0
N. Richie, Whitley	3,789 1 0
T. LUMSDEN, Jarrow (*accepted*)	3,790 0 0
J. Thomson, Jarrow	—
W. Richardson, Gateshead-on-Tyne	—

LEICESTER.

For the Erection of an Auction Mart in Silver Street and Cank Street for Mr. H. T. Hincks. Messrs. PETTIFOR & SIMPSON, Architects, Berridge Street Chambers, Leicester. Quantities by the Architects.

T. & H. Herbert	£1,730 0 0
T. Bland & Sons	1,721 0 0
Lawrence & Walker	1,579 0 0
O. Wright	1,521 0 0
C. Wright	1,499 0 0
C. BASS (*accepted*)	1,455 0 0

YOU will really enjoy yourself if you smoke the excellent cigars supplied direct to consumers, at wholesale prices, by HELMCKE & Co., 32 Great St. Helen's, London, E.C. Write for price list. Sample collections sent on receipt of 10*s.* 6*d.* or 21*s.*

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATERBOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.
Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.
Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS AND MANUFACTURERS,

14 ELM STREET, GRAY'S INN ROAD,

LONDON, W.C.

Designers and Manufacturers

of all kinds of ART WORK

for Ecclesiastic and Domestic Purposes,

in Silver, Copper, Brass, and Iron.

SPECIALITE:

DOOR FURNITURE AND LOCKS.

Write for Illustrated Catalogue.

LONDON.

For the Queen's Hall, being the first portion of the People's Palace, at the East End. Mr. E. R. ROBSON, F.S.A., Architect.

Higgs & Hill, Lambeth	£29,340	0	0
Wood Bros., Mile End Road	28,883	0	0
Boyce, Bloomsbury	27,150	0	0
Morter, Stratford	25,300	0	0
Shepherd, Bermondsey New Road	25,226	0	0
Wall Bros., Kentish Town	25,179	0	0
Gentry, Wormwood Street, E.C.	24,980	0	0
Jerrard, Lewisham	24,440	0	0
Perry & Co., Bow	24,277	0	0

For Alterations to the Duke of York Public-house, King's Cross, for Mr. F. J. Deacon. Mr. JOHN HUDSON, Architect, 80 Leman Street, E. No quantities supplied.

J. Bentley, Waltham Abbey	£1,070	0	0
J. Boyden, Gray's Inn Road	980	0	0
Hearle & Son, Cable Street, E.	887	0	0
Spencer & Co., Knightrider Street, E.C.	850	0	0
T. Little, Whitechapel	779	0	0
Coulsell Bros., Bethnal Green	765	0	0
J. HIGGS, Dorset Square (*accepted*)	697	0	0

Pewterer's Work.

H. Warne, St. George's Road	105	0	0
Buckley & Beach, Chelsea	103	0	0
J. Edwards, Camden Town	99	14	0
J. HEATH, Goswell Road (*accepted*)	99	0	0

For Repairs at Clerk's Offices, Dispensary, Special Wards, and Casual Wards, Princes Street, for the Guardians of St. George-in-the-East. Messrs. WILSON, SON & ALDWINCKLE, Architects, 2 East India Avenue, E.C.

Derby	£285	0	0
McCullen	278	0	0
Bishop & Holloway	275	0	0
Wythe	274	0	0
FURNISS (*accepted*)	214	0	0

LONDON—*continued.*

For the Erection of St. Andrew's Vicarage, Fulham. Messrs. J. E. K. & J. P. CUTTS, Architects, 28 Southampton Street, Strand, W.C.

Martin Wells & Co.	£3,225	0	0
W. H. Ashfold	3,210	0	0
Dove Bros.	3,055	0	0
Lathey Bros.	2,950	0	0
Goddard & Sons	2,896	0	0
L. H. & R. Roberts	2,894	0	0
J. Tyerman	2,882	0	0
J. Holloway	2,780	0	0

For Alterations and Additions at rear of Premises No. 217 Upper Street, Islington, for Mr. T. R. Roberts. Mr. T. KINGWELL COLE, M.S.A., Architect. Messrs. BATTAM & CO., Surveyors, 21 Mount Street, Grosvenor Square, W.

G. Foxley, King Street, W.	£1,350	0	0
G. S. Williams & Son, Thornhill Square, N.	1,350	0	0
Patman & Fotheringham, Theobald's Road, W.C.	1,243	0	0
Dove Bros., Islington	1,225	0	0
Bishop & Webb, Stratford	1,170	0	0
B. E. Nightingale, Lambeth	1,073	0	0
Drew & Cadman, Holborn	1,050	0	0
Wall Bros., Kentish Town	1,048	0	0

For Construction of Brick Sewers and Works in connection, Upper Montague Street and Castle Street East (880 feet), St. Marylebone.

G. Osenton, Erith	£1,463	0	0
J. Ford & Co., Westminster	1,440	0	0
G. Felton, Kilburn	1,223	0	0
J. Mears, Collingham Road, S.W.	1,195	0	0
W. Neave & Son, Wayland's Road, W.	1,175	0	0
J. Mowlem & Co., Westminster	1,100	0	0
C. KILLINGBACK, Camden Town (*accepted*)	970	0	0

For Fixtures and Fittings on Premises Nos. 219½ and 220 Upper Street, Islington, N., for Mr. T. R. Roberts. Mr. T. KINGWELL COLE, M.S.A., Architect. Messrs. BATTAM & CO., Surveyors, 28 Mount Street, Grosvenor Square, W.

Wall Bros., Kentish Town	£438	0	0
Sage & Co., Gray's Inn Road	410	0	0
Drew & Cadman, Holborn	370	0	0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

BEST BLUE
PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.
Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

KNOWLES & ESSEX
(Late W. CUNNINGTON & Co.),
Manufacturers of
ARTISTIC WALL-PAPERS,
Park Walk, Chelsea, London, S.W.
Specialities—Patent Frosted Gold, Crystal Damask and Raised Flock Decorations.

TO BRICK MANUFACTURERS, FOREMEN, ETC.
THE advertiser, who has had great experience in making GLAZED BRICKS in white and many colours, at one burning, is willing to sell the secrets. Results guaranteed. Samples sent for inspection. Red or Fire Clay. Also the preparation of a Rich Blood Red Slip, which serves as a Coating for Red Bricks of inferior colour.—Address "BRICKS," "The Architect," London.

GRUNDY'S PATENT
WARM-AIR
VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
JAMES WEIR, F.R.I.B.A."
"To Mr. Grundy.
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A."
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
'DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

LONDON—*continued.*

For Construction of Brick Sewer and Subway, and Formation of Wood Carriageways and York Stone Footways in Line of new Street from St. Martin's Place, Trafalgar Square, to Tottenham Court Road.

Snow & Co.	£40,700 0 0
J. W. & J. Neave	37,884 0 0
W. Stubbs	36,000 0 0
H. Lovatt	34,789 0 0
Trehearne & Co.	33,900 0 0
Kirk & Randall	33,783 0 0
T. Turner	33,200 0 0
Perry & Co.	32,100 0 0
R. Mayo	30,900 0 0
C. Dickinson	30,700 0 0
C. Killingback	30,500 0 0
G. Felton	30,300 0 0
J. MOWLEM & Co. (*accepted*)	29,750 0 0

For Painting, Cleaning, and Repairs to Board Schools, Schoolkeeper's Houses, &c., &c.

Walton Street.

Thompson	£341 10 0
Hewitt	280 10 0
Seabrook & Son	280 0 0
McCarthy	267 0 0
Green	244 0 0
Newton & Idle	232 0 0
Brown	228 0 0
Greatorex & Co.	226 0 0
Kearley	223 10 0
Simmonds Bros.	213 10 0
Wilkins & Kent	213 0 0

Ricardo Street.

Barber & Co.	£250 0 0
Fullager	217 0 0
Webb	205 0 0
Tait & Co.	191 17 0
Pritchard & Son	174 0 0

Marner Street.

Wood	42 3 6
Williams	30 0 0
Davis Bros.	26 0 0
Cruwys	25 0 0
Richards	24 0 0

Baker Street.

F. & F. J. Wood	£158 12 0
North	105 0 0
Toole	67 0 0
Robey	63 0 0

Flint Street.

J. Holloway	120 0 0
Ash	99 0 0
Roy	88 0 0
Mallett	83 0 0

Nightingale Street.

Pardoe & Son	99 0 0
Oldrey	76 10 0
Petchey	72 0 0
Williams & Son	60 0 0

Holden Street.

Richens & Mount	23 16 0
Holloway	16 0 0
W. Johnson	12 17 0

Mantua Street.

W. Johnson	7 15 0
Mallett	5 10 0
NIGHTINGALE (*accepted*)	5 10 0

LONDON—*continued.*

Princeton Street.

Seabrook & Son	£250 0 0
Furniss	220 0 0
Green	195 0 0
Kirby & Chase	195 0 0
McCullen & Co.	181 9 0
Nicholson	172 13 6
Harrison & Co.	160 0 0
Fullager	152 13 6
Greatorex & Co.	145 0 0
Pritchard	132 5 0
Simmonds	98 10 0
Hayworth & Son	89 0 0

Vicarage Road.

F. Johnson	395 0 0
Proctor	330 0 0
Jerrard	329 0 0
Lyon	240 0 0

Vere Street.

W. Hornett	124 0 0
Pritchard	107 14 0
Dearing & Son	99 0 0
Davis Bros.	73 0 0

East Street.

Richens & Mount	117 0 0
Nightingale	116 0 0
Higgs & Hill	114 0 0

Old Woolwich Road.

H. L. Holloway	55 0 0
Holding & Son	39 15 0
Roy	32 0 0

Haggerston Road.

Coombe	98 15 0
Knight & Walden	99 10 0
Howard	69 1 0
Tait & Co.	62 10 0

Battersea Park.

W. Johnson.	50 0 0
Mallett	49 0 0
Nightingale	32 10 0

Walnut Tree Walk.

Johnson	13 18 0
Nightingale	12 0 0
Mallett	10 16 0

LONDON—*continued.*

Board Offices.

W. Johnson	£290 0 0
Grover & Son	268 0 0
Pritchard & Son	198 15 0
Lilly	174 0 0
Davis Bros.	164 0 0
T. W. Smith & Son	139 0 0

Atley Road.

Harrison	370 0 0
Barber & Co.	180 0 0
Fullager	157 16 6
Webb	132 10 0
Pritchard & Son	128 12 0

Scrutton Street.

Davis Bros.	16 0 0
Hughes	15 10 0
Vincent	11 10 0
Troughton	9 15 0
Cruwys	9 0 0

Oxford Gardens.

Pardoe & Son	25 10 0
Petchey	24 0 0
Oldrey	22 0 0

Great Wild Street.

Lilly	23 10 0
Davis	18 18 0
Hornett	14 0 0

Calvert Road.

Holloway	11 0 0
Holding	10 5 0
Roy	6 5 0

St. John's Road.

Hornett	17 15 0
Pritchard	17 10 0
MCCORMICK (*accepted*)	17 10 0

Grays Infirmary.

Thompson & Son	26 10 0
H. J. Carter	23 16 0

Lamb Lane.

Cox	8 5 0
Sargeant	7 18 0
Dowling	7 7 0
Richards	6 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

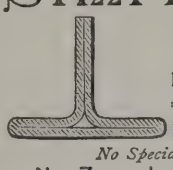
CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

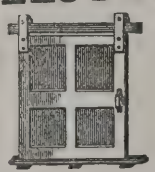
BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

WHITLAND ABBEY GREEN SLATE QUARRIES.
REDUCTION IN PRICE.
THESE Stout, Durable SLATES, which are so much sought after by Architects for Mansions, Churches, Chapels, and other Public Buildings on account of the permanency of their beautiful colour, are now offered by the Proprietor, Mr. MUSCOTT (whose name is so well known in connection with these Green Slates for the last twenty years), at a reduction of Twenty per Cent.—For Testimonials, Samples, Price Lists, &c., apply to the old address, as under.
Mr. MUSCOTT, {Whitland Abbey Green Slate Quarries Clynderwen R.S.O., South Wales.



IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Desins.

HENRY KING
(Late GREEN & KING),
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.

LONG EATON.

For Forming Bonsall Street, Long Eaton. Mr. J. SHELDON, Surveyor, Long Eaton.

Smith, Leicester	£465 0 0
Shortland & Co., Nottingham	448 0 0
Hawley, Ilkeston	360 0 0
TODD, Derby (*accepted*)	358 13 8

MABLETHORPE.

For Building New School and for Enlarging Master's House, Mablethorpe.

	School.	House.
Dabb, Mablethorpe	£399 12 0	£59 0 0
Harrison, Louth	398 15 0	54 10 0
Mawer, Louth	395 18 0	56 10 0
Thompson, Louth	360 0 0	40 0 0
J. & E. SEED, Mablethorpe (*accepted*)	349 10 0	32 0 0

NOTTINGHAM.

For Building Three Houses, Sherwood Rise, Nottingham. Mr. HARRY GILL, Architect, Nottingham. Quantities by the Architect.

Wooll Bros., Nottingham	£1,966 0 0
Illingworth, Nottingham	1,930 0 0
J. J. Adams, Nottingham	1,930 0 0
Moore Bros., Nottingham	1,900 0 0
F. Wartnaby, Nottingham	1,874 0 0
J. W. Priestley, Nottingham	1,873 0 0
L. Scattergood, Nottingham	1,867 0 0
J. Shaw, Sherwood Rise	1,860 0 0
J. Cooper, Nottingham	1,854 0 0
G. Brownsell, Nottingham	1,841 0 0
W. Bains, Old Basford	1,839 10 0
F. Jay, Nottingham	1,795 0 0
Evans & Woodcock, New Basford	1,765 0 0
J. F. Price, Sherwood Rise	1,760 18 0
Arthur Priestley, Nottingham	1,729 0 0
W. H. Taylor, Nottingham	1,723 0 0
Baynes & Co., Nottingham	1,723 0 0
CARGILL, New Basford (*accepted*)	1,700 0 0
G. Sadler, Nottingham	1,693 0 0
W. Wright, Nottingham	1,680 0 0
Gilbert & Gabbitass, Nottingham	1,654 0 0

OSWESTRY.

For Construction of Reservoir, near Oswestry, for the Liverpool Corporation.

DAVIES BROS., Wrexham (*accepted*)	£70,000 0 0

PAISLEY.

For the Mason and Brickwork for Board School, Camphill, Paisley, to accommodate about 2,000 Scholars. Mr. DAVIDSON, Architect, Terrace Buildings, Paisley.

Masons' Work.

D. M'Vey, Paisley	£14,227 0 0
J. Armour & Sons, Irvine	9,959 17 1
W. Gordon, Glasgow	9,942 0 0
Morrison & Mason, Glasgow	9,304 15 9
J. Bowes, Paisley	9,259 0 0
Law & Co., Glasgow	9,000 0 0
J. Bryce & Co., Paisley	8,955 0 0
Watson & Pattison, Paisley	8,682 5 11
J. Leckie & Co., Glasgow	8,588 1 5
Martin & Symington, Carluke	8,516 5 5
A. Bruce, Paisley	8,486 2 7
W. Taylor, Paisley	8,424 7 6
A. Steuart, Glasgow	8,397 0 0
A. & R. M'Intyre, Pollokshields	8,340 0 0
J. Watson & Sons, Glasgow	8,250 0 0
Watt & Wilson, Glasgow	8,140 0 0
P. M'Kissock & Co., Glasgow	8,079 6 0
W. M'GHIE, Great Paisley (*accepted*)	7,955 18 11

Brickwork.

J. Armour & Sons, Irvine	1,607 0 10
A. & R. M'Intyre, Glasgow	1,474 0 0
Bell & M'Lauchlan, Paisley	1,394 0 0
Morrison & Mason, Glasgow	1,348 8 3
J. Watson & Sons, Glasgow	1,237 7 0
A. Bruce, Paisley	1,220 5 1
P. M'Kissock & Co., Glasgow	1,187 0 0
J. Gault, Paisley	1,169 0 5
J. Leckie & Co., Glasgow	1,159 4 3
Martin & Symington, Carluke	1,154 6 11
Law & Co., Glasgow	1,147 0 0
G. PRIMROSE, Paisley (*accepted*)	1,103 1 8

PURTON.

For Making Alterations and Additions to the Angel Inn, Purton, Wilts. Mr. WILLIAM DREW, Architect, Swindon.

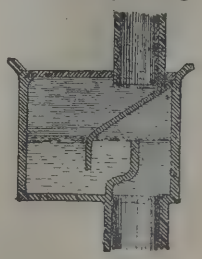
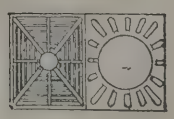
J. WILLIAMS, Swindon (*accepted*)	£235 0 0

MELLOWES & DARBY,
FORMERLY PRIMROSE & Co. SHEFFIELD.
"ECLIPSE" PATENT ROOF GLAZING
NO PUTTY, PAINT. ZINC OR OTHER PERISHABLE MATERIAL.
IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c.
NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.
PRIZE MEDAL AWARDS: KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882-3.
THE ONLY GLAZING AWARD, INTERNATIONAL HEALTH EXHIBITION, 1884.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.
OFFICE: 175 STRAND, LONDON, W.C.



PROVISIONALLY PROTECTED. Avoids all Splashing.
FIRTH'S
Improved Disconnecting Trap,
FOR FALL PIPES, &c.
COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.
FOR PARTICULARS APPLY TO
GRACE & FIRTH, Wakefield, Yorks.


SECTION.

PLAN.

PENZANCE.

For Building Public Baths on the Esplanade, Penzance. Mr. OLIVER CALDWELL, M.S.A., Architect, Penzance.

Carpenter, Mason, and Plaster Work.

Richard Hill, Penzance	£999	19	0
James Julian & Co., Truro	900	0	0
T. Houlson, Penzance	847	5	0

Carpenter and Joiner Work only.

John Leggo, Madron	413	0	0
T. Willoughby, Redruth	375	0	0

Mason Work only.

J. Pellew, Penzance	562	7	6

Engineer Work, Baths, &c.

C. Kinnell & Co., London	258	0	0

RADSTOCK.

For Altering and Enlarging the Baptist Chapel, Radstock. Mr. ALFRED HARFORD, Architect and Surveyor, 30 Broad Street, Bristol. Quantities by the Architect.

H. J. Williams, Bristol	£370	0	0
John Bastow, Bristol	359	0	0
E. Walters, Bristol	295	0	0
Jos. Bird, Radstock	290	0	0
Wheeler & Gregory, Radstock	285	0	0
KEELING & STAMP, Timsbury, near Bath (*accepted*)	252	0	0

STOKE-UPON-TRENT.

For Alterations and Additions to Old Hospital at the Workhouse. Mr. C. LYNAM, Architect, Stoke-upon-Trent.

H. & R. Inskip, Longton	£740	0	0
J. Gallimore, Newcastle	720	0	0
R. Bradbury, Stoke	711	0	0
Yoxhall & Heath, Stoke	674	0	0
G. W. HANCOCK, Stoke (*accepted*)	663	18	0

SWINDON.

For Erecting Four Houses in Dixon Street, New Swindon, for Mr. A. G. Lay. Mr. WILLIAM DREW, Architect, Swindon.

J. WILLIAMS, Swindon (*accepted*)	£690	0	0

For Erecting New Club-room, &c., to Beerhouse, Gorse Hill, Swindon. Mr. WILLIAM DREW, Architect, Swindon.

H. LOOKER, Stratton (*accepted*)	£145	0	0

TRADE NOTES.

MESSRS. STEELE & WOOD, having purchased the stock-in-trade of the Crystal Porcelain Pottery Company, have secured by public tender the entire business, and are making arrangements for prompt re-starting the works at Cobridge.

AT the meeting of the Carlisle Town Council, on Tuesday, it was stated that some of the wards of the House of Recovery were in such an unsanitary condition that it had been proposed to strip the plaster from the walls and recoat them with Robinson's cement, from the Knothill Plaster Works, near Carlisle.

MR. JOHN RAWLINGS, of Hackney Road, is now exhibiting two spiral cutter planers complete and in motion. He claims for the machine that the most curly and cross wood will require no hand-planing or scraping after once having been put through the cutter, and that from eight to ten thousand feet, including grinding, can be planed in a day of ten hours. No doubt this plane will be taken up by the trade when it becomes known to them.

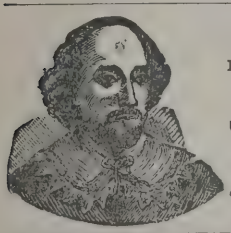
MESSRS. BARRON & SON, of Nottingham, have been appointed as consultant engineers and surveyors to the Wednesbury Urban Sanitary Authority, to prepare plans and specifications for the laying out of the proposed park, with liberty to tender for carrying out the work, the commission to be merged in the contract if theirs be accepted.

THE Plumbers' Company are showing great energy in their endeavours to secure the registration of competent plumbers. It will be seen that already many members of the trade have appeared before the Company at the Guildhall, and duly received certificates. Both masters and men belonging to London and the country were represented. The efforts made by the Company are deserving of support by the trade and of approval by the public. The experiment will be watched with much interest.

THE improvement of the river Ribble is being rapidly proceeded with, under a scheme of Sir John Coode, slightly modified. There are now 1,200 men and five steam navvies employed on the work daily, under the superintendence of Mr. Walker, contractor, of Westminster. About 2,400,000 cubic yards of earth have been removed from the river diversion and the site of the dock, which will have an area of 40 acres. This is about half the work of excavation, which was commenced in September last. It is expected the diversion cut will be completed in about twelve months. Nearly 37,000 yards of concrete has been laid down for the dock. The thickness of the walls at the base is 17 feet 6 inches, and the height 40 feet.

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, { Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



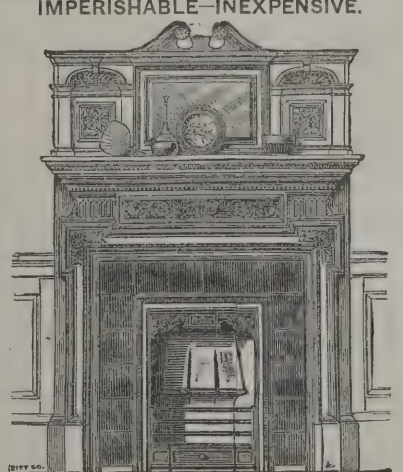
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
TRADE W MARK
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.



IN PLAIN COLOURS OR VARIEGATED, AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.,
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

About 700 feet of the wall has been completed, with the exception of the coping, and the foundations of the dock gates are now being put in. The lock excavations are finished. Blasting and digging in the dock basin is going on with great rapidity.

THE directors of Perry & Co., of London and Birmingham, have resolved to pay on September 1, out of profits, an interim dividend on the ordinary shares for the first six months of the year, at the rate of six per cent. per annum, free of income-tax, being at the same rate as for the corresponding period last year. The half-yearly dividend on the preference shares will be paid as usual at the fixed rate of five per cent. per annum.

JAMES WATT WET DOCK, GREENOCK.

THE James Watt Wet Dock of Greenock has been completed, and will be formally opened for traffic on August 5. The cutting of the first sod dates back eight years ago. A great deal of time during the eight years has necessarily been occupied in making the extensive excavations necessary for so great an undertaking. Of 1,150,000 cubic yards of soil removed in the excavations, 320,000 cubic yards were in rock which had to be blasted, and the rest principally stony clay. In addition to this work some time was taken up in distributing the rock and soil so removed to form three tidal harbours around the dock. The last year has been taken up with cutting out the entrances to the dock, the building of sheds and warehouses, and fitting the dock with all equipments necessary.

The James Watt Wet Dock is the second completed of the several extensive undertakings in the way of the enlargement of the harbour accommodation of the port which the Harbour Trustees of Greenock entered upon some eighteen years ago on the Garvel Park estate. The dock is 2,000 feet in length, and 300 feet in breadth for about half of its length, the other half being increased to 350 feet, where a jetty 800 feet long and 50 feet broad, to be used exclusively in the shipment of coals, is constructed running down the centre of the dock from the eastern end. The water area of the dock is about 14½ acres, and the length of the quay round it is 7,000 feet, or about 1¼ miles. It has two entrances—one from the western tidal harbour and the other from the northern or Great Harbour. Each of the entrances is about 75 feet in width, with 32 feet of water on the sill at high-water ordinary spring tides. By means of Mr. Kinniple's (engineer to the Greenock Harbour Trust) patent caissons the water is retained in the dock at a uniform depth of 32 feet. Each of the caissons is run upon rollers fixed to the floor of a recess in the wall of the dock, and by means of a small hydraulic engine is carried in and out as the necessity for opening or closing of the dock may require. This recess is about 90 feet in length, and is so constructed that it can at any time be converted into a small graving dock by placing a gate across the entrance, and pumping out the water which may have accumulated in the chamber, thus also obviating the necessity of removing the caisson itself for repairs. It is expected that the dock may be opened in a few minutes at any time of the tide, and in almost any sea or weather, or during a considerable current through the entrance, by means of these caissons. Lowering or folding bridges, also of Mr. Kinniple's patent, have been fitted on the tops of the caissons, and provide roadway and, if need be, railway communication across the entrance. These bridges, by coming in contact with curved plates, automatically lower or raise themselves during the process of opening or closing, as also the hand-rails, so that one man only is required to work or control the machines for opening and closing each entrance of the dock. The dock itself is a very substantial piece of work. The walls have curved toes of brickwork and concrete, founded from 2 to 6 feet 6 inches below the bottom of the dock. From the top of these to about low water sandstone has been used, and from low water up to the underside of the coping the walls are faced with finely-dressed granite, the whole being backed with Portland cement, rubble, concrete, and finished with massive granite copestones. At the circular corners, where the tear and wear will be considerable, special granite bond stones are added. Mooring bollards are set up at distances of 46 feet apart along the coping line or face of the walls, so that the traffic along the quay line will not be obstructed by mooring chains or ropes. It is proposed to use the jetty exclusively for the shipment of coal, for which purpose a high level viaduct will be formed upon which the waggons will be run direct from the railway, and the coals tipped from shoots into the hatches of the vessels lying alongside. On the south side of the dock large sheds and warehouses, capable of storing 20,000 tons, have been erected at a cost of 7,000*l*. The sheds are 225 feet and 275 feet in length and 107 feet wide, are built of brick, supported by iron columns and girders, and have iron roofs. The warehouses are also of brick, and are 180 feet long by 107 feet wide and 96 feet in height from the quay level to the ridge of the roof. A covered way

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

facing the dock runs along the entire front of the warehouses and sheds, on a level with the first floor of the warehouses. The principal use for which these are intended is for the storage of sugar, grain, and a general cargo; and for the purpose of facilitating the storage of goods a double line of railway has been run along the entire length of the sheds and warehouses. Two large travelling cranes have already been erected at the dock. A subway across the western entrance leading from the south to the north side of the dock has also been constructed for the passage of water, gas, and other pipes, and for giving communication with either side of the dock while the entrance is open.

The contract drawings and specifications were prepared by Mr. W. R. Kinniple, C.E., and the works carried out under his superintendence by Mr. John Waddell, contractor, Edinburgh. The building of the sheds and warehouses was entrusted to Messrs. J. & R. Houston, of Greenock, and Messrs. Tannett, Walker & Co., of Leeds, supplied the hydraulic machinery for the working of the entrances, as also several of the large cranes, while the caissons were made by Messrs. Kincaid & Co., engineers, Greenock.

THE BUILDING TRADE IN AMERICA.

THE industrial situation throughout the United States has, according to the Chicago *Inland Architect and Builder*, very greatly improved within two or three weeks. Stated in the fewest possible words, the volume of business is quietly swelling. Clearing House exchanges show a steady expansion, manufacturing interests are in vigorous health, demand for all kinds of manufactured products is increasing, collections are good, commercial failures have fallen off 1,000 in round numbers as against same time last year, and liabilities have decreased one-third. There is a widespread improvement in building activity; confidence has been largely restored; capital is seeking investment. The list of permits in all the larger cities show up well, and are in nearly all cases ahead of last year, east and west. The flow of capital westward and southward continues. Industrial enterprises are multiplying there, and railroads are opening up new and rich regions, and inviting capital, enterprise, and labour. There is much of interest to note in all departments of activity. Builders are pushing with vigour. Boston, New York, Philadelphia, and more western cities furnish statistics of building operations which show that whatever apprehensions were entertained earlier in the year have been dismissed. The great demand is for homes. While costly residences are going up in large numbers, the greater enterprise is shown in the erection of smaller houses, costing from 1,500 dols. to 3,000 dols. Building material continues cheap and abundant. Lumber is in liberal supply at all points, and firm in price. The South is furnishing large supplies of yellow pine in eastern markets, while Chicago and other white pine markets are shipping their usual enormous supplies east and west. The hardwoods are in quite active demand for interior finish and furniture-manufacturing purposes. Prices for all kinds will very probably remain stationary.

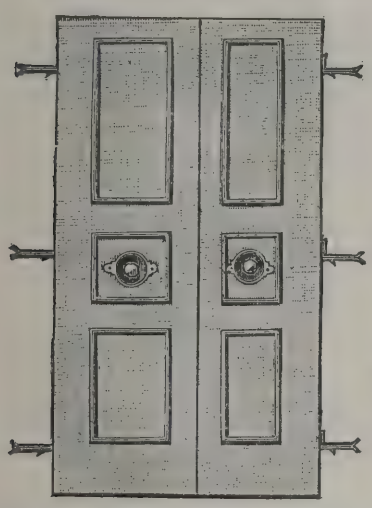
Brick, stone-cement, lath, plaster, &c., are in abundant supply at all points. Possibly an exception could be made in the case of bricks at two or three points where states have obstructed production for a time, but just now the yards in all sections of the country are believed to be full. Prices are stationary.

The iron trade has escaped any serious upheavals. The question of wages has been settled for another year at Pittsburgh. The nailers have agreed to resume. Prices for all kinds of iron and steel are low. Nails 2.00 dols. at mills. A strike is under way among eastern puddlers. The mills making structural iron for building purposes are running full time all through the East, and managers are assured of an active season demand. Angles are 1.90 dols. and beams and channels, 3 cents. The mills on galvanised iron are all fairly busy.

Real estate is improving in value along the lines of roads leading into the North-West. While there is much land offering, both rural and city, there is not enough to cause any serious depression in prices. Holders feel it is safe to hold, for the tide of population is in their direction.

Real estate in cities generally is firmly held. Much of it has been purchased this year for house building and manufacturing sites. Architects have felt the effects of summer strikes but for all sources of information available, it is evident tha they have recently received instructions to prosecute work to early completion. Investments in house building are profitable and encouraging.

The commercial situation is much better than a year ago. Failures are 20 per cent. less. Liabilities reach only about fifty million dollars as against about seventy-five million dollars for the first six months of last year. Money-lending institutions



WALTER JONES,

MAGNET WHARF, BOW BRIDGE, E.,

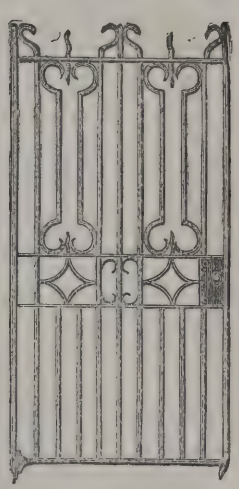
MANUFACTURES EVERY DESCRIPTION OF

WROUGHT-IRON FIRE-PROOF DOORS, FLOORS,

GALVANISED SHEETED DOORS,

WROUGHT-IRON GATES, SASH RAILING AND HEAVY FORGINGS.

APPLY FOR PRICES.



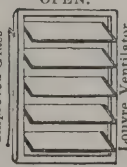
H. W. COOPER & COMPANY, LIMITED,

HEALTH EXHIBITION,



MEDAL AWARDED, 1884.

OPEN.



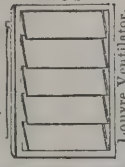
Improved Glass Louvre Ventilator.

Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.

H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.

SHUT.

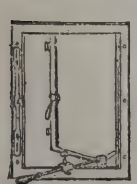


Improved Glass Louvre Ventilator.

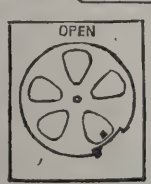
GLASS SELLERS' COMPANY EXHIBITION,

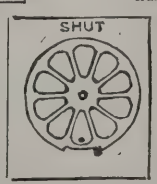


MEDAL AWARDED, 1876.

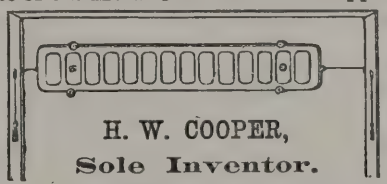


Improved Casement.

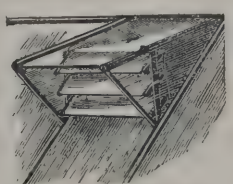




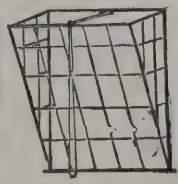
Circular Glass Revolving Ventilator.



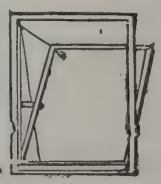
Glass Sliding Ventilator.



Improved Hopper for Skylights.



Hopper Venti



Casement.

Steam Works: Little Queen St., Upper George Street, Edgware Road, W.

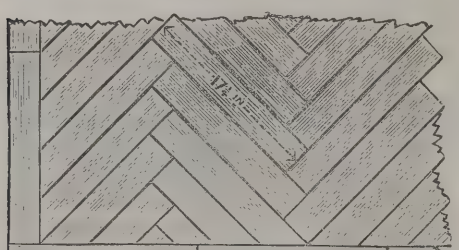
Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.

are liberal, and rates of interest are low. New opportunities are being sought, and enterprises hunting for work. Railroad building has been cautiously pushed for six months, less than 1,300 miles having been built, but from this date work will be pushed with vigour. The railroad companies have put each other under bonds to keep the peace, and they are doing so with more or less general satisfaction. Things are moving on about as well as can be expected. Fortunes are not being accumulated perhaps with the same ease, but the country at large is growing in the right direction. The manufacturing industries are thriving. Production is not deluging the channel of trade. Prices are fairly remunerative; consumption capacity is expanding. Labour troubles have been overcome. Conservative leadership has the reins. The outlook is encouraging, but the era before us is not one wherein sloths or imbecility can win. In fact, greater energy is now more imperatively demanded.

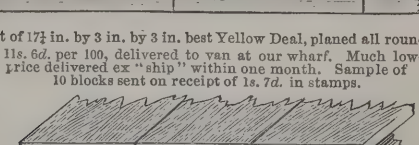
COLONIAL AND INDIAN EXHIBITION.

A PAPER on "Railway Extension in the Colonies," was read at the conference on Tuesday, July 27, by Mr. J. S. Jeans. The author began his paper by pointing out that this was a subject of almost equal interest to the colonies and the mother country—to the former because no other single influence could so materially aid their development, and to the mother country because she would for a long time be called upon to supply the greater part of the materials of construction, and because the colonies would take more of our home produce the more they were able to export themselves. The experience of the United States had shown that there was a close relation between railway facilities and the development of foreign trade, and that the more the exports were increased, the greater was the volume of imports, although the two did not exactly nor necessarily run on all fours. Britain now imports over 125 million pounds worth of food supplies, of which America furnishes fully 30 millions worth. It is of great importance to England to endeavour to assist the colonies to take the place of the United States in this regard, because the United States were a hostile nation in commercial affairs, imposing, as they did, an average duty of 45 per cent. on the whole of their imports, with a view to the exclusion of foreign commodities. The immense development of the trade of the United States within recent years was clearly traceable, in great part, to railway extension. There were now 130,000 miles of railway opened in the United States, whereas our Australian colonies had only 7,000 miles for an almost equal area; and Canada, for a larger area, excluding Alaska, had only 10,000 miles. Assuming that a railway contributed to the opening up of a country for 20 square miles on either side, the railways of the United States would be equal to opening up about 5½ millions of square miles, or nearly double the absolute area of the country, excluding Alaska, whereas the railways so far built in Canada were only equal, on the same basis of estimation, to opening up about 400,000 square miles, or very little more than one-ninth of the whole. The railways of India provided for opening up about half a million square miles, or rather over one-third of the whole; and the railways of Australia provided facilities for 280,000 square miles, or one-eleventh of the whole continent. The total mileage of railways now constructed in the British Colonies was about 30,000 miles, being an average of one mile to every 7,397 of the population, and every 269 miles of area. In the United Kingdom there is one mile of railway to every 6½ miles of area, and in the United States one mile of railway to every 25 miles of area. If our colonies had the same relation of railway mileage to area as the United States, their total railway mileage would be upwards of 330,000 miles. The freight rates of our colonies were generally higher than those of Europe, but in India and in Canada they were lower. The latter country had to arrange railway rates so as to compete for trans-Continental traffic with the United States, where, within the last ten or twelve years, the rates had been reduced on an average by one-half, and where freighters were now paying the railways a hundred million pounds per annum less than they would have had to pay for the same volume of traffic in 1872. It was of great importance to our colonial progress that the rates should be kept low, as this would develop traffic more rapidly, and better enable the colonies to compete with the United States. That they were able so to compete had been sufficiently proved by the enormous increase in their exports of bread-stuffs to Europe within recent years. With the exception of India, Queensland and New South Wales, in each of which the railways were now paying over 4 per cent., the colonial railways were not generally so remunerative as to tempt capital on their merits. Canadian railways only paid an average of 1·4 per cent.; Victorian railways, 2·91 per cent.; New Zealand railways, 2·51; and Cape Colony railways, 2·65 per cent. Railway promoters should endeavour not only to ascertain the traffic actually existing or available, but also the traffic likely to be created.

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¼ × 4½ Dry Wainscot Oak, 54s. 9d. per square; 1×4½ ditto, 45s.; 1¼×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s. 9d.

IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone, 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES,
STOVES, TILES, ETC.
WILKINS and SONS
88-92 PENTONVILLE ROAD, N.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

Building Paper. *Chemical Papers Co.,* LIGHT—STRONG—WATERPROOF. In 10 yard rolls, 40 in. wide, 2d. per yard. Sample roll, post free, 2/6. *Use under slate and tiles, under weather boarding, for temporary roofs, and as lining paper for damp walls.* For home and export.—EASTWOOD AND CO., LIMITED, Dealers in Building Materials, BELVEDERE ROAD, LONDON, S.E.

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market:—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS,

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

To Architects, Builders, Ironmongers, and the Building Trades generally.
BLAKEY'S PATENT
SELF-FIXING STEP PROTECTORS
Are Cheap, Elegant, & Durable.
ANY DESIGN MADE WITHOUT EXTRA COST.
Apply to the Patentee
JOHN BLAKEY, LADY LANE LEEDS,
Or to any Ironmonger.

NOW READY.
J. & W. KIRKWOOD'S
NEW PATENT
SPRAY BATH.
Write to Leith for Particulars.

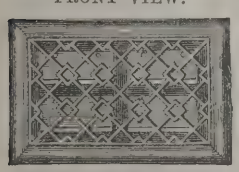
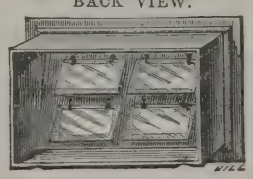
Experience had shown that in the colonies traffic developed very rapidly, and in some cases a net traffic of less than 300*l.* per mile per annum was equal to yielding a dividend of over 4 per cent., whereas it required over 1,700*l.* per annum to pay the same rate in England. It was of the greatest importance to the colonies that they should be furnished in the shortest possible time, and on the greatest attainable scale, with railway facilities, in order to transport the produce of their wheat-fields and vineyards, their sheep-runs and their cattle-ranches, to the markets of Europe, and for this purpose colonies were justified in undertaking an expenditure and incurring a debt that would not be otherwise justifiable.

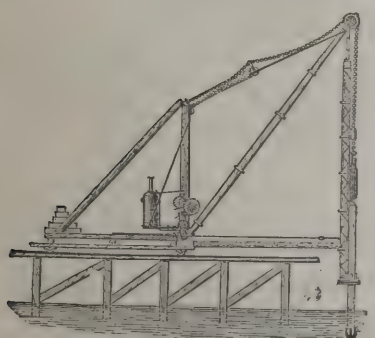
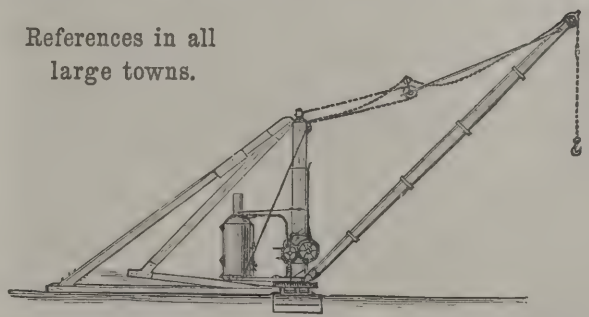
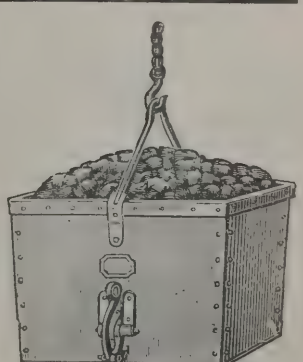
MANCHESTER SHIP CANAL.

ALTHOUGH the Manchester Ship Canal is not to be commenced at present, an abstract of the arrangements made with the contractors may still have interest. Messrs. Lucas & Aird entered into a contract with the Company to construct the canal, with the docks at Manchester, Salford, and Warrington, the swing aqueduct at Barton, the various locks required along the course of the canal, the branch railways and the necessary railway deviations, and all the incidental works authorised and required by the Company's Act of Parliament, and to complete the same from their commencement for the sum of 5,750,000*l.* The contractors subjected themselves to heavy penalties in the event of their failure to complete the works within the specified period. Should the works not be completed within the four years the contractors were for such period as they extended the time to pay interest on the whole amount of the capital then called up, at the rate of 4 per cent. per annum; but, on the other hand, should the work be carried out within the four years they were to receive a corresponding allowance of 4 per cent. interest on the paid-up capital as a bonus on their contract during such period as the work should have been completed within the specified time. The next largest item of expenditure in connection with the Ship Canal project, but which was really the first that would have to be provided for, was the purchase of the Bridgewater Canal undertaking and the Mersey and Irwell undertaking, which involved an outlay of 1,710,000*l.* The other land necessary for the construction of the works, including the cost of purchase and conveyance, was put down at 802,936*l.*, and the Parliamentary expenses, being the cost of the Act, at 146,000*l.*, making a total outlay in connection with the complete carrying out of the project of 8,408,936*l.* It was estimated that in the earlier stages of the work something like 20,000 men would be required, a much-needed means of employment would be afforded, which would be a very great relief to the present depressed state of trade in the district. It was the intention of the contractors to commence operations by laying down a line of railway on each side of the route of the canal, and the working plant would require about 6,000 railway waggons and about 300 locomotives. The cutting of the canal was to be divided into sections, operations proceeding simultaneously in each section, so that the work might be completed within the shortest time possible.

COMPRESSIBLE FOUNDATIONS.

THE subsoil at Chicago, U.S., is wet clay, and yielding to an extent which has caused serious difficulties on many of the heavier buildings by the unequal settlement. One of the most prominent examples is that of the United States Government building, which was built upon a bed of concrete 3 feet in thickness; the inequality of the pressure upon the foundations has caused an uneven subsidence, and many undesirable consequences have taken place. The concrete foundation has become broken, and cracks in various portions of the masonry, even to distortion of arches, and in two instances stones are reported to have dropped from the decorative work (on April 21), to the jeopardy of persons on the sidewalks around the building. As an example of what can be accomplished by the exercise of engineering skill under similar limiting conditions, the Home Insurance Company's building in the same city is a fireproof structure of great weight, being 160 feet in height, and constructed of masonry and iron. The foundation consists of independent piers built of alternate courses of dimension stone and rubble, and the area of the bottom carefully proportioned to a surface of a square foot to each two tons of load to be supported by the pier. In this manner each basement pier and each vertical line of columns rested upon an independent foundation, which was loaded to a uniform intensity per square foot. The beams and girders were very securely anchored together at walls and at intersections, and strips of band iron built into the masonry over arches and other places where reinforcement might be desirable. The whole build-

COMYN CHING & CO.,
22 & 23 LITTLE SAINT ANDREW ST., and 54, 56, & 58 CASTLE ST.,
UPPER SAINT MARTIN'S LANE, W.C., LONDON,
WHOLESALE IRONMONGERS.
MANUFACTURERS OF EVERY DESCRIPTION OF BRASS AND IRON WORK ON THE PREMISES.
Large Stock of Builders', Cabinetmakers', and Upholsterers' BRASSFOUNDRY. LOCKS of every description.
SPECIALITIES IN ORNAMENTAL BRASS DOOR FURNITURE, PICTURE RODS, STAIR RODS,
FRONT VIEW.

CORNICE POLES, STAIR NOSINGS in BRASS or IRON, ESPAGNOLETTE BOLTS, and IMPROVED SELF-ACTING WATER-BAR, or WEATHERING for FRENCH CASEMENTS.
Gasfitters, Bellhangers, Hot Water, and Ventilating Engineers. Sole Proprietors of
THOMAS BOYLE'S PATENT CHIMNEY-BREAST VENTILATORS.
Prices and Estimates on Receipt of Business Card.
BACK VIEW.


BUTTERS BROTHERS, ENGINEERS, GLASGOW.
PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

Crane used for Piling.
References in all large towns.

SCOTCH BUILDERS' CRANES,
Large Stocks. Send for List.

Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.
To hold ½ yard . £8 10 0
¾ „ . 9 10 0
1 „ . 10 10 0
FOR SALE HIRE, OR HIRE-PURCHASE.

ing has subsided 2¼ inches, but owing to the care in placing loads of uniform intensity of stress upon the foundation, the maximum inequality in settlement has been only 11-16ths of an inch. In our day and generation the wise men are not limited to those who build their house upon a rock, but must include those who make the sand as stable in its resistance as a rock. The original peninsula comprising the city of Boston, U.S., has been distorted into some other geographical form, and more than doubled in area by the filling over the harbour and estuaries by about 16 feet of gravel over clay and mud forming the bottom. The large buildings constructed upon this "made land" have received the benefit of skilled engineers in regard to the distribution of the loads upon the piling which support the stone foundations, and bid fair to remain permanent without any distortion, but many of the elegant private residences on the Back Bay district of the city, being erected under the sole direction of architects who did not avail themselves of the work of engineers familiar with that special branch, have settled irregularly, and many fine buildings are marred by cracks in walls and ceilings. This criticism does not apply in so great a measure to many of the later buildings where more judicious measures have been introduced to provide for uniform settling. The architects are not alone at fault here, for the abutment piers of a highway bridge over a railway on this district were moved laterally, foundations and all, some twelve years ago by the earth pressure caused by the approaches.

AN ENGLISH CONTRACT AT PALERMO.

IN the year 1880 the Italian Government passed a project of law to provide for the execution, within a period of ten years, of the works most urgently needed:—1. Public works; 2. Rivers; 3. Drainage of marshes; and 4. Ports. The total cost was estimated at 29,910,000 lire, or over one million sterling.

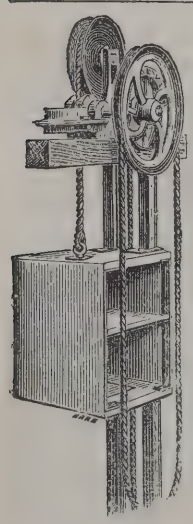
The port of Palermo had assigned to it the sum of 3,140,000 lire for rock excavation, and 230,000 lire for a wharf wall to be constructed at the Quattro Venti as a frontage to the new custom-house. The first-mentioned work for the rock excavation was let by contract at public tender to Mr. George Furness, of London, in the year 1882, and it was stipulated that the work should be completed in six years, dating from August 1883. The quantity of rock is about 100,000 cubic mètres, or 130,799 cubic yards. The price is 22 lire 12 c. per cubic mètre, or 13*s.* 6*d.* per cubic yard, measured in nature by soundings taken before the commencement and after completion. No payment is made for any excess of excavation either in area or in depth below the 7 mètres (23 feet). The nature of the rock is silicious, generally soft; some strata are hard, and a very small quantity has been found as soft as chalk.

A new plant was provided by the contractor at his own cost, consisting of a hopper dredge to hold and carry 180 cubic mètres, or 243 cubic yards; two floats of timber for the boring machines, each carrying four drills; and a workshop fitted up with forges, lathes, drills, and other machinery, and tools for keeping the plant in repair. The number of men employed is usually forty-nine for the dredge, drilling, and repairs; but, when the second float is at work, the number is then sixty, and when extraordinary repairs are going on as many as thirty additional men are put on, but this is only for a short period of time.

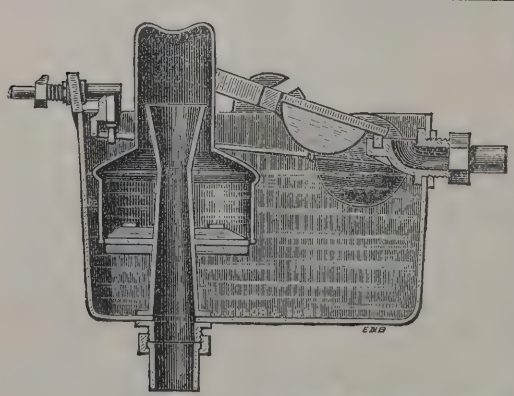
ECONOMIC WATER SUPPLY.

ON Saturday last several gentlemen interested in the economic water supply for towns and institutions met at the Henley Waterworks to view the working of the "Atkins' Patent Water Softening and Purifying Apparatus," which has been supplying the whole town for the last four years. This apparatus is an adaptation of the "Clark" system for softening water. The hard water is pumped into an automatic mixer, a small quantity being diverted, passed through a cylinder containing lime, whence it issues as a saturated solution of lime-water and rejoins the bulk of the hard water. The lime-water and hard water then flow through the mixer into a softening cistern. This cistern is always full, and the water travels slowly from the one end to the other in the course of an hour, by which time softening is effected; but the water has a milky appearance, owing to the presence of carbonate of lime in suspension. In this state the water is conducted to the filters, where the deposit is arrested, and the water, softened and filtered, is received by a duplicate pump and forced to the reservoir.

The whole process is automatic and continuous, and at the end of the day the filters can be cleaned in a few minutes by the aid of steam power. The special merit of this system is the small amount of labour required, which is an important item in large institutions.



LIFTS! LIFTS!! LIFTS!!!
PATENT A.B.C. SELF SUSTAINING LIFTS, FOR HAND OR POWER.
CANNOT RUN DOWN, AND FREE FROM JERKY MOTION.
DIRECT ACTING AND MULTIPLYING CYLINDER HYDRAULIC LIFTS,
CONTINUOUS, AND WATER BALANCE INCLINE LIFTS.
LIFTS OF ALL KINDS FOR GOODS OR PASSENGERS,
WORKED BY STEAM, GAS, HYDRAULIC, OR HAND POWER.
SHUTTERS & DIVISIONS,
FOR SHOP FRONTS, GATE OPENINGS, SCHOOL PARTITIONS, ETC.
A. ATTWOOD & CO., LATE Salmon, Barnes, & Co.
LONDON OFFICE:
20 BUCKLERSBURY, E.C.
ULVERSTON, LANCASHIRE.



BEAN'S PATENT DIRECT-ACTING VALVELESS WASTE-PREVENTING CISTERNS.
These Waste-Preventers are simple in construction and rapid and powerful in action. The working parts have been improved and are well balanced. The arrangements for charging the siphon are such that a slight pull by hand is all that is necessary to cause the immediate and automatic discharge of the contents of the Cistern.
THE CHIEF ADVANTAGES are—(1) the direct-acting method of charging the siphon, by which the full flush is obtained at once; (2) simplicity of construction; (3) no valve in the bottom of the cistern to cause leakage; (4) no tight-fitting parts to corrode or get out of order; (5) no waste incurred by fastening the "pull"; (6) insures a rapid and regulated flush without holding down the pull.
SOLE MAKERS— PRICES AND PARTICULARS ON APPLICATION.
J. TYLOR & SONS,
SANITARY AND HYDRAULIC ENGINEERS AND BRASSFOUNDERS,
2 NEWGATE STREET, LONDON, E.C.

ACCIDENT AT THE PRINCE OF WALES'S THEATRE, BIRMINGHAM.

A RATHER remarkable accident caused by the fall of a girder occurred at Birmingham on Friday. The roof of the stage of the Prince of Wales's Theatre is being raised, to allow of additional space for scenic machinery above the top of the proscenium, and the period of closure being somewhat short a numerous body of workmen have been employed by the contractors, Messrs. Sapcote & Son. The roof span being large three girders were to be introduced for its support, and these were to lie upon piers of brickwork carried up against the walls to a height of about sixty feet. For the purpose of raising them into position a lofty derrick was arranged upon the stage, which had been previously shored up beneath, so as to sustain the weight. The first girder had been successfully placed over the proscenium, and the raising of the second was undertaken. It was about 43 feet in length by 3 feet deep, and weighed upwards of six tons. About half-past nine o'clock on Friday morning a number of men by means of pulleys had raised it clear of the position in which it was to be placed. As it was being lowered into rest one of four guy-ropes by which the derrick was held in position gave way, and the structure began to topple towards the gable end of the building, which overlooks the premises of Messrs. Lindner & Co., merchants, in King Alfred's Place. The men endeavoured to guide the girder on to its bed, to which it had only some two inches to fall, but it appears to have swung round over the end wall, and then, snapping off the top of the derrick, to have slipped over endways into a portion of Messrs. Lindner's premises, the roof of which was thirty feet below. Three rooms forming a portion of the offices were demolished. These offices rested on beams stretched over part of a yard, and the lower end of the girder, crashing through the roof, fell against the outside beam, pushing it some yards out of its place and causing the floor to give way. At the time of the accident, Mr. Lindner, Mr. Leitner, a partner in the firm, and a clerk were engaged in one of two small rooms just under the wall of the theatre. They had only just been remarking the height to which the wall had been carried, when some of the brickwork, struck by the girder, came falling through the sky-light. Mr. Lindner and the clerk retreated to the warehouse through one door, and Mr. Leitner was endeavouring to get to a place of safety through another, when the girder fell, and he found himself precipitated among a quantity of *débris* into the yard below. When he was found it was discovered that he had not sustained more serious hurt than some severe scalp wounds, and was perfectly sensible. He was extricated by some of the employés, aided by the builders' workmen, who came running from the theatre. A further cut upon the head was caused by a falling brick as he was being got out. The chair in which Mr. Leitner had been sitting only a few moments before the fall was crushed to matchwood. Fortunately, one of the demolished offices was at the time unoccupied. It is also remarkable that none of the workmen in the theatre received serious injury, although several were placed in peril by the derrick falling against some of the scaffolding. Had the girder descended inside the theatre there could hardly fail to have been loss of life.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS.

THE annual meeting of the Association of Municipal and Sanitary Engineers was held lately at Hanley, under the presidency of Mr. Lobley, the local surveyor. According to the annual report twenty-five new members had joined during the past year. There are now 244 ordinary and six honorary members. It was recommended that the next meeting should be held in Leicester.

Mr. Lobley devoted his presidential address to a description of the town. The difficulty of carrying out work is suggested by the fact that almost the entire town is honeycombed by iron and coal workings to the great detriment of the buildings and pavements on the surface. Ordnance bench marks are no use at all until checked, and that must be done each time they are used. Streets between Hanley Station and the Town Hall have marks which are from 3 feet to 6 feet lower level than when taken by the Ordnance Surveyors. This subsidence causes gas, water, and sewer-pipes and branches to give way, and this in its turn causes the roadway surfaces to be continually broken into for repairs. Such pavements as may be seen in some of our large towns must not, therefore, be looked for, and even the macadamised roads cannot be expected to be as good as they should be when these excavations are so frequently made. One work was referred to in illustration, viz., the Bucknall Road canal bridge. The gradients of the road leading up to and over this canal are

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.
DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.
SEE HOBBS & Co^os
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON
SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.
SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST, BENTLEY PRIORY, ROYAL, LANGHAM, GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S, BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

very heavy, ranging from 1 in 14½, which the tram engines have to overcome between Stoke-upon-Trent and Hanley, to 1 in 12 on the Newcastle Road, and 1 in 13 on the Fenton Road, and 1 in 11 on the Bucknall Road. The soffit of the bridges must be high enough above the water to give facilities for the local traffic, and in order not to increase the gradients the road surface must be kept down to the lowest possible point. The depth, therefore, between the soffit of the bridges and the road surface on the top does not exceed 16 inches to 18 inches. The Bucknall Road bridge has been twice raised in consequence of subsidence through coal-workings. The water-level remains unaltered, but as the banks and bridges subside, so must they be lifted. The first raising took place in 1883 and the second in 1885, and it is expected to require raising again next year. The most costly part of the operation is, however, not raising the bridge, but adjusting the road levels on each side of it, and each raising makes the gradient worse. The retaining walls on each side of the road are also built thick enough to allow for several subsidences and extensions upwards.

Sewage Utilisation.

Mr. M. Ogle Tarbotton read an elaborate paper on "Some Recent Sewage Operations in Nottingham and its neighbourhood." Having described the sewage farm, which had been laid out under his direction, he said, in conclusion:—The primary object of all works of a hygienic nature is to raise the standard, physically, morally, and intellectually, of public health and happiness, and this cannot be accomplished without some corresponding expenditure. It is perfectly useless to demand large sanitary improvements, and expect the public purse to remain unmolested. This particularly applies to sewage operations, and those allied therewith. Sewage has not been found to yield an income in alleviation of the rates of either a small or a large town, and never will, and the more complicated the question is made the more will be the annual deficit. Also, whilst the compensatory value of sanitary labour and outlay is not capable of being accurately expressed in terms of money, there is always the danger of apathy, and even discontent, arising from the very success of the works undertaken, remembering that "Preventive measures are obnoxious to obloquy, for the more successful they are, the least apparent is the need of them."

Maintenance of Roads.

Mr. E. B. Ellice-Clark, in his paper on this subject, said that the cost being given per mile without further data on which to form an opinion, it is obvious that the maintenance of a wide level road, open to the weather, with little traffic, must be much less than that of a narrow road of steep and numerous changes of gradient, with an equal traffic, so that when we find a main road in one parish costs 40*l.* per mile to maintain and another costs 400*l.*, there is little to be gained by discussing the figures given in county returns, and we must rely upon general observation. He then referred to the existing authorities and the laws relating to the subject, pointing out the failure of the Highways and Locomotives Act. Of the difficulties encountered in working the Act of 1878, that relating to the accounts is not the least. A special form of account has to be kept under the provisions of the Act, by which every hour a man is employed on a main road must be entered, every load of materials, the quantity of water and the team labour all have to be separately entered and charged to the main road account. The town of which he was surveyor had 28 miles of roads and about 1½ miles of main roads. The work of maintaining the main road is inseparably mixed up with the maintenance of the other roads. Workmen pass without knowing it from ordinary roads to the main road. Machine sweepers and water-carts do the same thing, a load of water may be half distributed on a main road and half on an ordinary road. In towns employing a large number of water-carts, say thirty, it is impossible to sever the work. A main road requires a separate staff, separate carts, separate foremen, separate supervision, to keep the accounts with anything like accuracy, and if a main road is of insufficient length to provide this separate administration economically, the cost of book-keeping and dividing the cost of maintenance will amount to a large percentage upon the cost of maintenance, and the writer ventures to express the opinion that such an accurate subdivision of accounts as the Act contemplates is nowhere kept, a great many of the items being arrived at but approximately. The same objections apply to the system in rural districts, where there is no clerical staff provided to do the work. A simple, safe, and effective remedy can be obtained by grappling boldly with the subject. Sweep away all distinctions between disturnpiked roads, roads connecting large towns, and county or parish roads, and let all roads that are now repairable by the inhabitants at large be repaired by a single authority, adopting the county or division of a county as the unit of area. As an arbitrary line must be drawn somewhere between the rural and urban districts, fix a principle of demarcation, and exclude all towns of 10,000 inhabitants from the cost of a contribution to

Price 21s. POST FREE. **HARNESS' ELECTROPATHIC (BATTERY) BELT.** Will last for years.

Over a quarter of a million Patients have been successfully treated for Rheumatism, Lumbago, Sciatica, Gout, Kidney Complaints, Epilepsy, Paralysis, Indigestion, Constipation, Female Complaints, General and Local Debility, Functional Disorders, &c. The following are selected from upwards of 25,000 reports received. The originals may be seen at the Company's Rooms, 52 OXFORD STREET, LONDON, W.

GOUT.
"Completely cured me."—*Major Pakenham, Armagh.*

HYSTERIA.
"The Belt has done wonders."—*Mrs. M. Oriel, Dowlais.*

LUMBAGO.
"It has been an untold comfort to me."—*Miss Hudson, Twyford.*

RHEUMATIC FEVER.
"I can speak positively of its advantages."—*Dr. C. Lempriere, D.C.L., Senior Fellow, St. John's College, Oxford.*

SCIATICA.
"Worth fifty pounds."—*Mr. R. J. Watson, Harwich.*

KIDNEY DISORDERS.
"I am like a new man."—*Mr. W. P. Pougher, Plymouth.*

BRONCHITIS.
"A wonderful change."—*Rev. E. Aubrey, Ystrad, Pontypridd.*

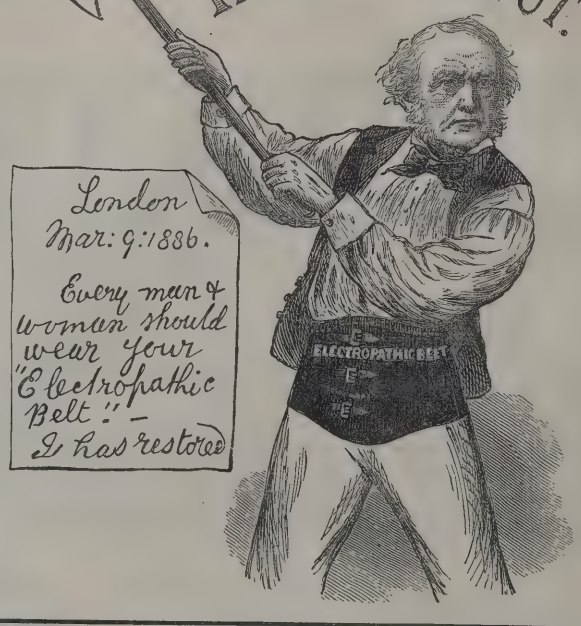
NEURALGIA.
"A most complete success."—*M. A. Langdale, Esq., Leacroft.*

RHEUMATISM.
"Found wonderful relief."—*Dr. A. Dresser, Norwood.*

NERVOUS HEADACHE.
"Derived much benefit."—*Mr. Wm. Holt, New Stofford.*

INDIGESTION.
"It has saved me hundreds of pounds. I wish I had purchased one before."—*Mr. C. Hitchcock, Bicester.*

NERVOUS DEBILITY.
"My health is quite restored."—*Dr. Bouracier, Garfield House, Burgess Hill, Sussex.*



LIVER COMPLAINT.
"I have no pain now."—*Mr. T. Smith, Hey, Lees.*

EPILEPSY.
"Wonderfully improved."—*Mrs. Godwin, Andoversford.*

SHORTNESS OF BREATH.
"Greatly relieved."—*Mrs. C. Frayer, 72 Elm Park Gardens, S.W.*

ASTHMA.
"Quite left me."—*Mrs. J. Low, Stirling, N.B.*

CONSTIPATION.
"A wonderful effect."—*Mr. H. T. Stokes, Demerara.*

FEMALE IRREGULARITIES
"Quite restored to health."—*Mrs. Hawkey, 16 Matilda Street, Barnsbury.*

DYSPEPSIA.
"A new man."—*Mr.*

PILES.
"Better in every way."—*Mr. R. Stringer, East Bradenham.*

BAD CIRCULATION.
"Feel like a different person."—*John Algar, Esq., Campsey Ashe, Wickham Market.*

PALPITATION.
"Quite free."—*Mr. G. Gate, St. Helier, Jersey.*

PARALYSIS.
"Very great benefit."—*Mrs. Sharp, Maidstone.*

WRITERS' CRAMP.
"A complete cure."—*Miss E. Hastings, Eastbourne.*

SPINAL WEAKNESS.
"Rapid improvement."—*Mr. Wm. Watson, Newspynie, N.B.*

MR. C. B. HARNESS, the Eminent Consulting Medical Electrician, has been specially retained by the Company, and may be consulted daily (without charge), on all matters relating to health and the application of Curative Electricity. Residents at a distance, and those unable to avail themselves of a personal consultation, are invited to write for a PRIVATE ADVICE FORM, which will be forwarded POST FREE, on application to THE MEDICAL BATTERY COMPANY, LIMITED, 52 OXFORD STREET, LONDON, W.

On receipt of Post Office Order or Cheque, value 21s., crossed London and County Bank, THE MEDICAL BATTERY COMPANY, LIMITED, 52 Oxford Street, London, W., undertake to forward the ELECTROPATHIC (BATTERY) BELT, as described above, for either Lady or Gentleman, free by post to any part of the United Kingdom.

"ELECTROPATHY; or HARNESS' GUIDE TO HEALTH," will be sent post free on application to the

The MEDICAL BATTERY CO., Ld., 52 OXFORD STREET, LONDON, W.

the county roads. County roads cannot be efficiently maintained without a complete change in county government. Presuming such a change, and an elected Board superseding the present justices, a scheme something on the lines of the following should be administered in the highways department:—Board for the whole or divisions of a county, having a chief engineer. The area of the county or divisions, subdivided into districts, which might be determined by (*a*) watershed considerations, or (*b*) facilities for access by railway, or (*c*) density of population (*i.e.*, proximity to large towns). Each district to have its surveyor or inspector, acting under the orders of his chief, who would be responsible to the Board, with the sewerage and other matters that do not touch the present discussion, and roads under his immediate charge. We should thus have (1) trained men, as paid officials, devoting their whole time to the duties of their office, directly responsible for the proper and economical upkeep of the roads; (2) a standard of efficient maintenance for the whole county would be set up, for which the Board would hold the chief engineer responsible; the divisional inspector would set up this standard of efficiency at comparative costs, for the books should show at a glance what a unit of roadway was costing in each division.

Economic Production of Coal-gas.

Mr. R. P. Spice, in his paper, called attention, among others, to the coal-liming process patented by Cooper, which, he said, was now thoroughly established. This method of dealing with the impurities contained in crude coal-gas had been in uninterrupted use at Tunbridge Wells for two years and eight months, and had never failed to yield to the prescribed treatment. So thoroughly were the conditions understood that the character of the coal being ascertained, the results as to the reduction of the sulphur compounds could be accurately foretold. He dwelt at great length on the advantages of this process, and he also advocated the application of the principle of gaseous firing to the carbonisation of coal initiated many years ago by the late Sir W. Siemens, but which had only recently come to the front.

Mr. Ogle Tarbotton said the process referred to was new, and, like all new matters, had to go through a number of phases. The want of appreciation of this process, he believed, was due to absolute prejudice in many parts of the country. People abused the process without trying it. Mr. Spice said there was no reason whatever why the process should not be tried, because it could be tried anywhere without one shilling extra capital being required, and he was prepared to prove anywhere that it was economical and beneficial in every way.

Watering Streets.

Mr. W. S. Crimp first described the Paris, Brown's, the hose-reel, and the tank or van methods of road-watering, and gave statistics to show that the last-mentioned was undoubtedly the cheapest. Sea-water, where available, might be used with advantage for laying the dust, as the salts which were left on the surface after the water had evaporated absorbed moisture from the atmosphere and from the subsoil, humidity thus being maintained for a period dependent on the amount of the salts and on the hygrometric conditions of the atmosphere, and consequently streets required to be watered less frequently than where ordinary water was used. Sea-water might be artificially prepared by dissolving sodic and calcic chlorides in water in the proportions of ½ lb. to 1 lb. of the mixed salts to each gallon of water, and from experiments made it had been ascertained that 1,480 gallons of such a solution were for street-watering purposes equal to 5,630 gallons of plain water. But although sodic and calcic solution rendered it unnecessary to lay the dust so frequently as when water alone was used, yet when the cost of the two was taken into consideration, it did not appear that there was any economy in substituting the solution for ordinary water where the latter could be procured at an ordinary rate.

THE LATE WILLIAM MAY.

MR. WILLIAM MAY, of Pool, Cornwall, died at the age of seventy-three last week, after a short illness, and is buried in the churchyard of Illogan, the scene of his earliest labours. The deceased had carried on business as a contractor for nearly fifty years, and executed a large quantity of work, chiefly for Mr. St. Aubyn, but also for the late Mr. Street, Mr. Hayward, of Exeter, Mr. Ewan Christian, and Mr. White. The deceased took great pleasure in his calling, and exercised it in the most honourable manner, so that he was held in the highest repute. In latter years, owing to declining health after an accident, he was obliged to refuse a great deal of work. Few men were better known in Cornwall, and his loss will there be much deplored.

A nephew of the deceased, Mr. T. F. May, is at present at Leicester, where he holds the appointment of clerk of works at the new post-office buildings.

A SANDERSON & SONS
PAPER STAINERS
IMPORTERS OF FRENCH PAPER-HANGINGS

TRADE MARK.

Sole Importers of the
NEW
IVORY DECORATIONS.



SPECIALITÉ
INGRAIN.

PRESS OPINIONS.

Messrs. SANDERSON & SONS have been awarded for their Wall Decorations the only Gold Medal at the New Orleans International Exhibition. This Medal may be considered the highest ever awarded to a paper stainer, as it was not obtained, as usual, in competition with other English firms only, but with the whole world—English, French, German, and American firms being all in one class.

Warehouse
52 BERNERS ST. W. LONDON. Manufactory
PAPER-STAINING WORKS
CHISWICK.

"THE PEDESTAL VASE,"

JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,

SANITARY ENGINEER, STANGATE, LONDON.

A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



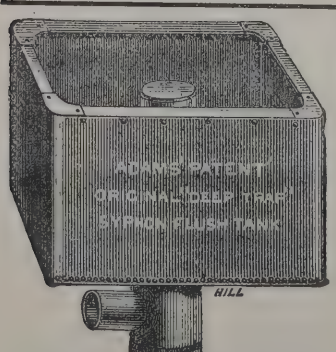
ELECTRIC & PNEUMATIC BELLS.

NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.

MECHANICAL TELEPHONES. Everything for a line complete for £3.

PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

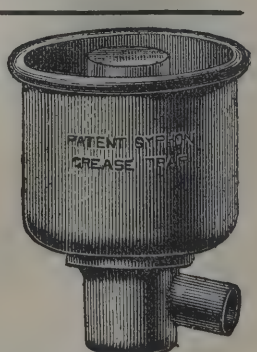


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
" **FLUSH SYPHONS** for Sewer Flushing.
" **FLUSH LATRINES** for Barracks, Schools, &c.
" **FLUSH URINALS** " " "
" **TROUGH CLOSETS** " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, July 30, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, AUGUST 6, 1886.

L'ART,

Price Two Shillings, can be ordered from all newsagents, and at any railway bookstall; or through the publishers for Great Britain, Messrs. GILBERT WOOD & Co., 175 Strand, W.C.

The scale of charges for Advertisements is as follows, and Advertisements intended for insertion in the following Number must reach the Office not later than the 24th or 8th of the month:—

ADVERTISEMENT SCALE.

For Two Lines and under (nine words to the line)	£0	5	0
For every additional Line	0	1	6
Per Quarter Page	6	0	0
Per Half Page	11	0	0
For a Page	21	0	0
For 1 inch deep by 2½ wide	0	15	0

Special arrangements may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 Strand, London, W.C.

THE ARCHITECT AND CONTRACT REPORTER.

ADVERTISEMENT SCALE.

For Two Lines and under	£0	2	6
For every Additional Line	0	0	6
For Quarter Page	2	10	0
For Half Page	4	10	0
For a Page	8	8	0

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, at the *Office*, 175 *Strand, London W.C.*

NOTICE.

We have appointed Mr. JOHN BERGER, *of New York, our agent for the United States and British North America, for receipt of Advertisements and Subscriptions to* THE ARCHITECT AND CONTRACT REPORTER.

EDITORIAL NOTICES.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested as much as possible to make their communications brief. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

COMPETITIONS OPEN.

HALIFAX.—Sept. 1.—Plans for proposed Board School are invited from Architects of the Town. Mr. Robert Ostler, Clerk to the School Board, Halifax.

LIVERPOOL.—Aug. 10.—Designs are invited for proposed Infectious Diseases Hospital. Mr. G. J. Atkinson, Town Clerk, Municipal Offices, Liverpool.

LLANGEINOR.—Aug. 16.—Plans are invited for the Erection of Board Schools at Pontycymmer and Blaengarw, Garw Valley. Mr. N. Llewellyn, Clerk to the Llangeinor School Board.

MAIDSTONE.—Sept. 5.—Designs for the Erection of Girls' School are invited by the Governors of the Girls' Grammar School. Mr. H. Monckton, Town Clerk's Office, Maidstone.

CONTRACTS OPEN.

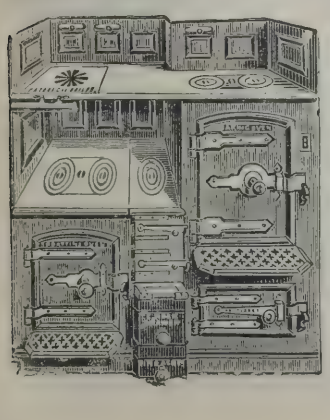
ABERGAVENNY.—Aug. 10.—For Repairs at Trothy Bridge, near village of Llanvaply. Mr. John Gill, Surveyor, Abergavenny.

ALNWICK.—Aug. 10.—For Turning Workshops into Cottages. Mr. G. Reavell, jun., Architect, Alnwick.

ASPATRIA.—Aug. 10.—For Addition to Station Hotel. Mr. W. Carmichael, Architect.

BANCHORY.—Aug. 21.—For Construction and Maintenance of 9⅜ miles of Cast-iron Pipes (350 tons), with Two Concrete Reservoirs, Tanks, Valves, Hydrants, &c. Messrs. Jenkins & Marr, C.E., 16 Bridge Street, Aberdeen.

BILLINGBOROUGH.—Aug. 16.—For Cleaning and Repairing Watercourses (North and South Becks), &c. Mr. W. Bundy, Billingborough.



GOLD MEDAL, Health Exhibition, 1884, after the most careful and exhaustive tests.

THIS KITCHENER (CRABTREE'S PATENT) is the most effective and economical of any in the Market. Obtain List, post free, and read through the various Testimonials.

All ARCHITECTS should have our Catalogue, post free, of INVENTIONS in WINDOW APPLIANCES.

SILVER MEDAL AT INVENTIONS,

☞ AND NOTE

Their Patent Chain Fan and Hopper Light Opener, which has no rival.

" " Skylight Lifters and Iron Skylights.

" " Reversible Pivot Windows for Cleaning outside from inside.

" " Epicycloidal Action for Opening one or any number of Lights.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C.; 54, 56 58 CALL LANE, LEEDS; 58 HOPE ST., GLASGOW.

BRADFORD.—Aug. 6.—For Enlarging Detached House. Mr. T. C. Hope, Architect, 27 Kirkgate, Bradford.

BRADFORD.—Aug. 7.—For Alterations and Additions to the Proposed Mirfield Institute. Messrs. Fairbank & Wall, Architects, 155 Swan Arcade, Bradford.

BRADFORD.—Aug. 12.—For Building Baptist Chapel and School. Mr. A. Sharp, Architect, Bank Buildings, Manchester Road, Bradford.

BRIDGEND.—Aug. 12.—For Providing and Laying Gas and Water Mains from Lodge at Pare Gwyllt to Blocks of Asylum. Mr. T. T. Lewis, Solicitor, Bridgend.

BURTON-ON-TRENT.—Aug. 16.—For Laying Pipe Sewers, &c. Mr. James Mansergh, C.E., 3 Westminster Chambers, Victoria Street, S.W.

CARDIFF WATERWORKS.—Aug. 26.—For Construction of Reservoirs, Filters, Pipe Laying, &c. Mr. J. A. B. Williams, C.E., Queen's Chambers, Queen Street, Cardiff.

CHINGFORD.—Aug. 12.—For Construction of Main Sewers. Mr. Edmond Egan, C.E., Loughton, Essex.

CLECKHEATON.—Aug. 7.—For Additions to Mill. Messrs. S. Haley & Son, High Street Mill, Cleckheaton.

CRUMPSALL.—Aug. 12.—For Building Day Room at Workhouse. Messrs. Mills & Murgatroyd, Architects, 23 Strutt Street, Manchester.

DALTON-IN-FURNESS.—Aug. 14.—For Building Auction Mart. Messrs. Settle & Farmer, Architects, Ulverston.

DUNDALK.—Aug. 17.—For Construction of Stations and Station Works for the Cavan, Leitrim and Roscommon Light Railway and Tramway Co. Messrs. J. Barton and J. O. Lawder, C.E., Exchange Buildings, Dundalk.

ELGIN.—Aug. 7.—For Alterations and Repairs to Church of Clatt. Messrs. A. & W. Reid, Architects, Elgin.

ELTON.—For Plumbing and Plastering at Fifteen Houses. Mr. T. Nuttall, Architect, Broad Street, Bury.

EXETER.—Aug. 16.—For Additions to Rougemont Hotel. Mr. C. E. Ware, Architect, Gandy Street Chambers, Exeter.

EXMOUTH.—Aug. 17.—For Building Public Hall, &c. Mr. J. Johnson, Architect, 9 Queen Victoria Street, E.C.

GARMOUTH.—Aug. 16.—For Building Dwelling-house. Messrs. A. & W. Reid, Architects, Elgin.

GORLESTON.—Aug. 12.—For Building Two Houses. Mr. W. B. Cockrill, Architect, Glencoe House, Gorleston.

GRAVESEND.—Aug. 13.—For Building Coastguard Room, Store, &c. The Director of Works Department, Admiralty, 21 Craven Street, W.C.

HALIFAX.—Aug. 24.—For Building Eight Houses, Haugh Shaw Estate. Messrs. G. Buckley & Son, Architects, Waterhouse Street, Halifax.

HANWELL.—Aug. 16.—For Alterations and Additions to Buildings to form Infectious Hospital and Probationary Wards. Mr. A. G. Langdon, Architect, 17 Craven Street, W.C.

HASTINGS.—Aug. 9.—For Building Four Small Houses. Mr. Coplys, 33 Havelock Road, Hastings.

HEREFORD.—For Alterations and Construction of Two Shops. Mr. W. W. Robinson, Architect, King Street, Hereford.

LEAMINGTON.—Aug. 9.—For Building Workshop and Store Room at Waterworks Pumping Station. Mr. H. C. Passman, Town Clerk, Leamington.

LEEDS.—Aug. 6.—For Building 16 Through Houses. Mr. C. Wilkinson, Architect, 8 Infirmary Street, Leeds.

LEEDS.—Aug. 9.—For Building Houses and Shops. Mr. T. B. Wilson, Architect, 12 East Parade, Leeds.

LIMERICK HARBOUR.—Aug. 16.—For Steel Dock Gates with Hydraulic Machinery. Mr. W. J. Hall, Harbour Engineer, the Docks, Limerick.

LYNN.—Aug. 10.—For Building House, Offices, and Warehouse. Mr. D. Clack, Surveyor, Southgates, Lynn.

MAIDSTONE.—Aug. 9.—For Supply of 20 Horse-power Lancashire Boiler to Sewage Works. Mr. F. J. C. May, Borough Surveyor, Maidstone.

MARSTON-ON-DOVE.—Aug. 18.—For Erection of Farm Buildings. Mr. F. Drewry, Devonshire Estate Offices, Buxton.

MENAI BRIDGE.—Aug. 9.—For Building Presbyterian Chapel. Mr. R. G. Thomas, Architect, Menai Bridge.

NORTHWICH.—Aug. 21.—For Building Gauge House, Forming Road, Laying Pipes for intended Waterworks. Mr. H. Bancroft, C.E., 83 Mosley Street, Manchester.

NOTTINGHAM.—For Building House, Shop, and Stabling, Mr. A. H. Goodall, Architect, Market Street, Nottingham.

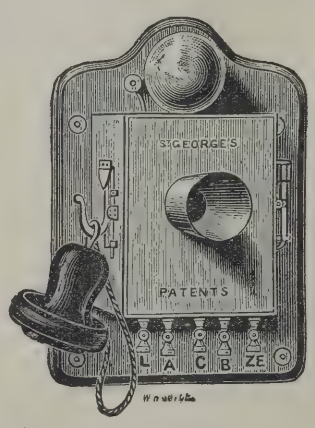
A. F. ST. GEORGE,

Electrician.

Telephone Manufacturer and Patentee.

Electric Light Contractor and Patentee.

85 Chancery Lane, London, W.C.



Price £12 12s.
per pair.

TELEPHONE SYSTEM (St. George's Patents), ON RENTAL FROM £5 PER ANNUM, OR ON PURCHASE OUTRIGHT.

GOWER-BELL PATENT TELEPHONE SYSTEM, ON RENTAL OR PURCHASE.

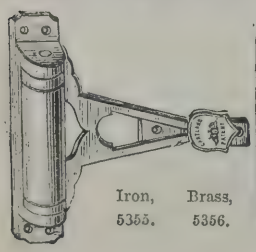
ESTIMATES FOR ELECTRIC LIGHTING ON ST. GEORGE'S PATENTS or OTHER SYSTEMS FREE.

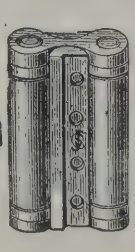
MELBOURNE INTERNATIONAL EXHIBITION, 1880, THE GOLD MEDAL
In addition to FIRST-CLASS HONOURS, was awarded to

JAMES CARTLAND & SONS,

Cabinet Builders and Naval Brass Founders,
BIRMINGHAM.
London Show-rooms: 40 Holborn Viaduct, E.C.
The extent, variety, quality, and finish of articles manufactured at this establishment cannot be excelled.

CARTLAND'S PATENT HELICAL, CLIMAX DOOR SPRINGS & HINGES.



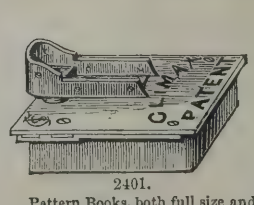


CAUTION.

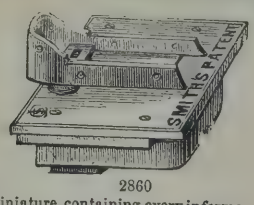
Ironmongers, Builders, and others are requested to see that the Trade Mark is on each Spring, as the Patentees are informed that spurious imitations of the

"CLIMAX SPRING HINGES"

are being sold, which have neither the **Power or Durability of Cartland's Patent Climax Door Springs and Hinges.**



2401.



2860

Pattern Books, both full size and Miniature, containing every information, may be obtained through any Merchant or Factor on application. All Goods for Export are carefully packed in Cartoon Boxes, and distinctly labelled with orange-coloured labels, bearing our Trade Mark, as above.

OLDHAM.—For Building Ten Cottages at Frankhill for the Oldham Estate Company. Mr. A. Cardwell, Secretary, 32 Clegg Street, Oldham.

PRESCOT.—Aug. 6.—For Bakehouse and Storeroom, and Drying-room to Laundry. Mr. S. H. Hartley, Clerk to the Union, Whiston, Prescot.

PORTSMOUTH.—Aug. 25.—For Building Town Hall, Municipal Offices, Police Court and Cells, Reading Room, and Library. Mr. W. Hill, Architect, 25 Park Square, Leeds.

SHEPTON MALLET.—Aug. 9.—For Laying Stoneware and Iron Pipes, Construction of Storage Tank, &c. Mr. J. S. Phelps, Surveyor, Croscombe, Wells, Somerset.

SOUTHOWRAM.—Aug. 10.—For Additions to Sunday School. Messrs. Petty & Ives, Architects, Waterhouse Street, Halifax.

SOUTH STONEHAM.—Aug. 9.—For Additions, &c., at the Workhouse. Mr. W. H. Mitchell, Architect, 9 Portland Street, Southampton.

STONEHAVEN.—Aug. 7.—For Repairs and Additions to Farm-steading. Mr. J. Hart, Dunnottar, Stonehaven.

THEALE.—Aug. 7.—For Building Two Bridges, Sheffield Bottom. Mr. J. Morris, Surveyor of Bridges for the County, 17 Friar Street, Reading.

TOTTENHAM.—Aug. 10.—For Laying 6-inch Cast-iron Water Main (3,000 feet), &c., coated with Dr. Angus Smith's Composition. Mr. de Pape, C.E., High Road, Tottenham.

TYNEWYDD, OGMORE VALLEY.—Aug. 7.—For Building Wesleyan Chapel. Mr. W. Cooke, 25 Dunraven Place, Bridgend.

WARKWORTH.—Aug. 14.—For Erection of Range of Buildings at Buston Barns. Mr. G. Reavell, jun., Architect, Alnwick.

WEST ARDSLEY.—Aug. 14.—For Building Villa Residence. Mr. T. A. Buttery, Architect, Morley.

WHITCHURCH.—For Building Detached Residence. Mr. C. Rigg, Architect, 24 High Street, Cardiff.

YARMOUTH.—Aug. 7.—For Building House. Mr. S. Rivett, Hall Quay, Yarmouth.

YOU will really enjoy yourself if you smoke the excellent cigars supplied direct to consumers, at wholesale prices, by HELMCKE & Co., 32 Great St. Helen's, London, E.C. Write for price list. Sample collections sent on receipt of 10*s.* 6*d.* or 21*s.*

TENDERS.

ALREWAS.

For Restoring Tower of Parish Church of Alrewas, Lichfield. Mr. BASIL CHAMPNEYS, Architect, 19 Buckingham Street, Strand.

Lowe & Sons, Burton-on-Trent.

ASTON CLINTON.

For Building National School for Boys, Aston Clinton, Bucks. Mr. W. HUCKVALE, Architect, Tring.

T. King, Aston Clinton	£1,127 19 8
J. Bowen, Battersea	1,010 18 9
Reynolds, Brighton	949 0 0
C. Curtis, Oxford	930 0 0
G. M. Dawson, Eastbourne	899 19 0
T. Heath, Towcester	850 0 0
J. Newton, Clapham	846 0 0
J. Bonham, Aston Clinton	842 15 0
W. Tompkins, Aston Clinton	829 7 6
F. Bonham, Aylesbury	780 11 8
Honour & Son, Tring	776 10 0
Cooper & Co., Aylesbury	758 0 0
Grist, Aylesbury	748 0 0
FINCHER & SMITH, Tring (*accepted*)	716 10 0
Searls, Leytonstone	670 10 0

BALTIMORE.

For Building National Industrial Fishing School, Baltimore (first portion of Schools for Seventy-five Boys). Mr. D. J. COAKLEY, Architect, 86 South Mall, Cork.

R. Johnson, Cork	£2,700 0 0
P. Murphy, Cork	2,240 0 0
JN. SISK, Cork (*accepted*)	2,350 0 0

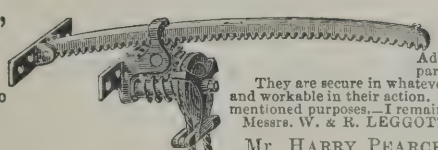
Eventually the Schools will be enlarged to accommodate about 600 boys.

Ham Hill Stone! Ham Hill Stone!!! For Ham Hill Stone of best quality and workmanship, apply to JOHN HANN & SON, Quarry Owners, Montacute, Ilminster. Established 1837. Agents, MATTHEWS & GEARD, Albany Wharf, Regent's Park Basin, N.W. [ADVT.

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,
Is admitted to be the best ever put before the Public.
From 5s. each.
Write for REDUCED PRICE LIST and Testimonials to
W. & R. LEGGOTT,
70 Park Road, Bradford, Yorkshire.
N.B.—Size and height of window no object.



TESTIMONIAL.
BANGOR, N. Wales: September 14, 1885.
Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.
Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

MELLOWES & DARBY,

FORMERLY PRIMROSE & Co. CHURCH ST. SHEFFIELD.

"ECLIPSE" PATENT ROOF GLAZING

NO PUTTY, PAINT ZINC OR OTHER PERISHABLE MATERIAL.

IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c.

NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.

PRIZE MEDAL AWARDS: KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882-3.

THE ONLY GLAZING AWARD, INTERNATIONAL HEALTH EXHIBITION, 1884.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.
Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.
Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

BARNET.

For Building Workhouse Infirmary, High Barnet. Mr. JOHN LADDS, Architect, 4 Chapel Street, Bedford Row, W.C. Quantities by Mr. Thomas Ladds.

	Buildings.	Warming.
Messrs. Williamson, Finsbury Park	£7,474	£150
Alfred Taylor, Cambridge Road, E.	6,776	200
W. James, High Barnet	6,127	160
Priestley & Gurney, Hammersmith	5,990	160
Charles Cave & Son, New Barnet	5,897	165
Lobb & Oliver, New Southgate	5,814	165
Brooks & Meeder, Enfield	5,751	180
Patman & Fotheringham, Theobald's Rd.	5,573	150
T. L. Green, Holborn	5,543	157
Pack Bros., Brixton	5,553	180
T. Turner, Watford	5,520	165
Staines & Son, Great Eastern Street	5,483	155
Stephens, Bastow & Co., Wandsworth	5,477	150
E. C. Howells & Son, Lambeth	5,394	150
Glasscock & Sons, Bishops Stortford	5,387	160
Wall, Chelsea	5,357	150
W. Oldrey, Westbourne Park	5,336	157
Gould & Brand, Camden Town	5,335	165
J. Garlick, Lillie Bridge Road	5,230	165
Wall Bros., Kentish Town	5,219	150
G. Parker, Peckham	5,170	160
Foster & Dicksee, Rugby	5,166	150
G. Worboys, Bassingbourn	5,140	150
Kirk & Randall, Woolwich	5,120	165
A. Kimberley, Banbury	5,087	153
James Smith & Sons, South Norwood	5,070	150
J. Curnow, High Barnet	5,013	150
Marriott Bros., High Barnet	4,950	160
J. Church & Co., Coleman Street, E.C.	4,625	150
John Willmott & Sons, Hitchin	4,599	150
C. Reed, Leytonstone	4,096	170

BARNSLEY.

For Construction of a Culvert, 6 feet diameter, over the Sough Dyke, for the Barnsley Town Council. Mr. J. H. TAYLOR, Borough Surveyor, Barnsley.

S. Squire, Barnsley	£389 12 0
C. Green, Wombwell	385 12 0
H. Hincliffe, Barnsley	379 10 0
G. H. BURROWS, Barnsley (*accepted*)	326 12 6

BARNSLEY.

For Building Twelve Dwelling-houses in Perseverance Street, Barnsley. Messrs. WADE & TURNER, Architects, 10 Pitt Street, Barnsley.

Accepted Tenders.

W. Dunk, excavator, mason, and carpenter	£1,160 0 0
J. Smith, carpenter and joiner	365 0 0
C. Dryden, plasterer	145 0 0
J. Casey, slater	111 10 0
J. Steele, plumber and glazier	74 10 0
G. Charlton, painter	49 0 0

BATLEY.

For Erection of Chapel and School at Batley, for the Trustees of the United Methodist Free Church. Mr. J. T. LAW, Architect, 64 Commercial Street, Batley.

Masons.

C. Robinson, Batley	£390 0 0
Hart & Brier, Dewsbury	380 0 0
J. & B. Farrar, Birstall	379 0 0
Joseph Ellis, Ossett	364 12 0
J. & T. Oldroyd, Batley	361 18 0
SAMUEL Y. NORTH, Batley (*accepted*)	360 0 0
George Kitson, Batley-Carr	350 0 0

Joiners.

J. Akeroyd & Son, Birstall	271 15 0
E. H. Shaw, Mirfield	263 10 0
C. Illingworth, Batley	240 0 0
Garthwaite & Blackburn, Dewsbury	239 10 0
Charles Brown, Gomersal	238 0 0
Geo. J. Turver, Dewsbury	235 0 0
W. E. Brooke, Ossett	220 0 0
Fothergill & Schofield, Batley-Carr	220 0 0
J. E. Greenwood, Dewsbury	205 19 3
George Elliott, Hanging-Heaton	205 0 0
Henry Brooke, Batley	200 0 0
RICHARD FIELD, Batley (*accepted*)	195 0 0

Plasterers.

J. B. Greenwood, Heckmondwike	45 0 0
Grange & Cookson, Heckmondwike	41 10 0
Samuel Crawshaw, Batley	40 0 0
James Broadbent, Dewsbury	34 15 0
WILLIAM PARKER, Heckmondwike (*accepted*)	33 0 0
Josiah Oates & Son, Dewsbury	28 14 0
Metcalfe & Lockwood, Staincliffe	28 10 0

PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.

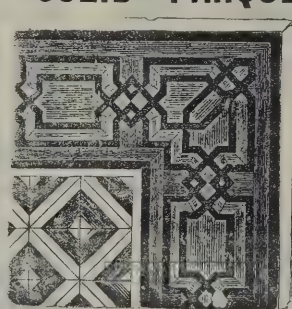
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 36 Great St. Helen's, E.C.

CONTRACTS.

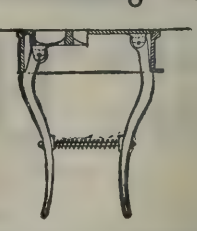
THE LONDON GUARANTEE & ACCIDENT COMPANY issue Bonds, security on behalf of a Contractor or Builder for the due performance of Government, Municipal, or other Contracts of every description, at moderate rates. On application, leave will be given to send in the Company's name as surety with any Tender, no charge being made unless the Bond is ultimately required. For terms, &c., apply to the Office, 10 Moorgate Street, London, E.C.
The Bonds of this Company are accepted by the several Government Departments.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered. PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

A. J. SHAW,
58 & 60 Gower Street, Sheffield,
MANUFACTURER OF
Coloured Varnishes & Wood Stains,
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.

WILLIAM HALFORD
(The Patent Self-Fastening Coal Plate Co.),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.

Patent Self-Fastening Coal Plates,
M. & T.'S PATENT.

NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

BATLEY—*continued.*

Slaters.

W. R. Thompson, Dewsbury	£30 10 0
George Hargreaves, Dewsbury	29 10 0
Edwin Thornton, Shipley	29 10 0
Thomas Brear, Dewsbury	28 10 0
Pickles Bros., Leeds	28 9 0
William Atkinson, Leeds	27 11 0
JONAS M. THORNTON, Batley (*accepted*)	27 17 0
George Fawcett, Dewsbury	26 10 0

Plumbers.

T. K. Armitage, Birstall	36 19 6
John Brooke, Heckmondwike	31 10 0
James Wright, Batley-Carr	30 0 0
Walter Walker, Batley	28 15 0
Robert Laxton, Batley	28 10 6
JAMES WALSHAW, Batley (*accepted*)	28 0 0
Joshua Snowden, Ossett	22 10 0

BURSLEM.

For Reconstruction of Grounds of the Athletic Company, Burslem.

Drewett, Alsager	£1,031 17 0
Macay, Stoke	708 1 0
Vaughan, Longsight, Manchester	699 0 0
Grant, Burslem	604 0 0
BREADLEY, Burslem (*accepted*)	530 0 0
Emery, Stafford	443 17 0

CAMBRIDGE.

For Building Model Machine Bakery and Corn Stores, Cambridge. Mr. FRANK WATERS, F.S.I., Architect, Sidney Street, Cambridge. Quantities by the Architect.

Redding & Son, Cambridge	£1,355 0 0
Thoday & Son, Cambridge	1,348 0 0
William Saint, Cambridge	1,286 0 0
Pamphilon, Cambridge	1,269 0 0
A. BUNTING, Fenstanton, St. Ives, Hunts (*accepted*)	1,149 0 0

CRIEF.

For Works of Water-Supply, Pipes, &c., Crief, from Loch Turret.

BROWN & YOUNG, Glasgow (*accepted*)	£1,116 10 0

DARLINGTON.

For Additions, &c., to the Brunswick Road Board Schools, Darlington. Mr. T. W. ROBSON, Surveyor.

Accepted Tenders.

R. Kitching, Darlington, brick, stone, plastering, joiner-work, and cement flooring.
J. & G. Wharton, Darlington, slating.
E. Smith, Darlington, plumbing, glazing, &c.

DEWSBURY.

For Building Town Hall, Dewsbury. Mr. H. HOLTOM, Architect, Dewsbury.

E. CHADWICK & SONS, Staincliffe (*accepted*)	£25,500 0 0
Architect's estimate	26,000 0 0

DURHAM.

For Water Supply Works on Farms for the Durham Rural Sanitary Authority.

T. Johnson, Fence Houses	£101 10 0
J. GARRICK, Durham (*accepted*)	88 15 2

EXETER.

For Rebuilding the Phœnix Inn, Goldsmith Street, for Mr. H. Pratt. Messrs. BEST & COMMIN, Architects, Exeter.

J. P. Vicary & Son, Exeter	£1,084 0 0

For Shop and Business Premises, Goldsmith Street, for Mr. J. Lock, Confectioner. Messrs. BEST & COMMIN, Architects.

Vicary & Son	£1,110 0 0
G. Stile	1,098 0 0
Scadding & Son	1,088 0 0
W. R. Commings	950 0 0
W. Gibson	930 0 0

For Westleigh Stone Boundary Walling and Piers, with Iron Railing, Small Conservatory, and Sundry Repairs and other work at Moor View Lodge, for Mr. W. J. Saunders. Messrs. BEST & COMMIN, Architects.

D. Reynolds	£219 0 0
T. Sharland	212 0 0

For New Chimney Stack, total height 88 feet, at Stoke Canon Paper Mills, near Exeter, for Messrs. F. Tremlett & Co. Messrs. BEST & COMMIN, Architects.
C. Pring, Exmouth.

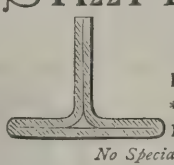
SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream.
SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, ontinuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

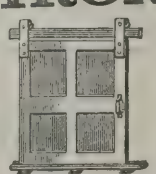
STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

WHITLAND ABBEY GREEN SLATE QUARRIES.
REDUCTION IN PRICE.
THESE Stout, Durable SLATES, which are so much sought after by Architects for Mansions, Churches, Chapels, and other Public Buildings on account of the permanency of their beautiful colour, are now offered by the Proprietor, Mr. MUSCOTT (whose name is so well known in connection with these Green Slates for the last twenty years), at a reduction of Twenty per Cent.—For Testimonials, Samples, Price Lists, &c., apply to the old address, as under.
Mr. MUSCOTT, Whitland Abbey Green Slate Quarries, Clynderwen R.S.O., South Wales.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK.
PICTOR & SONS, Box, Wilts.



IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES
Estimates Given at Wholesale Prices for Furniture made to Architects' Desins.

EXETER—*continued.*

For Strong Room, Red Brick Walls and Roof, Glazed Brick Lining, at the Banking Premises of Messrs. Fox Brothers, Fowler & Co., 57 High Street, Exeter. Messrs. BEST & COMMIN, Architects.

W. Dart, Crediton	£130 7 0

For Farmhouse at Whitestone Cross, for the Trustees of Atwill's Charity, near Exeter. Messrs. BEST & COMMIN, Architects.

G. W. P. Webber, Exwick	£300 0 0

For Shop and Dwelling-house, Alphington Street, Exeter, for Mr. William Fouracre. Messrs. BEST & COMMIN, Architects.

W. R. Commings	£547 0 0
G. L. Stile	469 0 0
W. Gibson	450 0 0
T. Sharland	425 0 0
J. Pomeroy	369 15 0
W. H. Gooding	310 0 0

FAILSWORTH.

For Building Mortuary Chapel, Registrar's Offices, &c., at Cemetery, Failsworth. Mr. S. C. TRAPP, Engineer, 88 Moseley Street, Manchester. Quantities by the Engineer.

J. W. Graham	£1,682 0 0
Butters & Carson	1,555 0 0
Southern & Sons	1,432 0 0
R. Neill & Sons	1,424 0 0
S. & J. Smethurst	1,422 0 0
Megarits & Co.	1,401 0 0
WILLIAM HOLT (*accepted*)	1,373 0 0
Davison & Carr	1,362 0 0

GUILDFORD.

For the Removal and Re-erection of Buildings, Erection of Walling, &c., in connection with the Sydenham Road Improvement, &c., Guildford. Mr. H. PEAK, Surveyor, 3 Market Place, Guildford.

R. Mason, Guildford	£251 0 0
H. Edmead & Sons, Guildford	229 4 0
J. Skuse, Guildford	229 0 0
G. Garnett, Guildford	217 0 0
T. Swayne & Son, Guildford	205 10 0
W. J. ENGALL, Guildford (*accepted*)	191 15 0

HALIFAX.

For Building Warehouses, containing 4,000 yards of Flooring Mr. H. ISITT, Architect, Sunbridge Road, Bradford.

Accepted Tenders.

Fearnley & Firth, Halifax, mason.
Ives & Co., Shipley, joiner.
H. Walsh, Halifax, plumber.
Rushworth & Firth, Halifax, plasterer and slater.
A. Marshall, Shipley, painter.
E. & W. H. Haley, Bradford, ironfounder.
Total, £2,791.

HIGH WYCOMBE.

For Building Business Premises, Frogmore Gardens, High Wycombe. Mr. THOS. THURLOW, Architect, High Wycombe and 56 Chancery Lane. Quantities supplied.

J. T. Harris, Wycombe	£1,080 0 0
Nash & Sons, Wycombe	1,048 10 0
G. Neale, London	929 0 0
C. Claridge, Banbury	927 0 0
W. R. Loosley, Wycombe	895 17 0
Clayson Bros., Northampton	825 0 0
H. Harris, Wycombe	805 10 0
G. H. Gibson, Wycombe	800 0 0

KIRKHAM.

For Flagging Works, Station Road, Kirkham.

Haslam	£28 0 0
Royle	25 10 0
Gardner	23 10 0

LEYTONSTONE.

For Decorative Repairs at The Elms, High Road, Leytonstone. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within.

Mansell	£200 0 0
Cain	175 0 0
Searls	175 0 0
Nicoll	145 0 0
Kelvie	141 0 0
Dainton	100 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

HOLDEN & CO.'S PATENT ZINC ROOFING
WITH THEIR
PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,
Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.
Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.
ZINC AND IRON WORKERS AND COPPERSMITHS.
Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.
HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

H. W. COOPER & COMPANY, LIMITED,
HEALTH EXHIBITION, MEDAL AWARDED, 1884.
OPEN. SHUT.
Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).
Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.
H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.
GLASS SELLERS' COMPANY EXHIBITION, MEDAL AWARDED, 1876.
OPEN SHUT
H. W. COOPER, Sole Inventor.
Improved Casement. Circular Glass Revolving Ventilator. Glass Sliding Ventilator. Improved Hopper for Skylights. Hopper Ventilator. Casement.
Steam Works: Little Queen St., Upper George Street, Edgware Road, W.
Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.

SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.
LONDON DEPOT: Kinson Wharf, Albert Embankment, LAMBETH, S.E.
CARTER, JOHNSON & CO., ENCAUSTIC TILE MANUFACTORY, St. George's Works, WORCESTER.
20 Victoria Buildings, Victoria Street, MANCHESTER.
Agents:—STURGEON & SMITH, 3 Cross Lane, Eastcheap, E.C

LONDON.

For Partially Pulling Down and Rebuilding Premises in Boot Street, Hoxton. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within.

Goodall	£1,026 0 0
Shurmur	1,017 0 0
Anley	1,010 0 0
Nichols	950 0 0
Jackson & Todd	919 0 0
Steel	915 0 0
Spencer & Co.	900 0 0
Virloie	759 0 0
Ivory	756 0 0

For Alterations to the Shakespeare Tavern, 65 Westbourne Grove, W., for Mr. A. T. Yardley. Messrs. A. W. SAVILLE and W. J. MARTIN, joint-Architects, 99 Strand, W.C. Quantities supplied.

R. Smith	£588 14 0
Jackson & Todd	497 0 0
Ward & Lamble	473 0 0
Burch & Co.	439 0 0
Spencer & Co.	430 0 0
B. COOK (*accepted*)	418 0 0

For the Restoration of Foresters' Hall, Clerkenwell Road.

Salmon, Holborn	£453 0 0
Stevens Bros., Holloway	430 10 0
T. Taylor, Kingsland	420 0 0
A. & E. Braid, Chelsea	390 0 0
Bouttell & Hammond, West Hampstead	385 0 0
Ellis & Turner, Aldersgate, E.C.	380 0 0
F. L. Linzell, London, W.C.	373 0 0
A. Saunders & Co., East Dulwich	370 0 0

For Repairing, Painting, and other Works at Infirmary, Kennington.

A. H. McAllen & Co., Plaistow	£619 0 0
Simmonds Bros., South Kensington	575 0 0
R. Seabrook & Sons, Camberwell	535 0 0
B. Walker, London	520 0 0
T. Hooper, Wandsworth Road	462 10 0
Dicksee & Dicksee, London	430 0 0
W. Furniss, Herne Hill	400 0 0
M. M'CARTHY, Chelsea (*accepted*)	390 0 0
J. Wood & Co., Nunhead	367 0 0

LONDON—*continued.*

For Rebuilding No. 219 Brompton Road, for Miss Jeffreys. Mr. ROBERT J. WORLEY, Architect. Quantities by Mr. R. C. Gleed.

Perry & Co.	£3,800 0 0
Peto Bros.	3,790 0 0
Chappell	3,750 0 0
Lawrence & Sons	3,647 0 0
Toms	3,613 0 0
Croaker	3,573 0 0
Lucas & Son	3,424 0 0
G. & J. Green	3,125 0 0

For Alterations and Repairs for the Royal Maternity Society, 31 Finsbury Square, E.C. Messrs. REDDALL & SON, Architects.

Kilby & Gayford	£457 0 0
Heeps	447 0 0
King & Son	423 0 0
Woodward	345 0 0

For Alterations and Repairs to the White Hart Public-house, Abridge, Essex, for Messrs. Charrington & Co. Mr. JOHN HUDSON, Architect, 80 Leman Street, E.

J. & H. Cocks, Mile End, E.	£1,359 0 0
J. Bentley, Waltham Abbey	1,290 0 0
R. Walter, Barking	1,050 0 0
J. S. Hammond & Son, Romford	968 0 0
G. Ransom, Walworth	835 0 0
W. GLADDING, Whitechapel (*accepted*)	779 0 0

LYNN.

For Building British Infant School, Lynn. Mr. JOHN A. HILLAM, Architect, Windsor Road, Lynn.

Bardle Bros., Lynn	£632 0 0
Wanford, Lynn	594 5 0
Beeson, Lynn	584 15 0
Dye, Lynn	569 0 0
Alflatt, Lynn	560 0 0
Jarvis, Lynn	539 0 0
Fayers, Lynn	498 0 0

NORWICH.

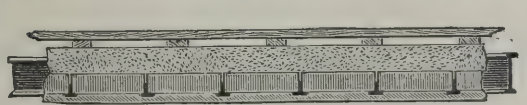
For Repairs to Roof and Balustrades of Free Library, Norwich.

R. W. Bennett	£42 15 0

FLAT BRICK FIRE-PROOF FLOORS.



LONDON, 1874.



LONGITUDINAL SECTION.



BRUSSELS, 1876.

THE BEST as well as the CHEAPEST Fire-proof Floors yet introduced. Their small cost makes them specially suitable for artisans' dwellings, residential flats, offices, chambers, and private houses.

They are constructed with hard-burnt bricks, laid flat, and bonded on the upper face with tough concrete 3 inches thick; and by the method of laying all iron is protected from the action of fire.

Experiments show a resistance to load and impact greater than furnished by the ordinary concrete floors. No thrust is transmitted to the walls, as in all arched construction, the walls being tied in and strengthened.

The floors are practically noiseless, the different densities of the concrete, brick and plaster, with the air space above, intercepting the sound vibrations.

The brick soffit forms a capital key for the plaster, and no laths or counterceiling are necessary, but for high-class work wood blocks are introduced in the soffit, to which the ordinary lath and plastering or fibrous plaster is fixed. This also provides a second air space, and furnishes the most perfect sound-resisting floors known.

They are not affected by water, acids, or alkalies, and they may be fixed during the progress of the building, thus dispensing with the use of internal scaffolding.

The concrete being tough instead of friable, the boarded finish may be nailed down without the use of sleeper joists. It is recommended to use an inch strip as a sleeper fillet. This will provide ventilation, and space for gas and water-pipes.

The depth of the finished floor is 6 to 9 inches only, and when the saving on this head is taken into account, the cost does not exceed that of the ordinary combustible timber floor of corresponding strength.

HOMAN & RODGERS,

Engineers and Patentees,

17 GRACECHURCH ST., LONDON, E.C., & 13 DAWSON ST., MANCHESTER.

WORKS: RATCLIFF, LONDON, E., & HULME IRONWORKS, MANCHESTER.

Homan's Patent Girders, Rolled Joists, Cast-iron Columns, Roofs, Bridges, and every kind of Constructional Ironwork.

London Telephone, No. 1,026. Registered Telegraphic Address—"HOMAN RODGERS, London"; "NAMOH, Manchester."

PINHOE.

For Family Residence with Gardener's Cottage and Farm Buildings, Pinhoe. Messrs. BEST & COMMIN, Architects, Exeter.

T. Sharland.

PONTYPOOL.

For Street Improvement Works, Pontypool.

J. Herbert	£260 0 0

PORTSMOUTH.

For Reconstruction of High and Low Level Sewers, Portsmouth, under the superintendence of Sir F. Bramwell. Quantities by Mr. C. M. Houghton.

D. W. Lewis, Portsmouth	£29,256 0 0
W. R. & C. Light Bros., Portsmouth	21,350 0 0
T. P. Hall, Portsmouth	20,934 0 0
W. Ward, Portsmouth	20,820 0 0
J. MOWLEM & Co., Westminster (*accepted*)	20,746 0 0

STAMFORD.

For Building House, Castle Dyke, Stamford. Messrs. J. & C. RICHARDSON, Architects, 15 Barn Hill, Stamford.

Ludlow & Nicholls, Stamford	£349 7 0
Hilliam & Corby, Stamford	335 13 0
Scholes, Rouse & Clark, Stamford	330 0 0
J. Woolston, Stamford	329 0 0
F. Dobson, Stamford	315 0 0
E. Bowman, Stamford	288 0 0
W. H. LYON, Stamford (*accepted*)	260 0 0

WALTHAMSTOW.

For Asphalte Tar Paving.

T. Harrison	£588 0 0
S. Atkins	487 19 2
BRADSHAW & Co. (*accepted*)	487 9 5

WORTHING.

For Erection of School House and Residence, Worthing, for the Rev. P. Crick. Messrs. J. E. K. & J. P. CUTTS, Architects, Southampton Street, Strand.

J. W. Hobbs & Co., Limited	£5,060 0 0
R. C. Blaker	4,953 0 0
E. Snewin & Son	4,851 0 0
W. W. Smith	4,456 0 0

WATERLOO.

For Road Work, Courtenay Road, Waterloo.

J. M'Cabe, Liverpool	£435 0 0
Keating & Sons, Liverpool	434 0 7
Catterall & Co., Liverpool	395 12 4
W. F. CHADWICK, Liverpool (*accepted*)	382 17 0

TRADE NOTES.

THE much admired windows exhibited at the Folkestone exhibition, representing the figures of *Apollo*, *Minerva*, and *Venus Astarte*, and also a splendid treatment of flowers, were the work of Messrs. Cox, Sons, Edgley & Co., the well-known workers of every description of ecclesiastical and domestic art. We may mention that, connected with this firm, is Mr. Thos. Cox, the only member of the original firm of Cox & Son now in England.

MESSRS. EDGAR KEELING, TEALE & Co., Art Metal Workers, of 14 Elm Street, Gray's Inn Road, London, W.C., have supplied the locks and door furniture for the London and County Banking Company's new premises, recently erected in High Street, South Kensington, from the designs and under the superintendence of Mr. Alfred Williams, architect, of Southampton Buildings, Chancery Lane.

MR. TALBOT B. REED has in the press an exhaustive history of "Old English Letter Foundries, with notes Bibliographical and Historical on the Rise and Progress of English Typography." The work will bring to light much curious information concerning the origin and development of type-founding in England, and will give biographies of the chief type-founders from the earliest times to the year 1830. It is to be issued by Mr. Elliot Stock.

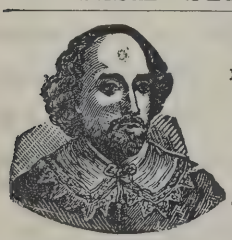
MESSRS. WOODHOUSE & RAWSON, electric light contractors, of 11 Queen Victoria Street, have recently lighted up the New Club for the Caledonian ball and Mrs. McKenzie's ball, together with many other installations of a similar nature.

WE are authorised to state that Sir Henry Ponsonby has received Her Majesty's command to notify to the author of "Events in an Irish Country House in 1880" an acceptance of a copy.

WE learn that the authorities at the British Museum are introducing the electric light into several fresh departments.

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

PARKINSON'S
BEST QUALITY LOWEST PRICES
WET & DRY
COTTAGE LANE CITY Rd LONDON.
GAS METERS

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

SHOP SHUTTER SHOES.
NO SHUTTER BARS REQUIRED.
HARRISON'S PATENT SELF-FASTENING BEST MALLEABLE IRON SOLID BEAD SHOES
Extensively specified, and used by Architects, Surveyors, and Builders. The Solid Bead greatly protects the Corners of Shutter from wear in removal. Terms Cash. Illustrated List on application.
JAMES HARRISON, 35 Union Street, {BOROUGH, LONDON.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

Messrs. Faraday & Son, of Berners Street, have the contract for fittings. This firm has extensions of a similar kind in hand for Messrs. Shoolbred, Tottenham Court Road, and are completing contracts for Sir Arthur Sullivan, for a theatre at Algiers, and the château of a senator of Brussels.

In our advertising columns will be found the prospectus of "The British Dinner Co., Limited," with a nominal capital of 25,000*l.*, divided into 25,000 shares of 1*l.* each, payable 2*s.* per share on application and 8*s.* on allotment. The company purpose providing good wholesome food, suitable for the working and other classes, at the lowest possible cost. They state that they will supply not only the same description as sold by the Aërated Bread Co. (which is paying a large dividend) and by Lockhart's Cocoa Rooms, but also a dinner comprising a soup or fish, a plate of meat and vegetables, at the minimum cost of sixpence, which is profitably done in Glasgow. We have no doubt that, if this is carried out, the undertaking should prove a financial success to the shareholders.

ST. GILES'S CATHEDRAL, EDINBURGH.

The Bruce memorial window has just been placed in the west end of the nave of St. Giles's Cathedral, by Cottier, of London. The subject of the window is "The Prophets"—"These are the prophets of whom our fathers spake," as is inscribed on a scroll in old English characters. The window has five lights, with a transom in the centre, giving ten compartments, in each of which the counterfeit presentment of a prophet is placed. The tracery above has been filled in with prophetic emblems—such as Ezekiel's wheel, &c. Reading from south to north, there appear in the upper compartments of the window Isaiah, Jeremiah, David, Ezekiel, and Daniel; and in the lower set, Amos, Jonah, Elijah, Zechariah, and Malachi. In the faces and habiliments of the figures something of the characteristics of the several prophets mentioned have been reproduced. The Shepherd King, attired in royal robes, plays on his harp; Jeremiah, in sombre raiment, laments over Israel; while the herdman of Tekoa appears in peasant's costume, and carries in his hand a shepherd's crook. The draping of the figures has been most successfully accomplished, the garments in which they are attired being picturesquely disposed about them in soft artistic folds. The figures, it may be said, are about 7 feet in height, and, if anything, err on the side of largeness.

BUILDERS AND BY-LAWS.

At the Poole Police Court a builder, Mr. A. S. Musgrave, of Westbourne, was summoned for erecting four dwelling-houses in Langley Road, Branksome Park, within the last two months, without giving proper notice to the Borough Surveyor before the commencement of such work. Mr. H. W. Dickinson appeared to prosecute, and stated that in May 1885 defendant submitted plans to the Town Council for the erection of ten semi-detached villas, in Langley Road, Branksome Park, but they were rejected because the by-laws had not been complied with. The plans were again presented later on, and were again rejected for the same cause. Nothing more was heard about them, and it was presumed that they had been dropped. The surveyor, however, discovered that Mr. Musgrave was building the houses upon the plans that had been rejected, without having given notice of his intention to build. He had therefore broken the by-law which required that notice should be given before the commencement of such work. John Elford, borough surveyor, stated that his attention was drawn to the buildings about a fortnight ago, when he saw several houses nearly completed and others commenced by the defendant. He had given no notice about his intention to erect the buildings. Defendant pleaded entire ignorance of the by-law requiring him to give notice to the borough surveyor before he commenced building. Mr. Pearce said there was no doubt that defendant had committed an offence, but the bench were inclined to deal leniently with builders when what they had done was in ignorance of the law. He would be fined 5*s.* and costs.

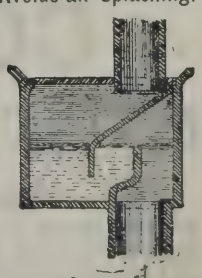
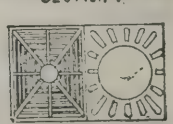
LIVERPOOL ENGINEERING SOCIETY.

On Friday last the members of the above society visited the Forth and Tay Bridge, on the invitation of the engineers and contractors of the respective undertakings. On arrival at Queen's Ferry South, the party was met by Mr. Cooper, the resident engineer of the Forth Bridge, who drew attention to the novel features of the special appliances for constructing this gigantic bridge. Having examined the various details connected with the south shore end of the work, the party embarked in the steam launch kindly placed at their disposal for the occasion, and proceeded to the north shore. Here the

THE ÆOLUS WATERSPRAY
SYSTEM OF
HEATING, COOLING, & VENTILATING
IS THE
CHEAPEST AND BEST.
For Particulars apply to
MANAGER, 235 HIGH HOLBORN, LONDON, W.C.
Applications for Agencies invited.



PROVISIONALLY PROTECTED. Avoids all Splashing.
FIRTH'S
Improved Disconnecting Trap,
FOR FALL PIPES, &c.
COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.
FOR PARTICULARS APPLY TO
GRACE & FIRTH, Wakefield, Yorks.


SECTION.

PLAN.

"skew backs" which are now in position were examined with much interest. The mode of erecting the vertical members of the piers, and the skilful arrangement for raising temporary staging by hydraulic pressure, was explained by Mr. Cooper. The party were much struck with the progress made in all parts of the work since their visit last year, the whole of the foundation being now completed. The precautions taken against accident were also noted with satisfaction, riveters and others engaged on the elevated part of the work exposed to heavy winds, &c., being protected by a wire caging which also prevents tools and materials falling on the men below. The facility with which the riveting *in situ* is effected by means of the specially designed apparatus was thoroughly appreciated. At Dundee the party made an inspection of the Tay Bridge, on Monday, under the guidance of Mr. Searight, one of the assistant engineers. Here again a steam launch conveyed members to the various points of interest. One of the large bowstring girders in course of construction was seen, and the method of floating it into position in mid stream was explained. The opportunity afforded of comparing the design and execution of the old and new bridges was by no means the least instructive feature of the excursion.

COVENANTS REGARDING DRAINS.

AT the Liverpool Assizes on Wednesday, before Mr. Justice Cave, an action was brought for breach of contract in respect of the drainage of a warehouse in Hoyle Street, Liverpool, leased by Messrs. Green & Taylor to Mr. Harbord and others. The action was brought against the defendants, who are the trustees of the late Richard Harbord, a warehouse-keeper of the city, upon a covenant in a lease which plaintiffs obtained from the defendants of two warehouses in Hoyle Street, and by which the lessors were to repair, put, and maintain in order all outside drains of the warehouses in question. The question his lordship would have to determine, Mr. Bigham said in opening the case for the plaintiffs, was whether the drains were outside drains within the meaning of the covenant; while the second question would be what damages they were entitled to, having regard to the fact that they had given the defendants due notice of the defective drainage. The lease commenced in January 1884, and on September 28 of that year it was found that one of the drains had refused to act; the water came in, flooded the cellar, and very considerable damage was done to some goods stored there. On the 29th the plaintiffs' clerk notified the defendants of the occurrence, but no steps were taken to abate the nuisance. Hence the present action to recover damages. Plans of the property were produced, but his lordship expressed himself as being unable to understand that the drains were on the outside of the warehouse as meant by the covenant, and accordingly judgment was given for the defendant.

HARTLEPOOL HEADLAND.

A SCHEME long projected for the headland protection at Hartlepool was practically begun on Monday, when the mayor of the town laid the foundation-stone. The contract was signed on January 22, 1886, by Mr. T. A. Matthews, of Bolton, for the work, at a cost of 23,319*l*. Since that date Mr. Matthews has pushed forward his preparatory works with much energy, a considerable number of blocks having been already made ready for use. It is expected that the quantity of land reclaimed from the sea will exceed three acres, and will allow of a promenade 18 feet above high-water mark, with a promenade on the surface nearly three-quarters of a mile long, and varying in width from 20 feet to 130 feet. Mr. H. Main is the engineer.

AN ARCHITECT-BUILDER.

A CASE was tried at the Devon Assizes which suggests the risks of combining building with architecture. The plaintiff, Mr. W. B. Sivell, was formerly an architect and builder, but did not practise, and lived on a small property at Lympstone. The defendant, Mr. W. H. Peters, was a magistrate, and resided at Harefield. In the early part of 1884 the defendant thought it would be well to pull down a building at Lympstone known as the New Inn, and in its place put up some modern cottages. What he was going to do was talked about, and Mr. Sivell, although retired from business, taking an interest in the place, caused it to be brought to the knowledge of the defendant that he would be prepared to supply him with a sketch elevation of some very pretty cottages. Mr. Peters came and talked with plaintiff about the matter. Defendant said he could not think of accepting plaintiff's services gratuitously, but he should be glad if plaintiff would return to his old pursuits and act as

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

architect on the usual terms. Plaintiff found that as soon as Mr. Peters got one scheme he wanted another. First, the ground was prepared for six cottages, then it was altered and arranged for seven; but when the advertisements for the cottages appeared it transpired that there were to be nine cottages. Only two tenders were sent—one for 1,266*l.* and the other for 1,300*l.* Mr. Peters thought that too much, and suggested that the contract should be cut down, and that plaintiff should take it himself. Nine cottages at 1,200*l.* would come to about 140*l.* apiece, but the contract was brought down to 117*l.* each. An agreement was drawn up, which the architects and surveyors employed said they could not construe. By that agreement plaintiff undertook to put up nine cottages, "as per plans and specifications, on the site of the New Inn, lessening the cost of the materials, &c., consistently with necessary requirements," for the sum of 1,050*l.* Three days afterwards Mr. Sivell set to work, and on October 12 he commenced building the nine cottages. Mr. Peters took great interest in the work, and suggested first one alteration and then another, and at last was told that if he did all this he would entirely break the contract. The defendant had pressed bricks substituted for common ones, had hollow walls built to keep out the wet, had some of the rooms enlarged, and in two cases had additional rooms built. In the autumn of 1884 defendant also told Mr. Sivell to buy Kenwood's Cottages and rebuild them. About this time Mr. Peters had the misfortune to lose his wife, and he thought it would be a nice thing to erect a memorial tower to her among these cottages. Mr. Sivell gave him a rough estimate of the cost, which he put at 350*l.* He was told to go on with the tower and four cottages, but Mr. Peters subsequently came down, said the cottages were too cramped, and that instead of four cottages there should be three. He subsequently added a clock and clock chamber to the tower, and after that he added a look-out room for the fishermen. Mr. Peters went abroad for some time, and on his return home Mr. Sivell drew up a rough statement of accounts, and put down the sums originally agreed upon, but he did not put down any extras, as the work was still going on. Afterwards they could not agree as to the extras. Mr. Peters offered 200*l.*, which was refused by the plaintiff, who, however, accepted 150*l.* on account, and expressed himself ready to abide by the decision of any two surveyors and an umpire. The plaintiff had actually paid 2,335*l.* on account of these buildings, and had only been paid 2,000*l.* He claimed 2,928*l.* 14*s.* 10*d.*, leaving a balance of 928*l.* 14*s.* 10*d.* unpaid. Alternatively he claimed, if the work was not to be valued according to measurement and value, but according to various extras, 475*l.* 15*s.* 7*d.*

Mr. Justice Manisty said he thought it was hopeless to attempt the trial of such a case, and by his lordship's direction the jury were discharged, and the case was directed to go to arbitration, the costs to remain with the arbitrator.

MODEL OF JEDBURGH ABBEY.

THE model of Jedburgh Abbey by Mr. George Aitken has been now sent off to the International Exhibition, Edinburgh. Great care has been taken to make the model as perfect as possible in all its details, and the work has been successfully accomplished. Every portion of the old fabric has been faithfully reproduced, from the elegant clustered pillars and moulded arches of the nave, and the massive tower with its grotesque figures and decorated balustrade, to the broken walls and arches of the aisles, the dilapidated arcades, and the canopied niches, long since deprived of their sacred images.

THE MOSAIC WORKS OF MESSRS. BURKE & CO. IN PARIS.

ENGLISH visitors to Paris who can take an interest in an effort by a firm of their countrymen to gain a position in the French capital, and in a line where the competition is exacting, would do well to visit the workshops of Messrs. Burke & Co., the mosaic workers of Newman Street. They will be found at the corner of the Rue St.-Luc, which is quite close to the outer boulevard, and within a few minutes' walk of the Northern railway station. That part of Paris, forming as it does the district of La Chapelle, was at one time supposed to be outside the area set forth for a tourist's inspection; but the city has grown since then, and the guide-books have to be more comprehensive. Bædeker, for example, recommends a visit to the church of St.-Bernard, erected in 1861 from the designs of M. Magne, which is a good example of modern French Gothic. It stands opposite the gate of Messrs. Burke's works. The district occupies the east side of the hill of Montmartre, and the character of the ground is evident from the way in which the streets are laid out. But the place is easily accessible from all parts of Paris, and one of the lines of tramway runs quite

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER 700 ENGRAVINGS OF DIFFERENT PERIODS, AND NOTICES.

BY PAUL ROUAIX.

NEW EDITION. Price, Single Volume, 5*s.*; Complete Series, 12 Volumes (by Subscription), £2 8*s.*

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

LONDON: GILBERT WOOD & CO., 175 STRAND.

close. A visitor will find much to compensate him for the journey, even if his hotel should be at the left side of the river.

The mosaic works are capacious and, it is needless to say, are well lighted. In the basement is the machinery which is employed for sawing marble slabs into thin sheets, which are afterwards cut up into tesseræ for pavements. A good deal of care has to be taken with this operation. It is necessary to have several cutters at work simultaneously, and the degree of force and motion must be regulated according to the quality of the material. The slightest jarring might destroy a valuable slab. The machine which we saw got through the work apparently with as much ease as a steam loom, although the marble was exceedingly close grained and hard.

The material obtained in this way is only intended for pavements or other work which has to be produced cheaply, and in which no attempt is made to produce a definite pattern. But so long as the marble employed is of good quality, pavements of the kind are not only well adapted for wear, but have an agreeable appearance. It is supposed very often that mosaic of this class is made up of mere chips of marble which are left from more important work. Some of the old Italian pavements have been produced in that way, and they must have needed an enormous amount of rubbing-down before a flat face was secured. In Messrs. Burke's pavements of the simplest class there is nothing that can be called *débris*. The fragments of marble are, as we have said, obtained from large blocks, and, from the uniformity of thickness which is a consequence of machine-cutting, there is not only a level surface, but, from the perfection of the bedding, there is a longer duration than is possible with any other mode of production.

It is not necessary to describe the process of forming a mosaic. There are, as in weaving, different methods of procedure, but they all resolve themselves into one. A coloured drawing has to be made, and the mosaicist, by means of infinite patience, has to imitate it by adding one little tessera to another. It is not a kind of work on which expedition is desirable. If men work in a hurry, as has to be done whenever a very low price is accepted, there must be either a want of delicacy in the graduation of the tones or the blocks will not be put well together. We have seen mosaics of this class which are no more than caricatures of the art. It should also be remembered that in mosaic there is at all times a difficulty in insuring an approach to the contours that are easily produced by the brush or pencil. It is only practicable when skilful hands are employed and sufficient time is given to them for fitting the cubes. The glory of mosaic is that it can withstand the influences of time better than sculpture and far better than painting; but if the mosaicist is compelled to drop a certain number of tesseræ every day, in order to gain a living, he cannot afford to think much about the endurance of what he is doing. Contractors and others may say that mosaic bears a resemblance to type-setting, and that a compositor works under similar conditions of relation between wages and the quantity of separate types that are taken up and set down in a day. But the compositor is not engaged in making a picture which depends for success on the harmony between the multitude of particles.

The Italians employed in Messrs. Burke's ateliers appear to be all picked artists, and when we visited their rooms we can testify that their work in all its stages was marked by very great care. Mosaics for churches, public and private buildings were in course of production, and we could observe no sign of the slip-shod manner of production which is more out of place with mosaic than with any of the industrial arts. The director of the works in the Rue St.-Luc is a master of the craft, who is eager to produce mosaics that will be worthy of the name.

Under the circumstances, it is certain that Messrs. Burke & Co. will attract a still larger amount of patronage from French architects than they have gained. Their work will sustain all the tests that are necessary. It has accuracy, fine colour, and durability. Mosaic is often used as a means of decoration throughout France, and Messrs. Burke, from the quality of their work, must overcome any prejudice which might exist against foreign contractors. The enterprise which is seen in the establishment of works of the kind is entitled to the commendation of everybody in England; for if British trade is to regain its position it will be only by showing readiness to compete with rivals on their own ground.

Messrs. Burke were instructed by the architect for the Palace of Justice, at Brussels, to submit a design for a mosaic panel to be placed over the entrance door to the Tribunal of Commerce. The design was accepted, and the full-size cartoon was prepared by an English artist, which says much for the appreciation by foreigners of artistic progress in England. The mosaic was prepared at Messrs. Burke's factory in Paris, and fixed by their Italian workmen. In the factory at Paris there are only Italians. The manager is an Italian, yet the owner is an Englishman, and the locale France.

THE BRITISH DINNER COMPANY, LIMITED.

Incorporated under the Companies' Acts, 1862 to 1883, whereby the liability of each Shareholder is limited to the amount of his Share.

CAPITAL £25,000, divided into 25,000 Shares of £1 each,

Payable 2s. per Share on Application and 8s. per Share on Allotment, after which further calls will be made as required for the development of the business. It shall be optional, however, for Shareholders to pay up in full at a reduction of 5 per cent. Where no Allotment is made the application money will be returned in full.

DIRECTORS.

CHARLES REEVE, Esq., 177 New Bond Street, London, W., Chairman.
S. WILKINS, Esq., 1 Vincent Terrace, London, N.
J. G. LYLE, Esq. (Messrs. James Lyle & Co.), 57 Bishopsgate Street Within, London, E.C.
Captain Sir ATWELL KING LAKE, Bart., 39 Carlton Hill, London, N.W.
C. J. NASMYTH, Esq., 65 Regent Street, London, W.

BANKERS.—The London and County Bank, Limited, 325 High Holborn, London, W.C.

SOLICITOR.—ARTHUR TOOVEY, Esq., 18 Orchard Street, Portman Square, London, W.
GENERAL MANAGER.—Mr. EMANUEL DURET.
AUDITOR.—HENRY NORMAN HOLE, Esq., Bond Court House, Walbrook, London, E.C.
SECRETARY.—EUSTACE A. S. HOUNSELL.
TEMPORARY OFFICES.—15, 16, 17 The Outer Temple; 222-5 Strand, London, W.C. (opposite the Royal Courts of Justice).

This Company has been formed for the purpose of establishing Depôts over the Metropolis and elsewhere to supply good, wholesome, nutritious, well-cooked food suitable for working classes and others of small means at the lowest possible cost.

On the Continent and in Scotland there are numerous establishments where substantial dinners, at low prices, are provided for the people, yielding handsome dividends to the Shareholders.

Good meat dinners, with portions of potatoes, and a second vegetable—turnips, cabbage, or other seasonable kind—and a first course of either good soup or fish and bread, can be supplied for sixpence, and yield a profit equal to 25 per cent., which is proved to demonstration in Glasgow, where similar food is supplied with a good profit at even a lower price.

It is a well-known fact that New Zealand mutton and American beef (both of first quality) can be bought on the London markets at prices ranging from 4½*d.* to 5*d.*, and 5*d.* to 5½*d.* per lb. respectively, both of which are served daily in first-class London restaurants as "prime Scotch or English meat."

All the food will be of good quality, and carefully prepared, so that the nutritive properties are retained. Families will find this the best opportunity for obtaining ready-cooked dinners at less cost than they could be prepared at home.

The Directors have secured the services for five years of Mr. Emanuel Duret as General Manager at a nominal salary and commission, *pro rata*, after the Shareholders *first receive* dividends of not less than 5 per cent. Mr. Duret has had great and varied experience, and has made the matter of "cheap food for the million" his special study for over a quarter of a century, practically and theoretically, both on the Continent and in England. He has had the greatest and most varied experiences as Manager and Caterer. He is thoroughly conversant with the management of large establishments, and well acquainted with the best markets for meat, fish, provisions, &c.

1. He managed the St. James's Hall Restaurant, Regent Street and Piccadilly.
2. Was Contractor and Caterer to the Admiralty.
3. The Directors of the North-Eastern Railway Company selected him out of about 300 candidates, and appointed him Manager of their Hotel and Refreshment Rooms at York, which he opened and conducted to the entire satisfaction of the Board.
4. He was Proprietor and Manager of the Manor House Hotel at Leamington, and holds the highest and most complimentary testimonials from those by whom he was employed, as well as from the Speaker of the House of Commons, the Earl of Camperdown, and many other distinguished noblemen and gentlemen, testifying in the strongest terms to his great ability, courtesy, and efficiency as a public caterer.

The philanthropist and economist combine when placing a cheap, nutritious, palatable meal within the reach of the working-man at a fair profit. It has been statistically proved that a working-man spends about

60	per cent.	of his wages in	Food.
15	,,	,,	Rent.
10 to 12	,,	,,	Clothing.
13 to 15	,,	,,	Gas, coals, rates, taxes, education, &c.

This enormous expenditure of 60 per cent. shows that food ranks first amongst the necessaries of life, and that the claims for food assert themselves before all others; therefore the question of a thorough food reform is of much more importance than the question of housing, and deserves the greatest attention on the part of the public. If a working man were provided with a house, rent free, the effect would only be a saving of 15 per cent., but a rational food reform would save him 30 per cent., or twice as much as the whole of his house rent.

It is well known that one of the most successful private commercial undertakings in London is Lockhart's Cocoa Rooms, now established all over London and throughout the large provincial cities and towns. The trade, however, is confined principally to tea, coffee, cocoa, cakes, &c.

The Aerated Bread Company (Limited) also supply tea, coffee, cocoa, bread, butter, cakes, eggs, and some cold or preserved meats, and, like Lockhart's, they have, and are continually opening depôts all over the metropolis, paying steadily increasing dividends, and the shares consequently are at very high premiums.

The British Dinner Company (Limited) intends to supply not only what can be obtained at the before-mentioned establishments, but also what a working man requires most—namely, a substantial dinner, consisting of a basin of good soup or fish, a plate of meat, and a portion of both potatoes and another vegetable and bread, for sixpence, well prepared; a comfortable room, tables scrupulously clean, with good and prompt attendance.

This Company will buy meat, vegetables, tea, coffee, and all other provisions in large quantities for cash, obtaining them at very much lower prices than private individuals. It is contemplated to buy provisions, potatoes, cabbages, turnips, onions, and eggs direct from the farmers, thus saving all intermediate profits.

The only contract that has been entered into is made between the Temple Syndicate and Mr. Eustace A. S. Hounsell as Trustee for and on behalf of the Company, whereby the Syndicate contracts to pay all Rent of Offices, Salaries of Secretaries and Clerks, Printing, Stationery, Postages, Advertising, and all Costs and Expenses incidental to the registration, formation and floating of the Company generally up to the date of allotment of Shares for the sum of £750 and 750 fully paid Shares in the Company.

Prospectuses and Forms of Application may be had of the Bankers, or at the offices of the Company. The agreement above referred to and the Memorandum and Articles of Association may be seen at the offices of the Company.

Applications for Shares may be made to the Bankers, or to the Secretary. All cheques should be crossed with the name of the Company's Bankers, and made payable to the Secretary.

MESSRS. DOULTON'S EXHIBITS.

There is so much of Indian and Colonial work to be seen at South Kensington, visitors are likely to overlook what has been done by Messrs. Doulton & Co. towards the embellishment of the building. Their work is well deserving of attention from its beauty and novelty.

The whole of the west wall opposite the turnstiles from Exhibition Road into the main entrance hall is faced with slabs of terra-cotta painted in the impasto process recently introduced by the firm. This process may be described as a "new departure" in ceramic decoration, the paintings being executed in coloured clays, which become incorporated with the body of the ware in the subsequent firing and glazing. The joints in these panels are made to follow the outlines or leading lines of the design, as in stained glass; and as pieces of large area can be safely used, the total number of joints in a panel of any given size is considerably reduced. Not only, therefore, is the labour of fixing less than in ordinary tile panels, but the unsightly straight jointing is altogether avoided. As compared to the usual style of painting on tiles, the impasto painting is much richer in effect, and admits of much bolder treatment and broader methods of workmanship than have hitherto been possible in permanent wall decoration.

The subjects of the panels are as follows:—Of the three lunettes (each nearly 7 feet high by 10 feet wide) above the archways, the left hand one is typical of India's native art, and represents an Indian potter working at his wheel, while a native woman is decorating the ware. The centre panel is typical of Great Britain, as represented in her manufacturing industries; the figures are those of an engineer and blacksmith. The right-hand lunette represents Australasia, as typified by a gold-miner and a farmer. The large panels on either side are typical of East and West, in allusion to the wide extent of the British Empire—the East as seen in its gorgeously plumaged peacocks and wealth of floral beauty, its marble palaces and temples glistening beneath the brilliant sky, and the West as showing in sterner aspect a family of eagles in their eyrie on some mountain peak. These two panels are each over 16 feet high by 7½ feet wide, and are probably the largest paintings ever yet executed in ceramic ware.

Between the archways are pilaster panels of conventional ornament, and above and below a frieze and dado all in coloured terra-cotta. The decorations of this wall were designed by Mr. John Eyre.

In the garden adjoining the Durbar Hall, and not far from Mr. Rowland Ward's trophy, is the façade (nearly 200 feet long) of the Indian Tea House. The construction is of wood, into which is framed a series of terra-cotta panels painted in rich tones of permanent coloured glazes. The models for the panels were executed by the Indian carvers, Jumma and Mohammed Baksh, under the superintendence of Mr. C. Purdon Clarke, from whose designs the Indian Palace has been erected. Let into the floor of the Durbar Hall is a fountain of glazed terra-cotta, a facsimile both in colour and design of an old fountain in the Mogul style.

In the West India Court is a fountain in Doulton ware, designed by Mr. George Tinworth, which is generally surrounded by a crowd, and it is to be feared is not recognised as the production of a London firm. This fountain was first exhibited at the Paris Exhibition of 1878. The various subjects which compose the pyramidal column of this work are selected from Scripture history, and have reference to water either in its natural aspects or artificial uses.

Messrs. Doulton & Co. have also supplied the whole of the sanitary and lavatory arrangements and fittings to H.R.H. the Prince of Wales's apartments, to the board-room, to the offices throughout the exhibition buildings, and for the use of the native Indian workmen engaged in the bazaar; also the fireplaces and mantelpieces in glazed pottery for the committee-room, secretary's office, and various other offices, and the patent silicon-ware treads to the nosings of stone steps at main entrance in central gallery and flight of steps adjoining Old London, &c. Some of these silicon treads have been in position during the former exhibitions on this spot, and notwithstanding the enormous traffic, show no signs of wear.

Messrs. Doulton & Co. have also contributed to the success of the other exhibitions which are now open in the provinces. In the grand hall of Edinburgh they have a large exhibit of their art pottery in its various forms, and in the central court they have a collection of pottery for domestic and manufacturing purposes. In Liverpool the Doulton trophy is placed under the dome in the central avenue. It consists of a pavilion about 30 feet by 30 feet, with four porches, surmounted by an octagonal dome of glazed tiles, with large ball of glazed terra-cotta above all, the lower portion being ornamented with Doulton-ware arches, columns, balustrades, &c. In the interiors are represented in four distinct sections, drawing-room, dining-room, boudoir, and library, each being fitted with appropriate fireplaces and

M. C. DUFFY & SON'S Improved and Perfectly "Immovable Acme" System of
WOOD BLOCK FLOORING

(W. DUFFY'S PATENT)
OBTAINED THE
HIGHEST AWARDS
AT ALL THE
International
Exhibitions, 1885.

SUITABLE FOR
Churches, Schools,
Warehouses, Basements,
Railway Station Booking
Offices and Platforms,
Mansions, Hospitals, Banks,
AND
Public Buildings Generally.



PRICES and full PARTICULARS on application to the Manufacturers,
M. C. DUFFY & SON,
At their Chief Office,
66 STORKS ROAD, S.E.
ALSO AT
GLASSHOUSE STREET,
Albert Embankment, S.E.
UNION ROAD,
Rotherhithe, S.E.;
STATION ROAD,
Spa Road, S.E.;
VAUXHALL WALK, S.E.;
AND AT
GREAT YARMOUTH.

THE IMPERIAL HAND GRENADE
FIRE EXTINGUISHER.

Their Royal Highnesses the Prince and Princess of Wales and Suite witnessed a Practical Experiment in Fire Extinguishment at Norwich, during the Royal Agricultural Society Show, July 14, 1886.

"The fire extinguisher displayed in presence of the Royal party and a large company was the Imperial Hand Grenade, and the trial was conducted in a meadow next Trowse Church, under the direction of Mr. T. H. Tilton and Mr. Alfred Barnard (of Barnard, Bishop & Barnards, who are wholesale agents for the East of England). The experiments were a thorough success. A wooden chimney 14 feet in height was ignited, and the flames shot up quite 10 feet beyond; a large structure representing the section of a house and a smaller structure were also set on fire, and all were instantaneously extinguished by four grenades. The Prince and Princess both expressed their surprise and pleasure at the efficacy of this novelty in quickly putting out fire, and ordered that several might be sent on to Sandringham. The Royal party then moved off amid the cheers of the crowd."—*The Norfolk Chronicle and Norwich Gazette*, July 15, 1886.

BARNARD, BISHOP & BARNARDS,
WHOLESALE and RETAIL AGENTS, 91, 93 & 95 Queen Victoria St., E.C.; and Norwich.

ART PLATES FROM "THE ARCHITECT."

Gold Medal, International Health Exhibition.

Proof Impressions of the following Illustrations which have appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing.

THE MARTYRDOM OF ST. STEPHEN.

AWARDED THE GOLD MEDAL AT THE INTERNATIONAL HEALTH EXHIBITION.

By E. J. POYNTER, R.A.

Size, Forty Inches by Fifteen Inches. Price One Shilling. Free by post, carefully packed inside patent roller, One Shilling and Threepence.

CROWNING OF CHARLEMAGNE.

By M. HENRI-LÉOPOLD LÉVY.

WALL PAINTING IN THE PANTHÉON, PARIS.

Size, Forty Inches by Twenty-two Inches.

Price One Shilling. Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE REVERIE OF ALBERT DÜRER.

By J. JACOB.

Size, Thirty-four Inches by Twenty-five Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

WALL PAINTINGS

IN THE MAIRIE OF THE THIRTEENTH ARRONDISSEMENT, PARIS.

By M. BOULANGER, Membre de l'Institut.

Printed in Blue or Brown.

1.—THE UNION OF THE ARTS.
2.—LEARN, LOVE, LABOUR.

Size, each Forty Inches by Twenty Inches.

3.—PRO PATRIA.

Size, Twenty Inches by Twenty Inches.

Price the set of three, Two Shillings and Sixpence, or One Shilling each.
Free by post, carefully packed inside patent roller, Two Shillings and Ninepence.
Ditto, Single Copy, One Shilling and Threepence.

THE WATCHER.

By CHARLES SPRAGUE PEARCE.

Size, Eighteen and a Half Inches by Thirteen and a Half Inches.
Price Sixpence.
Free by post, carefully packed inside patent roller, Eightpence.

PANELS.

By M. PAUL ALBERT BAUDOIN.

No. 1.	No. 2.
1. Dramatic Music.	1. Orpheus.
2. Heroic Music.	2. Pastoral Music.
3. Symphony.	3. The Dance.
4. The Ballad.	4. Melody.

Size, Thirteen and a Half Inches by Eighteen and a Half Inches.

Price the Pair, One Shilling and Sixpence.
Free by post, carefully packed inside patent roller, One Shilling and Ninepence.

DEPARTURE OF CRUSADERS FOR THE HOLY LAND.

By G. GUFFENS.

Size, Thirty-six Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

STUDIES.

By M. LECOMTE DU NOUY.

Size, Fifteen Inches by Twenty Inches.
Price Sixpence.
Free by post, carefully packed inside patent roller, Eightpence.

THE BARD.

Facsimile of Cartoon by Prof. Maillart.

Size, Thirty-six Inches by Twenty-two Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

PANELS.

By M. P. MILLIET.

No. 1.	No. 2.
1. Music.	1. The Dance.
2. Tragedy.	2. Lyric Poetry.

Size, Eighteen and a Half Inches by Thirteen and a Half Inches.

Price the Pair, One Shilling.

Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE BANQUET.

The well-known and beautiful Chromo-lithograph

By H. STACY MARKS, R.A.

Size, Thirty-nine Inches by Fifteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

FIESCHI THE CONSPIRATOR. TASSO AND THE PRINCESS.

From Paintings by

Signor BARZAGHI CATTANEO.

Each Eighteen and a Half Inches by Thirteen and a Half Inches.
Price the Pair, One Shilling and Sixpence.
Free by post, carefully packed inside patent roller, One Shilling and Ninepence.
Single Copies, One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

HARMONY WELCOMING THE NATIONS.

By M. CHARLES JOSEPH LAMEIRE.

Size, Thirty-six Inches by Thirteen and a Half Inches.
Price Sixpence.
Free by post, carefully packed inside patent roller, Eightpence.

THE FLITCH OF BACON.

By THOMAS STOTHARD, R.A.

Size, Forty Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside paten roller, One Shilling and Threepence.

THE CANTERBURY PILGRIMS

By THOMAS STOTHARD, R.A.

Size, Forty Inches by Sixteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE REVENGE OF ATHALIE.

By XAVIER SIGALON.

Size, Thirty-two Inches by Twenty-one Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

May be obtained from all Newsagents or Booksellers, or from the

Publishers, GILBERT WOOD & CO., 175 Strand, London, W.C.

stoves, all of pottery, and on slow-combustion principles; on the walls are landscapes in tiles, and around are placed various ornaments for mantelpieces, cabinets, &c., in the choicest art wares. An entirely new feature is the painted glass introduced in the entrances to the pavilion, consisting of designs in floral and other decorations, with appropriate borders. Most of them are done on cathedral glass by a new process patented by Messrs. Doulton, and are most effective both in colouring and design, while from the simple manner of manufacture really good artistic designs are very reasonably produced. The exterior of the trophy is ornamented with some excellent tile panels. Those on the south side represent Stephenson and Watt, and those on the north Liverpool past and present, the former being the paddle steamship, the *Royal William*, the first steam vessel that sailed from the Mersey for New York, about fifty years ago, and the latter, the *Umbria*, the last new screw Cunard liner. The trophy, with the stands at the angles, was designed by Mr. A. E. Pearce. The Doulton screen, which is 80 feet long and 25 feet high, is also in the exhibition.

At Folkestone is exhibited the dramatic panel modelled by Mr. Tinworth, called *The Preparation for the Crucifixion*, which is a marvel for design and execution.

MONKS' PARK STONE.

THE following letter on the litigation in respect of Monks' Park stone arrived too late for insertion last week :—

SIR,—The notice of this case in your last issue was, I presume, communicated to you by the defendants or their agents, and, as the result of the hearing before Vice-Chancellor Bacon in July last was at the time largely circulated amongst architects and builders by means of slips sent out by the defendants, it seems hardly necessary for them now to publish in newspapers a revised edition of the Vice-Chancellor's judgment; but as they have done so, I may in fairness ask you to insert in your widely-circulated newspaper the following brief statement.

In the year 1877 I took a lease, granted by Sir G. Goldney, Bart., of thirty-six acres of stone lying under the park in which Monks' House, in the parish of Corsham, is situated, and found valuable stone. I sold the stone to a large extent under the name of Monks' Park stone, and in the year 1882 registered a trade-mark under the Act of 1875, with the name "Monks' Park" as the description of stone from my particular quarry, thinking thereby to prevent the use of this name by any other quarry-master who might after that date raise stone from the other parts of the Monks' Park estate.

In April, 1883, I for the first time saw by an advertisement in the *Stonemason* that the defendants were offering Monks' Park stone for sale. I remonstrated with them against the use by them of the term "Monks' Park" as a description of their stone, and they ceased to advertise it in newspapers under that or any similar name, but as they allege continued to advertise it by the circulation in the trade of slips and pamphlets under the name of "Pictor's Monks' Park."

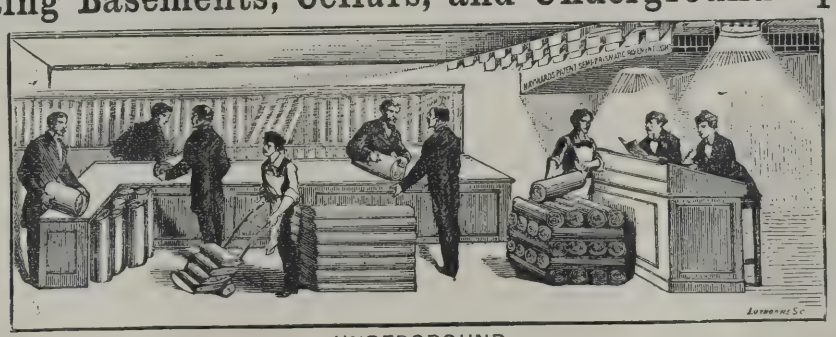
This "slip" and "pamphlet" advertisement the learned Vice-Chancellor was certainly convinced, at the hearing of the motion, had come to my knowledge at the time or immediately after the ceasing of the defendants' advertisement in the *Stonemason*; but, as a matter of fact, I had no knowledge of the defendants' "slip" advertisement until shortly before I applied to the Vice-Chancellor; and as the defendants in their defence partly relied upon laches on my part for not having followed up my remonstrance in 1883 against their use of the name, probably, had I been in possession of this valuable information, the result to the defendants might have been different.

The defendants' advertisement in 1883 was concurrent with their opening a quarry on the Monks' Park Estate—not under the park in which Monks' House is situated, but under a farm known locally as "Boyd's Farm"—and the sale by them of the stone from that quarry under the name of "Pictor's Monks' Park stone."

I took proceedings against defendants for the purposes set out in their revised edition, with the result of the injunction being refused. The question as to documents merely arose out of the form of defendants' affidavit, and had nothing to do with the main question between me and the defendants. If it was proved, as stated in the "revised edition" of the case, that the stone from my quarry in "Monks' Park" and the stone from defendants' quarry at "Boyd's" was of the same kind and quality, being of the same bed, I can only ask architects and builders, before they determine this question, not to rely implicitly upon the opinion of Vice-Chancellor Bacon as to the quality of the respective stones, but to inspect the two quarries and judge for themselves before they select Bath stone to be used in valuable buildings.

I need hardly assure you that I will give every facility in my

HAYWARD'S PATENT
"SEMI-PRISM" PAVEMENT LIGHTS
For Lighting Basements, Cellars, and Underground Apartments.



UNDERGROUND.
Basements can be made valuable Business Premises by using Hayward's Patent "Semi-Prism" Pavement Lights.

REDUCTION IN PRICES.
5,000 FRAMES, OR STOCK SIZES, ALWAYS ON HAND.
Illustrated Price Lists and Estimates on application.
HAYWARD BROS. & ECKSTEIN,
Patent Pavement Light Works,
WORKS: UNION STREET, BOROUGH, LONDON, S.E.

power towards an inspection of my Monks' Park quarry at Corsham.—I am, Sir, your obedient servant,

Bath, July 28, 1886. I. SUMSION.

THE CONVALESCENT HOSPITAL, DARENTH.

A MEETING of the Metropolitan Asylums Board, the last prior to the vacation, was held on Saturday.

Captain Douglas Galton, for the general purposes committee, brought up a report upon the subject of the establishment of a hospital for convalescing smallpox patients at Darenth. The question under discussion was whether the provision to be made on the Darenth site for future epidemics should be in the form of huts or brick buildings, this question having been raised by the Local Government Board. The committee remarked that the central authority did not give an authoritative decision on the question they had raised, but confined themselves to suggesting certain points for the consideration of the Asylums Board. They based these suggestions upon the assumption that the construction of smallpox hospitals, and the number of patients whom it might be desirable to treat under one administration, were so far undecided as to render it inexpedient to expend a larger sum than was absolutely necessary on structures which further experience might show were not wholly suited to their purpose. The committee concurred in this view, but considered that the plan they were proceeding on did limit the expenditure, and was the most economical they could adopt, having regard to the efficiency of the service and to the necessity of providing for recurring epidemics. The committee stated that for various considerations, as well as on financial grounds, they were decidedly of opinion that it was not expedient, in the interests either of the patients or of the ratepayers, to depart from the plans which had been adopted after most careful consideration, both on the part of the managers and on the part of the Local Government Board, and which received the approval of that Board.

Captain Douglas Galton proposed the adoption of the recommendations. He maintained that brick buildings should be erected for the hospital on several grounds, the chief of them being that wooden huts presented a great danger from liability to fire; that they were more difficult to keep at an even and a good temperature, and were liable to become saturated with infection, while they would involve a considerable proportion of the sum of 116,000*l.* required for the building of brick huts. He concluded by moving, "That a copy of so much of the committee's report as relates to the Gore Farm Hospital be transmitted to the Local Government Board, in reply to their letter of the 4th ultimo, with an intimation that the managers concur in the various conclusions at which the Gore Farm Committee and the General Purposes Committee have arrived, and with a request that the Local Government Board will at once issue the order promised in their letter of July 12, 1884, authorising the managers to expend and raise on loan the sum of 116,000*l.*, being the amount which it is estimated will be required for the erection of the proposed Hospital for Convalescing Smallpox Patients on the managers' estate at Darenth."

Mr. Davis moved that the consideration of the entire question should be deferred for twelve months.

The Board rejected a proposal to adjourn the discussion, and eventually, upon a division, the managers rejected the amendment by 26 to 13, and the recommendations of the committee were agreed to.

THE LIVERPOOL AND BIRKENHEAD DOCKS AND WAREHOUSES.

AT the recent meeting of the Institution of Naval Architects a paper was read by Mr. G. F. Lyster, engineer to the Mersey Docks Estate, in the course of which he gave the subjoined description of the works lately executed:—

The last important Works Act was that obtained in 1873, at which time, owing to the rapid increase in the size and tonnage of steamships, it had become necessary that special dock provision should be made to meet the requirements of the port in that direction. Very comprehensive systems of docks were then designed to meet these pressing wants, and Parliamentary powers were obtained to carry out the necessary works, which consisted of the development of the northern and southern ends of the estate, previously acquired and reclaimed from the foreshore for the purpose. The Parliamentary estimate for these schemes was 4,100,000*l.* The northern development, known as the "North-end scheme," comprised the extension of the Canada Basin and the lowering of the level of its floor, the formation of the Langton Half-tide Dock or entering vestibule into the main group, two graving docks, the Langton Branch Dock, the Alexandra Dock and its three branches, and the Hornby Dock. The total area of the wet docks provided by this exten-

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

HILL & HEY,
Inventors, Patentees, and Sole Makers of their Patent
"EXCELSIOR" Syphon and Outlet VENTILATORS,
For the Ventilation of Schools, Churches, Mission Rooms, Staircases of Residences, Stables, Billiard Rooms, &c.
WORKS, HALIFAX
SUCCESSORS TO THE
ORIGINAL "WATSON'S" VENTILATOR WORKS. ESTAB. 1852
Prices, Descriptive Pamphlets, Testimonials, &c., on application.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
☞ *Legal and Commercial Stationery.*

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered, price 12s. 6d.
Office: 175 Strand, London, W.C.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

Building Paper. LIGHT—STRONG—WATERPROOF. In 10 yard rolls, 40 in. wide, 2d. per yard. Sample roll, post free, 2/6. *Use under slate and tiles, under weather boarding, for temporary roofs, and as lining paper for damp walls.* For home and export.—EASTWOOD AND CO., LIMITED, Dealers in Building Materials, BELVEDERE ROAD, LONDON, S.E.
Chemical Papers Co.,

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market:—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

To Architects, Builders, Ironmongers, and the Building Trades generally.
BLAKEY'S PATENT
SELF-FIXING STEP PROTECTORS
Are Cheap, Elegant, & Durable.
ANY DESIGN MADE WITHOUT EXTRA COST.
Apply to the Patentee
JOHN BLAKEY, LADY LANE, LEEDS.
Or to any Ironmonger.

NOW READY.
J. & W. KIRKWOOD'S
NEW PATENT
SPRAY BATH.
Write to Leith for Particulars.

sion is 83 acres, and quayage 23,700 feet, while the length of floor of the two Langton Graving Docks is 1,900 feet. The estimate for this important section of the Parliamentary works amounted to 2,691,360*l.*, within which sum they have been carried out to completion. The greater part of the additional dock accommodation in this position was completed in 1881, and was opened for use by their Royal Highnesses the Prince and Princess of Wales on September 8 of that year. The works at the south end of the dock estate authorised by the Act of 1873, comprised the enlargement of the Herculaneum Dock, which had been built in 1868 with a special view to future extension, and the formation of a chain of docks to the northward terminating at the Brunswick Docks, and forming a complete development of the whole of the available estate in this position. The Herculaneum Dock and graving docks, and the Harrington Dock immediately to the north of the same, are finished and in full use, and the remaining docks of the group are rapidly approaching completion. The Parliamentary estimate for the South-end scheme was 1,408,640*l.*, within which they will be carried out.

In addition to the value accruing to the trade of the port by such a large and extensive increase of docks in a district of the city hitherto unprovided with this class of accommodation, it will have the further advantage of bringing some of the older docks into more prominent use than hitherto. I allude to that important group, including the Brunswick and other docks immediately to the north of it, the entrances to which are impeded by the Pluckington Bank, which extends for over a mile in length immediately in front of that portion of the estate, and forms a serious obstruction to its free working. The new South-end group will to a great extent neutralise this inconvenience by admitting vessels to enter the old dock through the new group by way of the river entrances at the Herculaneum. The total water area of the new docks at the north and south ends of the estate constructed under the Act of 1873 is 111 acres, equal to nearly half the acreage of the docks in existence previous to the date referred to. The total area of the existing dock estate at Liverpool is 1,078 acres, and the entire of this space is developed into basins, docks, quays, and premises worked in connection therewith. There are in all at Liverpool sixty docks and basins of the ordinary type, having a total water area of 368 acres, and twenty-five miles of quay berthing.

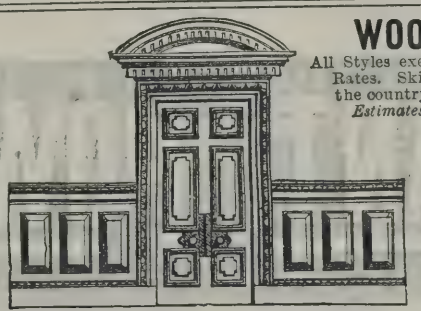
It now remains for me briefly to refer to the Birkenhead estate, which now forms an integral portion of the Liverpool estate, and is worked in complete unison therewith. The docks of which it consists are constructed on the site of a tidal creek called Wallasey Pool, which extended inland from the left bank of the river for about two miles, and which was formerly the outlet of the drainage of the lowlands of the Leasowes lying between the Dee and the Mersey. The original design for the undertaking was by the well-known and eminent engineer, the late Mr. James Meadows Rendel, F.R.S., who partially carried out the work. When in the hands of the projectors it mainly consisted of two large docks, called the East and West Float, with an aggregate area of about 120 acres, occupying a large proportion of the pool. Considerable alterations, however, were made in the design by the late Mr. John Bernard Hartley, when the docks became the property of the Board, though the East and West Floats, and also a great low-water basin and river entrances leading into smaller docks, still formed the leading features of his scheme. The connection between the docks and the river is by means of an extensive chain of docks, also a capacious half-tide dock with several locks, the sills of which are laid at a similar depth to those described for the Liverpool North-end scheme, and maintained by an extensive sluicing arrangement of a somewhat similar character. The total area of docks at Birkenhead is 164½ acres, with 9½ miles of quayage. There are also three graving docks at Birkenhead, opening from the West Float and capable of dealing with the largest class of vessels, their aggregate length being 2,430 feet. The several quays of the Birkenhead docks are surrounded by railways which are connected with the London and North-Western, Great Western, and Cheshire Lines systems, each of which have large stations upon the dock quays. On the acquisition by the Dock Board of the Birkenhead estate it became necessary to establish a means of interchanging the traffic between the two estates, and with this object in view extensive landing-stages were established by the Board on both sides of the river, alongside of which vessels of considerable size lie, on the lowest state of the tide. These stages are in communication with the quays of the river wall by means of hinged girder bridges for foot passengers and pontoon roadways for wheel traffic. The length of the Liverpool stage is 2,060 feet by a minimum width of 80 feet, and that at Woodside on the Cheshire bank of the river is 800 feet long and 80 feet wide. The passenger boats which ply between the several ferry stations on the river make use of these stages free of charge, and it is computed that no less than twenty-two million passengers annually cross to and fro.

TURPIN'S
PARQUET FLOOR,
JOINERY & WOOD
CARVING CO., LD.,
22 QUEEN'S ROAD,
BAYSWATER, LONDON, W.

PARQUET FLOORINGS.
150,000 ft. super. in Stock, ready for Laying.
RIGA INCH OAK FLOOR BOARDS,
Tongued and Grooved, VERY CHEAP.
Immense Stock always ready for Laying.



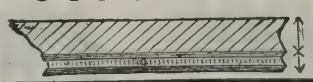
THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Constructio



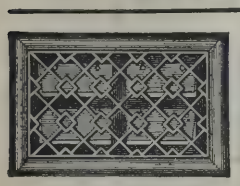
WOOD CARVINGS.
All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.
Estimates and Designs on Application.



ARTISTIC JOINERY.



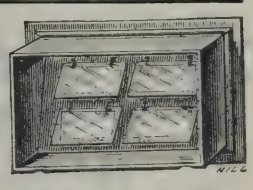
ORNAMENTAL PARQUET.
DEAL BACKING.



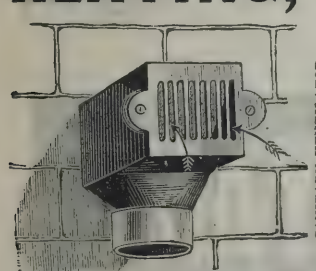
FRONT VIEW.

VENTILATION. Practical! Perfect! Natural!
(Thomas Boyle's Original Patent.)
COMYN CHING & CO., Sole Proprietors,
FOR PRIVATE HOUSES, PUBLIC HALLS, CHURCHES, SCHOOLS, SANITATION.

BACK VIEW.



HEATING, VENTILATING, & GAS ENGINEERS.
ALL SYSTEMS.
MANUFACTURING IRONMONGERS.
Special Manufacturers of Ornamental Brass Work of every Description.
PRICES AND ESTIMATES ON APPLICATION.



SANITARY VENTILATOR.

COMYN CHING & CO.,
54, 56, & 58 Castle Street, Long Acre, and 22 & 23 Little St. Andrew Street, London, W.C.



INLET VENTILATOR.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.—Office: 175 Strand, London, W.C.

The sheds in connection with the newer docks more especially are of a very commodious description, occupying generally a width of quay of 100 feet. The total area of sheds on the quays of the docks at Liverpool and Birkenhead is 104½ acres, exclusive of the warehouses. Very extensive blocks of warehouses were erected about twenty years ago for the accommodation of the grain trade at the Waterloo Dock, Liverpool, and the Great Float, Birkenhead. The aggregate floor area of both sets of warehouses is 23 acres, and they are equipped with elaborate machinery for facilitating the rapid discharge of ships, and for housing and delivering the grain into railway waggons, carts, or lighters. A main feature is the transfer of grain on bands, an arrangement which at the time these warehouses were erected was entirely novel, but which has since become the recognised means of transmitting grain not only in warehouses, but from ship to quay and in other situations. Other extensive warehouses for ordinary goods, also a special warehouse for the storage and manipulation of tobacco, in which there is a very large trade, have been erected in various positions along the estate. The total floor area of the warehouses on the dock estate amounts to 93 acres. The coal trade of the port is provided for at the Bramley-Moore and Wellington Docks, Liverpool, and at the Great Float, Birkenhead. At the former position an extensive arrangement of coal sidings has been provided at a level above that of the dock quays and having connection over the streets with the Lancashire and Yorkshire Railway, which is in direct communication with the Lancashire coalfields. This arrangement gives great facilities for this class of trade, as is evidenced by the fact that above 500,000 tons of coal are here annually dealt with. On the south quay of the Great Float, Birkenhead, an extensive group of sidings and coal hoists, working in connection with the coalfields in North and South Wales, have been constructed, and add materially to the trade of these docks, an average of over 1½ million tons of coal being annually brought into Birkenhead for export, and for the use of the steamships. The timber trade has its chief centre in the Canada and Brocklebank Docks, on the quays of which extensive yards are in the occupation of the trade. The import of live cattle from abroad is a trade which has of late years assumed large proportions, and very extensive lairages, together with the necessary slaughter-houses and other adjuncts, have been provided both at Liverpool and Birkenhead. The area appropriated to this purpose at Liverpool is two acres, and at Birkenhead sixteen acres. The northern part of the Woodside Stage, and the whole of the Wallasey Stage, 350 feet by 70 feet, are made use of for landing cattle, heavy boats being able to come alongside at all states of the tide. The petroleum trade becomes more and more important, and in laying out the quays of the southernmost dock (the Herculaneum), very secure petroleum stores were provided by excavations in the face of the rock on the east side of the dock. These stores and others on the north quay of the Great Float, Birkenhead, are now in full working order. The gross total area of the estate on both sides of the river amounts to 1,583¾ acres. This is subdivided into 532¾ acres of water space in the form of docks, half-tide docks, and basins, which are surrounded by thirty-four miles of quays, also sheds and warehouses having an aggregate floor area of 181½ acres, the remainder being laid out in streets and open quays, also in timber yards, shipbuilding yards, and other business premises necessary for the working of the port, with a small residue of partly undeveloped land. The total graving dock accommodation is comprised in twenty-four docks with an aggregate length of floor of 14,920 feet. The total number of ships which entered the port and paid tonnage rates in the year ending July 1, 1885, was 21,529, having a net tonnage of 8,571,454 tons. In this figure the capacity in or out only is represented, not both. The total revenue of the estate received from all sources during the same period was about 1½ millions sterling. The affairs of the dock trust are administered by a body named the Mersey Docks and Harbour Board, with a number of members fixed by Act of Parliament at twenty-eight, twenty-four of whom are elected by the dock ratepayers, the remaining four being nominee members appointed by the Government.

IMPROVEMENT OF THE LIFFEY.

THE improvements undertaken by the Dublin Port and Docks Board are making steady progress. The object is to give a uniform depth of 26 feet of water at low tide to vessels frequenting that side of the Liffey from the Ringsend Dock up to Butt Bridge—a stretch of dock on which vessels drawing not more than 6 feet have been left high and dry at low water for many a year past. Up to Lime Street the heaviest vessels can now come alongside the wharves, and in the course of another twelvemonths the whole line of southern quays from Ringsend to Butt Bridge will be as available for heavy shipping as is the deepest portion of the northern side.

BRYANT, POWIS & BRYANT LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.

Telephone: No. 586.

Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.

Telephone: No. 2,617.

Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT LIMITED,

ESTABLISHED 1838.

MARVIN'S
AMERICAN
FIRE & BURGLAR PROOF SAFES,

PATENT WELDED STEEL AND IRON,

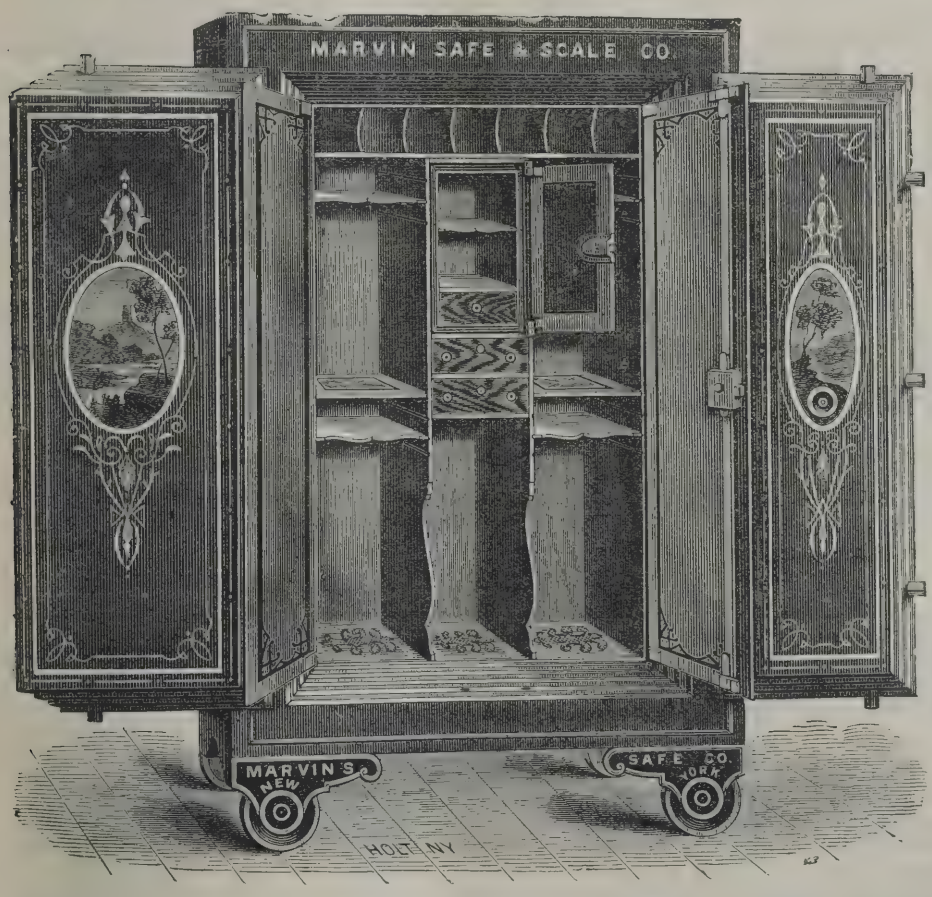
STRONG-ROOM DOORS & BANKERS' VAULTS,

NEW YORK, U.S.A., and LONDON, E.C.

BY SPECIAL APPOINTMENT

CONTRACTORS TO THE UNITED STATES GOVERNMENT TREASURY AND POST OFFICE.

FIRE AND BURGLAR PROOF SAFES.



Manufactured with the newly patented "Tongue and Groove" Improvement, "Forged Angle Frame with Sliding Back-plate," "Annealed Hinges," &c. &c. Body of heavy plate iron, secured by angle iron corners and welded refined iron frame and an entire inside iron lining.

Our new patterns give a greater thickness of Fire-proofing than in any other makes. Doors are fitted with round bolts and "Yale" Combination Lock of 1,000,000 changes. Inside doors are of plate-iron secured by suitable bolt work and key lock.

ABSOLUTELY PROOF

Against Blasting, Drilling, and Pick Lock.

Estimates and Designs furnished on application for all sizes and thickness of burglar proof vault doors; also for all styles of vault work.

Every description and style of Fire and burglar proof Safes for Merchants, Bankers, Jewellers, &c. Illustrated Catalogue, with full description, on application.

EUROPEAN BRANCH:

66 QUEEN STREET, CANNON STREET, LONDON, E.C.

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

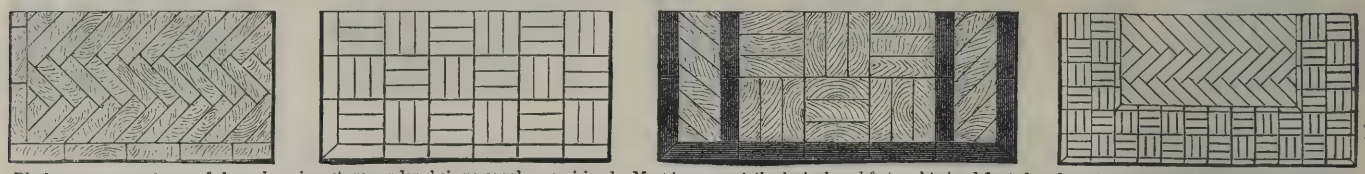
SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

No. 1. No. 2. PATTERNS. No. 3. No. 4.



Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS,

ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus

ESTABLISHED 1844.

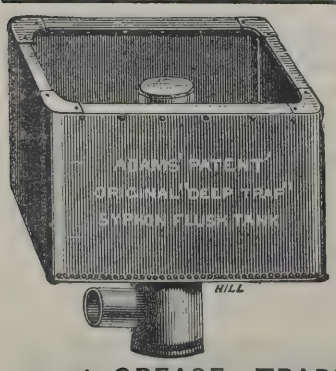
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to :—

BRISTOL ..... St. Philip's Marsh.
EXETER ..... Basin Head.
SOUTHSEA ..... Beaufort Road.
READING ..... Caversham Road.
DUBLIN ..... 14 St. Andrew's Street.
MANCHESTER ... 20 Cross Street.

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

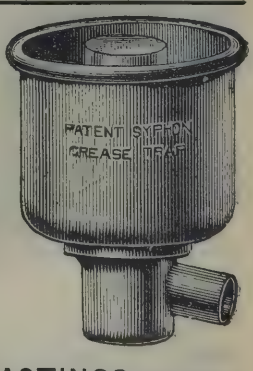


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
„ FLUSH SYPHONS for Sewer Flushing.
„ FLUSH LATRINES for Barracks, Schools, &c.
„ FLUSH URINALS „ „ „
„ TROUGH CLOSETS „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London
Friday, August 6, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, AUGUST 13, 1886.

Terms, Post Free.
SIX MONTHS, 10/-.
TWELVE MONTHS, 20/-.

SPECIAL NOTICE.

Price Fourpence.
EVERY FRIDAY.

On receipt of this Memorandum, signed, THE ARCHITECT AND CONTRACT REPORTER will be forwarded regularly.

To Messrs. GILBERT WOOD & CO., Proprietors of 188

The Architect and Contract Reporter,

175 STRAND, LONDON, W.C.

Please forward a Copy of THE ARCHITECT AND CONTRACT REPORTER weekly to

NAME. | ADDRESS.

THE ARCHITECT AND CONTRACT REPORTER.

ADVERTISEMENT SCALE.

For Two Lines and under	£0 2 6
For every Additional Line	0 0 6
For Quarter Page	2 10 0
For Half Page	4 10 0
For a Page	8 8 0

On pages preceding and following matter, special rates.
Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, at the *Office*, 175 *Strand, London W.C.*

COMPETITIONS OPEN.

HALIFAX.—Sept. 1.—Plans for proposed Board School are invited from Architects of the Town. Mr. Robert Ostler, Clerk to the School Board, Halifax.

LLANGEINOR.—Aug. 16.—Plans are invited for the Erection of Board Schools at Pontycymmer and Blaengarw, Garw Valley. Mr. N. Llewellyn, Clerk to the Llangeinor School Board.

MAIDSTONE.—Sept. 5.—Designs for the Erection of Girls' School are invited by the Governors of the Girls' Grammar School. Mr. H. Monckton, Town Clerk's Office, Maidstone.

CONTRACTS OPEN.

ABERGAVENNY.—Aug. 26.—For Construction of Iron Roof, Hydraulic Main Pipes, Ironwork for Retorts, and Sulphate Ammonia Apparatus. Mr. J. T. Rutherford, Clerk to the Improvement Commissioners, Town Hall, Abergavenny.

ALNWICK.—Aug. 16.—For Wooden Cart-Shed with Slated Roof. Mr. G. Wilson, Town Surveyor, Green Bat, Alnwick.

ASHTON-UNDER-LYNE.—For Extensions to Villa Residence. Messrs. T. D. & J. Lindley, Architects, Ashton-under-Lyne.

BANCHORY.—Aug. 21.—For Construction and Maintenance of 9¾ miles of Cast-iron Pipes (350 tons), with Two Concrete Reservoirs, Tanks, Valves, Hydrants, &c. Messrs. Jenkins & Marr, C.E., 16 Bridge Street, Aberdeen.

BEXHILL.—Aug. 18.—For Building Cottage Home at Cooden. Mr. J. B. Wall, Architect, 32 Walbrook, E.C.

BILLINGBOROUGH.—Aug. 16.—For Cleaning and Repairing Watercourses (North and South Becks), &c. Mr. W. Bundy, Billingborough.

BURTON-ON-TRENT.—Aug. 16.—For Laying Pipe Sewers, &c. Mr. James Mansergh, C.E., 3 Westminster Chambers, Victoria Street, S.W.

CARDIFF.—Aug. 21.—For Rebuilding Premises, St. Mary Street. Mr. J. P. Jones, Architect, 27 Park Street, Cardiff.

CARDIFF WATERWORKS.—Aug. 26.—For Construction of Reservoirs, Filters, Pipe Laying, &c. Mr. J. A. B. Williams, C.E., Queen's Chambers, Queen Street, Cardiff.

CLACTON-ON-SEA.—Aug. 24.—For Building Congregational and Baptist Church. Mr. T. H. Baker, Architect, Clacton-on-Sea.

CHURCH COPPENHALL.—Aug. 25.—For Enlargement of Board Schools, Maw Green. Mr. E. Furber, Surveyor, Hightown, Crewe.

DALTON-IN-FURNESS.—Aug. 14.—For Building Auction Mart. Messrs. Settle & Farmer, Architects, Ulverston.

DRUMOAK.—Aug. 26.—For Additions to Public School. Messrs. Matthews & Mackenzie, Architects, 225 Union Street, Aberdeen.

DUBLIN.—For Construction of Billiard Saloon, &c. Mr. Hampden Shaw, Architect, 5 Westmoreland Street, Dublin.

DUBLIN.—For Repairs, &c., to Property, for Mr. M. J. Saurin, J.P., Harold's Cross. Mr. R. J. Stirling, Architect, 4 Nassau Street, Dublin.

DUNDALK.—Aug. 17.—For Construction of Stations and Station Works for the Cavan, Leitrim and Roscommon Light Railway and Tramway Co. Messrs. J. Barton and J. O. Lawder, C.E., Exchange Buildings, Dundalk.

EDINBURGH.—Aug. 18.—For Fitting-up and Roofing (Corrugated Iron) Cattle Courts at Bangour Farm. Messrs. John C. Brodie & Sons, 5 Thistle Street, Edinburgh.

EXETER.—For Rebuilding No. 177 Fore Street. Messrs. Hans Price & Wooler, Architects, Weston-super-Mare.

EXETER.—Aug. 16.—For Additions to Rougemont Hotel. Mr. C. E. Ware, Architect, Gandy Street Chambers, Exeter.

EXMOUTH.—Aug. 17.—For Building Public Hall, &c. Mr. J. Johnson, Architect, 9 Queen Victoria Street, E.C.

GARMOUTH.—Aug. 16.—For Building Dwelling-house. Messrs. A. & W. Reid, Architects, Elgin.

GATESHEAD.—Aug. 19.—For Building Primitive Methodist Schools, &c., Durham Road. Mr. T. E. Davidson, Architect, Albany Chambers, South Shields.

GRAVESEND.—Aug. 13.—For Building Coastguard Room, Store, &c. The Director of Works Department, Admiralty, 21 Craven Street, W.C.

GUILDFORD.—Aug. 14.—For Working Men's Club. Mr. W. G. Lower, Architect, 12A High Street, Guildford.

HALIFAX.—Aug. 20.—For Laying Iron Water Pipes (1,440 yards). Mr. J. A. Paskin, Waterworks Engineer, Town Hall Chambers, Halifax.

HALIFAX.—Aug. 24.—For Building Eight Houses, Haugh Shaw Estate. Messrs. G. Buckley & Son, Architects, Waterhouse Street, Halifax.

HANWELL.—Aug. 16.—For Alterations and Additions to Buildings to form Infectious Hospital and Probationary Wards. Mr. A. G. Langdon, Architect, 17 Craven Street, W.C.

HUDDERSFIELD.—Aug. 19.—For Additions and Alterations to Premises, 19 King Street. Mr. W. Cooper, Architect, Lord Street, Huddersfield.

HUDDERSFIELD.—Aug. 19.—For Heating by Steam Pipes at Workhouse. Mr. J. Hall, Clerk to the Guardians, Union Offices, Ramsden Street, Huddersfield.

HUNSLET.—Aug. 19.—For Building Three Houses, Hunslet Hall Road. Messrs. Richard Towse & Son, Architects, Dewsbury Road, Leeds.

IRTHLINGBOROUGH.—Aug. 14.—For Building Sixteen Cottages in Four Blocks. Mr. Edward Sharman, Architect, Croyland Abbey, Wellingborough.

KILLYLEAGH.—Aug. 21.—For Building Lecture Hall and Classrooms in connection with First Presbyterian Church. Messrs. Young & Mackenzie, Architects, Donegall Square East, Belfast.

LEE, ILFRACOMBE.—Aug. 13.—For Building Vicarage House. Mr. R. Medley Fulford, Architect, The Close, Exeter.

LEEDS.—Aug. 20.—For Building House and Stabling, Kelsall Estate, Woodsley Road. Mr. Thomas Winn, Architect, 18 Park Lane, Leeds.

LEEDS.—Aug. 13.—For Building Armley Hall Sunday School, Canal Street. Messrs. W. S. Braithwaite & C. D. Swale, 6 South Parade, Leeds.

LEYTON.—Sept. 6.—For Enlargement of Newport Road Board Schools. Mr. J. T. Newman, Architect, 2 Fen Court, Fenchurch Street, E.C.

LIMERICK HARBOUR.—Aug. 16.—For Steel Dock Gates with Hydraulic Machinery. Mr. W. J. Hall, Harbour Engineer, the Docks, Limerick.

LLANFRECHNA.—Aug. 18.—For Construction of Works of Water Supply. Mr. J. Blenkarn, C.E., Pontnewydd.

MARSTON-ON-DOVE.—Aug. 18.—For Erection of Farm Buildings. Mr. F. Drewry, Devonshire Estate Offices, Buxton.

MILLOM.—Aug. 16.—For Additions and Alterations to Board School. Messrs. Settle & Farmer, Architects, Ulverston.

MULROY, CO. DONEGAL.—Sept. 1.—For Building Coastguard Station. Mr. W. B. Soady, Office of Public Works, Dublin.

NETTLESWORTH.—Aug. 14.—For Building Chapel, Vestry, and Appurtenances. Rev. W. Gillies, North Road, Durham.

NORTHWICH.—Aug. 21.—For Building Gauge House, Forming Road, Laying Pipes for intended Waterworks. Mr. H. Bancroft, C.E., 83 Mosley Street, Manchester.

NORTHOWRAM.—Aug. 17.—For Building House at the Haugh, Stump Cross. Mr. J. F. Walsh, Architect, Waterhouse Chambers, Crossley Street, Halifax.

NOTTINGHAM.—Aug. 18.—For Construction of Branch Railway and Goods Station. Drawings, &c., at the Engineer's Office, Euston Station.

PAISLEY.—Aug. 31.—For Construction of Harbour and Works to the River Cart. Messrs. Miller & Bell, C.E., 204 St. Vincent Street, Glasgow.

PORTSMOUTH.—Aug. 25.—For Building Town Hall, Municipal Offices, Police Court and Cells, Reading Room, and Library. Mr. W. Hill, Architect, 25 Park Square, Leeds.

PORTSMOUTH.—Aug. 17.—For Removing and Reconstructing Portion of Wall of Camber Dock. Mr. A. Hellard, Town Clerk, Portsmouth.

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

RIPLEY.—Aug. 31.—For Building Board School, Street Lane. Mr. J. R. Naylor, Architect, Old Bank Chambers, Irongate, Derby.

STANLEY, CROOK.—Aug. 18.—For Building Sunday Schools. Mr. Robert W. Thompson, Architect, 46 North Bondgate, Bishop Auckland.

STOKE.—Aug. 14.—For Building Bridge, Cemetery Road. Mr. J. Collyer, Assistant Surveyor, Woking Station.

WARKWORTH.—Aug. 14.—For Erection of Range of Buildings at Buston Barns. Mr. G. Reavell, jun., Architect, Alnwick.

WEST ARDSLEY.—Aug. 14.—For Building Villa Residence. Mr. T. A. Buttery, Architect, Morley.

WIGAN.—Sept. 1.—For Alterations and Additions at Wigan Infirmary. Mr. W. Taberner, Secretary.

YARMOUTH.—Aug. 26.—For Building Five Cottages. Mr. W. B. Cockrill, Architect, Glencoe House, Gorleston.

TENDERS.

ACTON.

For Construction of Road and Sewer to be called Nemoure Road, Acton, W. Messrs. E. E. CROUCHER & Co., Surveyors, 76 Chancery Lane, W.C.

Adams	£400 0 0

ALDERSHOT.

For Improvement Works, Cambridge Road, Aldershot. Mr. W. COULSON, Surveyor.

G. Kemp, Aldershot	£595 0 0
J. CRANSTON, Aldershot (*accepted*)	518 0 0

BARNSLEY.

For Earthwork and Embankments on the River Dearne, at Mapplewell, Fleets, near Barnsley. Mr. J. H. TAYLOR, Engineer.

H. Hinchliffe, Barnsley	£956 0 0
S. Squire, Barnsley	587 13 4
Porter & Higham, Barnsley	387 1 8
C. Green, Rotherham	367 10 0
G. H. Burrows, Barnsley	289 8 9
J. COOPER, Barnsley (*accepted*)	286 16 3

BATH.

For Alterations, &c., to Auckland House, North Parade, Bath, for Poor Law Offices.

Highest tender	£2,555 0 0
Morris & Son	1,850 0 0
J. LONG & SONS (*accepted*)	1,794 0 0

BEATTOCK.

For Iron Bridge over Annan Water at Barnhill, Beattock. Mr. R. PATERSON, Surveyor, Buckrigg, Beattock.

Arrol Bros., Glasgow, iron cover for roadway	£295 0 0
J. Goodwin & Co., Motherwell, iron cover	288 0 0
R. PEDDIE & CO., Edinburgh, steel cover (*accepted*)	185 0 0
Brownlie & Murray, Glasgow, wooden cover	115 0 0

BEDFORD.

For Erection of Three Villas on the Clapham Road, for Mr. Thos. Fane. Mr. F. T. MERCER, Architect, Bedford. Quantities by the Architect.

J. P. WHITE (*accepted*)	£2,419 0 0

For Erection of Two Villa Residences on the Clapham Road, for Mr. H. Duhan. Mr. F. T. MERCER, Architect, Bedford. Quantities by the Architect.

T. LAUGHTON (*accepted*)	£1,440 0 0

For Erection of Two Houses in Waldeck Avenue, for Mr. H. D. Tebbutt and Mrs. F. H. Tebbutt. Mr. F. T. MERCER, Architect, Bedford. Quantities by the Architect.

T. LAUGHTON (*accepted*)	£1,191 0 0

For Erection and Completion of Two Dwelling Houses in Victoria Road, for Mr. T. W. Pearse. Mr. F. T. MERCER, Architect, Bedford. Quantities by the Architect.

WHITE (*accepted*)	£800 0 0

For Erection of a Shop and Dwelling-house in Midland Road, for Mr. A. Uellsley. Mr. F. T. MERCER, Architect, Bedford. Quantities by the Architect.

G. HARRISON (*accepted*)	£600 0 0

For Alterations to Premises in Mill Street, for Mr. T. Hague Currier. Mr. F. T. MERCER, Architect, Bedford. Quantities by the Architect.

F. H. LONG (*accepted*)	£295 0 0

For Alteration and Additions to Premises, High Street, for Mr. F. Gamman. Mr. F. T. MERCER, Architect, Bedford. Quantities by the Architect.

S. BALL (*accepted*)	£180 0 0

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

MELLOWES & DARBY,

FORMERLY PRIMROSE & Co. "ECLIPSE" PATENT ROOF GLAZING NO PUTTY, PAINT ZINC OR OTHER PERISHABLE MATERIAL.

CHURCH ST. SHEFFIELD.

IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c.

NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.

PRIZE MEDAL AWARDS: KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882-3.

THE ONLY GLAZING AWARD, INTERNATIONAL HEALTH EXHIBITION, 1884.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.
Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

BIRKDALE.

For Completion of Tower of St. Peter's Church, Birkdale. Messrs. THOMAS D. BARRY & SON, Architects, Liverpool. Quantities by the Architects.

Rathbone	£540 0 0
Halsall	487 0 0
RIMMER (*accepted*)	446 10 0
Miller	445 0 0
Architect's estimate	500 0 0

BIRKENHEAD.

For Roads and Avenues at Public Abattoirs, New Chester Road, Tranmere, Birkenhead. Mr. T. C. THORBURN, C.E., Borough Surveyor, 35 and 36 Hamilton Square.

		Alternative.
R. Bell, Birkenhead.	£1,190 0 0	—
W. Maddocks & Co., Birkenhead	1,118 9 5	£1,218 9 5
J. Riddel, Birkenhead	1,059 7 0	—
W. F. Chadwick, Liverpool	1,054 0 0	1,105 0 0
W. F. Inglis, Liverpool	967 17 2	1,018 1 2
W. Vaughan, Manchester	963 10 0	—
STERLING & SWAN, Manchester (*accepted*)	930 0 0	986 0 0

BURY (LANCS.).

For Alterations and Additions in connection with the Abattoirs, Bury. Mr. J. CARTWRIGHT, Borough Engineer.

F. & L. Wilde, Bury	£405 0 0
J. Comfort, Bury	391 5 10
J. BYROM, Bury (*accepted*)	390 16 4

CARDIFF.

For Erection of Whyndam Arcade, Cardiff, from St. Mary Street to Mill Lane. Mr. JOHN P. JONES, Architect, 27 Park Street, Cardiff. Quantities by the Architect.

T. Evans, Cardiff	£12,780 0 0
C. Burton, Cardiff	11,887 0 0
Shepton & Son, Cardiff	10,795 0 0
Symonds, Cardiff	10,750 0 0
D. J. Davies, Cardiff	10,700 0 0
Jones Bros., Cardiff	10,543 0 0
Shepherd & Son, Cardiff	10,439 0 0

CHESHAM.

For Building Shoe Manufactory and Two Dwelling-houses, Townsend Road, Chesham, for Messrs. T. Lulham & Sons, Queen's Road, Brighton.

A. Mead, Chesham	£1,480 0 0
G. Neal, Chesham	1,430 0 0
G. Darlington, Amersham	1,290 0 0
C. Monk, Hemel Hempstead	1,260 0 0
J. HONOUR & SON, Tring (*accepted*)	1,198 0 0

CORK.

For Constructing Sewer at Seward's Avenue, Cork.

P. W. Walsh, Cork	£245 0 0
J. Murphy, Cork	223 0 0
M. Walsh, Cork	221 0 0
R. Longfield, Cork	220 0 0
J. O'FLYNN, Cork (*accepted*)	188 10 0

CUDWORTH.

For Additions to St. John's National Schools, Cudworth. Mr. H. CRAWSHAW, Architect, Barnsley. Quantities by the Architect.

S. Sykes, Cudworth, mason.
T. Schofey, Mon Bretton, joiner.
J. Smith, Barnsley, plumber.
C. Fleming, Barnsley, slater.

DULWICH.

For the Supply of Lifts to new Infirmary at Champion Hill, Dulwich. Messrs. JARVIS & SON, Architects.

Jacques & Co.	£2,050 10 0
J. F. Clark	1,748 0 0
Coles	1,640 0 0
Glenfield & Co.	1,640 0 0
Waygood & Co.	1,498 0 0
Kirk & Randall	1,481 0 0
Goddard & Co.	1,319 15 0
CLARK, BUNNETT & CO. (*accepted*)	1,135 0 0

Benham & Sons and Waller & Co. informal.

ECKINGTON.

For Additional Classroom at Renishaw School, for the Eckington School Board.

J. Fidler, Eckington	£348 0 0
T. Taylor, Eckington	340 0 0
J. GRANT, Mosborough (*accepted*)	306 0 0

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING.
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.
Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

KNOWLES & ESSEX
(Late W. CUNNINGTON & Co.),
Manufacturers of
ARTISTIC WALL-PAPERS,
Park Walk, Chelsea, London, S.W.
Specialities—Patent Frosted Gold, Crystal Damask and Raised Flock Decorations.

TO BRICK MANUFACTURERS, FOREMEN, ETC.
THE advertiser, who has had great experience in making GLAZED BRICKS in white and many colours, at one burning, is willing to sell the secrets. Results guaranteed. Samples sent for inspection. Red or Fire Clay. Also the preparation of a Rich Blood Red Slip, which serves as a Coating for Red Bricks of inferior colour.—Address "BRICKS," "The Architect," London.

GRUNDY'S PATENT
WARM-AIR
VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

EAST STONEHOUSE.

For Supply of 4-inch Cast-iron Water Pipes (20 tons), East Stonehouse, Devon. Mr. J. L. Hodge, Engineer, 22 Courtenay Street, Plymouth.

	Per Ton.
R. Stephens, Devonport	£4 17 6
D. T. Stewart & Co., Glasgow	4 17 6
Watson, Gow & Co., Glasgow	4 17 3
R. Maclaren, Glasgow	4 11 8
T. Spittle, Newport, Mon.	4 11 0

FOREST HILL.

For Building Hall in connection with St. James's Church, Stanstead Road, Forest Hill, for the Trustees. Messrs. Tolley & Son, Architects, Cannon Street, E.C.

Roberts	£3,100 0 0
Bryan	2,870 0 0
Marriage	2,754 0 0
Gould & Brand	2,728 0 0
Waddington	2,093 15 0

GREAT HORTON.

For Building Thirteen Houses near Cross Lane, Great Horton. Mr. W. Longley, Architect, 5 Charles Street, Bradford.

Accepted Tenders.

J. Thornton, Great Horton, mason	£1,297 8 6
W. & J. R. Thompson, Bradford, joiner	380 0 0
J. Throp, Great Horton, plasterer, &c.	173 5 0
J. Smithies, Great Horton, slater	92 0 0
S. Benn, Great Horton, plumber and glazier	67 10 0

KELLS (IRELAND).

For Painting Wood and Ironwork at the Workhouse, Kells. Mr. Francis Nulty, Architect.

W. J. Rohan, Athlone	£94 10 0
P. Smith, Navan	80 0 0
Smith Bros., Kells (*accepted*)	72 0 0

KING'S LYNN.

For the Construction of Sewerage, Wellington Street, Exton's Road and Goodwin's Road. Mr. E. G. Mawbey, Borough Surveyor, King's Lynn.

H. Vickery, Gaywood, Lynn	£1,028 15 0
Bardell Bros., Lynn	603 0 0
J. Spriggs, Lynn	560 0 0
H. Collison, Lynn (*accepted*)	524 5 4

KIRKBURTON.

For Alterations and Additions to Birk's Gate, Kirkburton. Messrs. J. Kirk & Sons, Architects, Huddersfield.

Accepted Tenders.

J. Hollingworth & Sons, Cumberworth, near Huddersfield, mason.
J. Christie, Huddersfield, joiner.
T. Longbottom & Sons, Lockwood, plasterer.
G. Garton, Huddersfield, plumber.
J. H. Stuttard, Huddersfield, painter.
Pickles Bros., Huddersfield, slater.

LEIGH.

For the Sewering Works, Leigh. Messrs. Banks, Fairclough & Stephens, Surveyors, Church Street, Leigh.

C. & F. Bennie, Oxford-Warrington	£860 0 0
W. Chadwick, Leigh	788 18 5
J. Slater & Son, Leigh	766 17 6
Wilson & Co., Pendleton	764 3 0
Stansfield & Alcock, Ashton-under-Lyne	726 16 2
J. Prescott, Wigan	718 6 0
S. Cowburn, Hindley	688 0 0
J. White, Liverpool	675 0 0
W. Wood, Tyldesley	651 12 6
W. Winward, Wigan (*accepted*)	638 0 0

LYNN.

For Dwelling-house, Offices, and Warehouse, Lynn. Mr. D. Clack, Architect, Lynn.

R. Dye, Lynn (*accepted*).

LONDON.

For Alterations and Part Rebuilding of No. 7 Wigmore Street, Cavendish Square, for Mr. O. H. Hanson. Messrs. Alexander Payne and F. M. Elgood, Joint Architects.

Perry & Co.	£2,573 0 0
Charles Cox	2,365 0 0
Longmire & Burge	2,363 0 0
G. H. & A. Bywaters	2,354 0 0
George Shaw	2,347 0 0
Thomas Boyce	2,240 0 0
John Woodward	2,220 0 0
Henry Baylis	2,220 0 0
T. L. Green	2,148 0 0
Stimpson & Co. (*accepted*)	2,114 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
Bills of Quantities, Specifications, Reports Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
Plans of Estates, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
Certificate Books for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. Sprague's Tables, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, ontinuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., Ld.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.

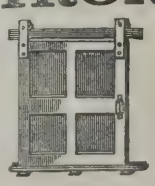
SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (Sent Post Free).

WHITLAND ABBEY GREEN SLATE QUARRIES.
REDUCTION IN PRICE.
THESE Stout, Durable SLATES, which are so much sought after by Architects for Mansions, Churches, Chapels, and other Public Buildings on account of the permanency of their beautiful colour, are now offered by the Proprietor, Mr. MUSCOTT (whose name is so well known in connection with these Green Slates for the last twenty years), at a reduction of Twenty per Cent.—For Testimonials, Samples, Price Lists, &c., apply to the old address, as under.
Mr. MUSCOTT, { Whitland Abbey Green Slate Quarries / Clynderwen R.S.O., South Wales.

HENRY KING
(Late GREEN & KING),
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.



IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES
Estimates Given at Wholesale Prices for Furniture made to Architects' Desins.

LONDON.—*continued.*

For Erecting Three Houses in Brunswick Street, Blackfriars, for Mr. C. Isaacs and Others. Mr. C. H. FLACK, Architect, 9 Bedford Row.

		Extra for Graining.
Beasley	£2,400 0 0	£120 0 0
Hoare	2,367 0 0	85 0 0
Mills	2,290 0 0	100 0 0
Downs	2,290 0 0	90 0 0
Chant	2,227 0 0	80 0 0
Clarke	2,208 0 0	103 0 0
Allard	2,196 0 0	56 0 0
Harris	2,187 0 0	92 0 0
Scrivener	2,187 0 0	122 0 0
Gatfield	2,163 0 0	30 0 0
Quick	2,068 0 0	75 0 0
Exton	2,029 0 0	61 0 0
Manley	1,977 0 0	75 0 0

For Repairs to Vestry Hall, Islington.

M'Cormick & Son	£385 0 0
Grover & Son	349 0 0
Wontner, Smith & Son	319 0 0
Combes & Son	318 0 0
Dove Bros.	315 0 0
Dearing & Son	311 0 0
Down & Son	293 0 0
Surveyor's estimate	363 0 0

For Sundry Works in Repairs, &c., to the Residence, No. 31 Finsbury Square, belonging to the Royal Maternity Charity. Messrs. WILLIAM REDDALL & SON, Surveyors to the Charity.

Killby & Gayford	£457 0 0
Heeps	447 0 0
King & Son	423 0 0
Woodward	345 0 0

For Making-up Half of Woodstock Road, Bedford Park.

Mowlem & Co.	£755 0 0
G. Alldred	720 0 0
J. Ball	691 0 0

Consideration deferred.

YOU will really enjoy yourself if you smoke the excellent cigars supplied direct to consumers, at wholesale prices, by HELMCKE & Co., 32 Great St. Helen's, London, E.C. Write for price list. Sample collections sent on receipt of 10*s.* 6*d.* or 21*s.*

LONDON—*continued.*

For Supplying Warehouse and Office Fixtures and Fittings at 49 to 52 Jewin Street, and 1 to 3 Jewin Crescent, for Messrs. Dalton, Barton & Co. Messrs. DUNK & GEDDEN, Architects, 36 and 37 Leadenhall Street.

F. Sage & Co.	£1,431 0 0
J. & J. Greenwood	1,220 0 0
D. KING & SON (*accepted*)	1,200 0 0

Crane and Hoist Work.

R. WAYGOOD & Co. (*accepted*)	102 10 0

For Supply and Delivery of Cast-iron Lamp Posts, for the Hackney Board of Works. Mr. J. LOVEGROVE, Surveyor, Town Hall, Hackney.

One Hundred Lamp Posts.

	Per Ton.
Roger & Weck	£9 0 0
Tortoise Foundry Company	8 0 0
Glenfield Company	7 18 6
Hardy & Padmore	7 15 0
Biggs	7 14 0
Clay Cross Company	7 13 6
Murray & Co.	7 11 0
Taylor & Sons	7 5 0
Pontifex & Co.	7 5 0
Allen & Co.	7 0 0
Tees Side Iron and Engine Works Company	6 16 6
Newton, Chambers & Co.	6 10 0
Waller & Co.	6 10 0
J. & S. Roberts	6 7 6
W. Black	6 6 0
Crapper & Co.	6 5 0
R. Hutson	6 0 0
W. A. Oakley	5 17 6
Renshaw, King & Co.	5 15 0
F. Bird	5 13 0
Piegus & Co.	5 10 0
General Iron Foundry Company	5 9 3
Jukes, Coulson, Stokes & Co.	5 8 6
Lucy & Co.	5 7 6
Smith, Patterson & Co.	5 7 6
Official Liquidator of Oliver & Co.	5 7 6
Williamson & Co.	5 5 0

T. Spittle, £1 3*s.* each, for special pattern.

GEARY'S PATENT "INVINCIBLE" SYSTEM OF

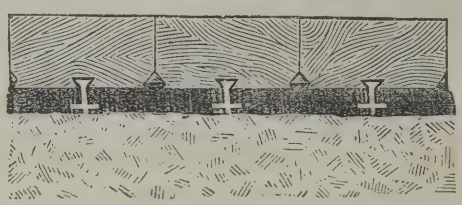
WOOD BLOCK FLOORING.

Now being extensively adopted throughout the country for

Public Buildings, Churches, Schools, Banks, Mansions, Warehouses, Railway Station Offices, Basements, &c.

POSSESSES IMPORTANT ADVANTAGES OVER ALL OTHER SYSTEMS.

Every Block fastened IMMOVABLY to a Substratum of Adhesive and Preservative Mastic by METAL KEYS, as shown.



NO CEMENT "FLOATING" REQUIRED the Mastic being laid on the ROUGH Concrete Foundation.

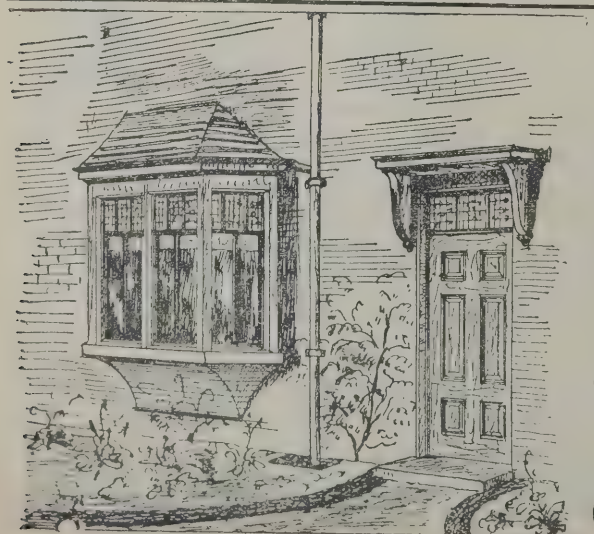
BLOCKS ABSOLUTELY IMMOVABLE.

ALL FLOORS GUARANTEED.

FULL PARTICULARS, PRICES, SAMPLES, &c., ON APPLICATION TO

GEARY & WALKER, { LONDON: 24 CHARING CROSS, S.W. MANCHESTER: 7 JOHN DALTON STREET.

SPECIALITY:—Oak and Darkened Oak for Church Aisles, Mansions, &c., from 9*s.* per superficial yard.



PROVISIONALLY PROTECTED.

FIRTH'S

Improved Disconnecting Trap,

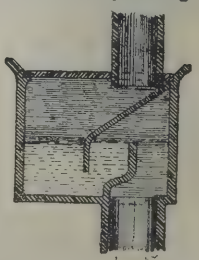
FOR FALL PIPES, &c.

COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.

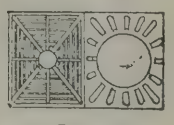
FOR PARTICULARS APPLY TO

GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing.



SECTION.



PLAN.

LONDON—*continued.*

Two Hundred Lamp Posts.

	Per Ton.
Roger & Weck	£8 10 0
Glenfield & Co.	7 15 0
Tortoise Foundry Company	7 15 0
Biggs	7 12 0
Clay Cross Company	7 11 0
Hardy & Padmore	7 10 0
Murray & Co.	7 9 0
Pontifex & Co.	7 2 6
Allen & Co.	7 0 0
Taylor & Sons	7 0 0
Tees Side Iron and Engine Works Company	6 16 6
Waller & Co.	6 8 0
J. & S. Roberts	6 5 0
W. Black	6 4 6
Newton, Chambers & Co.	6 0 0
R. Hulton	5 17 6
W. A. Oakley,	5 17 6
Renshaw, King & Co.	5 15 0
F. Bird	5 11 3
Piegus & Co.	5 8 6
General Iron Foundry Company	5 7 9
Jukes, Coulson, Stokes & Co.	5 7 6
Lucy & Co.	5 7 6
Smith, Patterson & Co.	5 6 3
Official Liquidator of Oliver & Co.	5 5 0
Williamson & Co.	5 0 0

T. Spittle, £1 2*s.* each, for special pattern.
Mackenzie & Co. (too late).
Stevens Bros. & Co. (too late).

For Painting and Cleaning Infirmary Wards, Plumstead.

Seabrook & Sons, Camberwell	£302 10 0
E. Proctor, Woolwich	290 0 0
Stacey Bros., Greenwich	220 0 0
M'Cullen & Co., Plaistow	189 17 0
Clark, Greenwich	174 0 0

For Repairs at the Christchurch Workhouse, St. Saviour's.

Lilley	£126 0 0
J. Hilliard	124 18 0
G. Newton	90 0 0
WINSFORD (*accepted*)	89 18 0

LONDON—*continued.*

For Repairing Furniture of Vestry Hall, for the Vestry of St. Mary, Islington.

Vezey Bros.	£317 17 10
Jones Bros.	241 0 0
Lucraft & Son	211 15 0
CHICK & SON (*accepted*)	206 10 0

For Supply of 2,500 Sacks of Portland Cement (10 to the ton), delivered on Port Street, for the Vestry of Chelsea. Mr. G. R. STRACHAN, A.M.I.C.E., Surveyor to the Vestry.

Formly & Co.	£372 7 11
Wiggins & Co., Hammersmith	364 11 8
Eastwood & Co., Chelsea	364 11 8
Patrick, Dovercourt	354 3 4
WAKELY BROS. & Co., Chelsea (*accepted*)	354 3 4

LOUGHTON.

For Construction of Roads and Sewers, to be called Queen's Road and New Road, on the Queen's Park Estate, Loughton, Essex. Messrs. E. E. CROUCHER & Co., Surveyors, 76 Chancery Lane, W.C.

Dunmore	£1,085 0 0
Adams	926 3 7
Ford & Co.	890 12 2
French	875 0 0
Bell	845 0 0

For Construction of Sewer in the High Road, Loughton, Essex. Messrs. E. E. CROUCHER & Co., Surveyors, 76 Chancery Lane, W.C.

Ford & Co.	£209 0 0

LOWER HEYFORD.

For Works of Water Supply, Lower Heyford, Northampton.

G. Branson & Son, Northampton	£149 0 0
H. Straney, London	126 16 9
G. Bennett, Northampton	112 10 0
J. T. Wingrove & Son, Northampton	107 0 0
H. R. Coles, Weedon	104 0 0
R. P. Clayson, Northampton	102 10 0
MARSH, Lower Heyford (*accepted*)	85 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER 700 ENGRAVINGS OF DIFFERENT PERIODS, AND NOTICES.

BY PAUL ROUAIX.

NEW EDITION. Price, Single Volume, 5*s.*; Complete Series, 12 Volumes (by Subscription), £2 8*s.*

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

LONDON: GILBERT WOOD & CO., 175 STRAND.

MELTON.

For Construction of Melton Waterworks.

B. C. Badham, Holborn	£8,590 0 0
W. Hill & Co., Westminster	7,975 0 0
Fast, Melton	7,653 0 0
Foster & Barnes, Radcliffe	7,639 19 4
Enoch Tempest, Leicester	7,185 0 0
T. Smart, Nottingham	7,136 8 9
Logan & Hemingway, Melton	6,994 11 6
Cooke & Co., Battersea	6,858 0 0
Innes & Wood, Birmingham	6,820 0 0
B. W. Ward, Whetstone	6,786 11 6
Foster & Dicksee, Rugby	6,765 0 0
S. & W. Pattison, Ruskington, Sleaford	6,742 0 0
J. Young, Ingatestone	6,655 12 6
J. Pickthall & Co., Merthyr	6,513 17 0
J. Smith, Belgrave	6,453 9 4
Hill & Co., Plymouth	6,422 14 0
H. W. Gould, Southampton	6,034 0 0
Hill, High Wycombe	5,946 16 5
H. Hughes & Son, Dudley	5,710 12 0

MOUNTAIN ASH.

For Construction of Flushing Chambers, for the Mountain Ash Local Board. Mr. S. O. HARPUR, Surveyor, Mountain Ash.

T. Taylor, Pontypridd	£223 16 0
T. Morris, Mountain Ash	188 8 0
M. EDMUNDS, Mountain Ash (*accepted*)	172 10 0

NEWPORT PAGNELL.

For the Construction of Well in connection with Water Supply, Newport Pagnell.

Tilley, Walbrook	£646 0 0
G. Hill, London	557 0 0
W. Hill, London	545 0 0
Docwray, London	535 0 0
R. Spiller, London	480 0 0
J. Shelton, Newport	422 0 0
Bennett, Northampton	305 0 0
Brown, Tottenham	286 0 0
Batchelor, Chatham	263 0 0
E. Watts, Smethwick	187 0 0
J. Miles, Wolverton	155 0 0

NEWPORT.

For Building Restaurant and Business Premises, Commercial Street, Newport, for Mr. Walter J. Dix. Messrs. W. G. HABERSHON & FAWCKNER, Architects, London, Newport, and Cardiff. Quantities by the Architects.

		Vaulting Basement.
G. Martin	£2,535 0 0	£33 10 0
Moulton & Brownscombe	2,220 0 0	36 0 0
G. Wilkins	2,200 0 0	33 0 0
J. Linton	2,196 0 0	34 8 0
W. M. Blackburn	2,193 0 0	29 0 0
C. MILES (*accepted*)	2,120 0 0	31 0 0

ORPINGTON.

For Erection of Private Residence, with Stables and Conservatory, at Orpington, Kent. Mr. ST. PIERRE HARRIS, Architect, 1 Basinghall Street, E.C., and Orpington. Quantities by Mr. C. Stanger.

R. Durtnell, Brasted	£3,384 0 0
F. Higgs, Loughborough	3,332 0 0
D. Payne, Bromley	3,253 0 0
Taylor & Son, Bromley	3,162 0 0
F. Wood, Chislehurst	3,132 0 0
T. Knight, Sidcup	3,080 0 0
W. & F. Croaker, London	3,039 0 0
Somerford & Son, Clapham	2,897 0 0

For Private Residence, with Stables and Cottage, at Scad's Hill, Orpington. Mr. ST. PIERRE HARRIS, A.R.I.B.A., Architect, &c.

Knight, Sidcup	£2,244 0 0
Coleman, Poplar	2,084 0 0
F. Wood, Chislehurst	2,073 0 0
Somerford & Son, Clapham	1,998 0 0
W. & F. Croaker, Great Dover Street	1,990 0 0
TAYLOR & Son, Bromley (*accepted*)	1,895 0 0

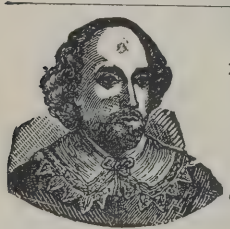
PORTSMOUTH.

For Extension of Temporary Chancel and Sacristy, Portsmouth Catholic Cathedral, for the Right Rev. John Virtue, D.D., Bishop of Portsmouth. Mr. JOSEPH STANISLAUS HANSOM, F.R.I.B.A., Architect. Quantities by Mr. Henry Smith.

W. Ward (too late)	£1,581 0 0
Burbridge	1,549 0 0
Lawrence	1,493 0 0
Light Bros.	1,483 0 0
Buckle & Wheeler	1,466 0 0

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



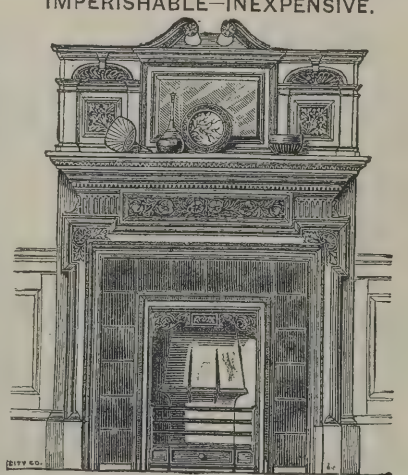
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.



IN PLAIN COLOURS OR VARIEGATED, AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.,
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

PORTSMOUTH—*continued.*

For Building Stables for Mr. Bishop. Mr. J. W. Walmsley, Architect.

Burden, Portsmouth	£680 0 0
J. Croad, Portsmouth	577 10 0
Crockerell, Portsmouth	570 0 0
D. W. Lewis, Portsmouth	560 0 0
H. Lawrence, Portsmouth	540 0 0
T. P. Hall, Portsmouth	515 0 0
J. H. Corke, Portsmouth	500 0 0
Cooper, Portsmouth	490 0 0
Rogers, Portsmouth	486 16 6

PENZANCE.

For Building Ward, Medical Officers' Department, Dispensary, &c., West Cornwall Infirmary, Penzance. Mr. Oliver Caldwell, M.S.A., Architect, Penzance.

All Trades.

James Julian, Truro	£1,150 0 0
John Bond, Tredrea, Penzance	1,075 0 0
James Richards, Hayle	1,075 0 0
Richard Hill, Penzance	1,015 0 0
Pellew & Bottrell	980 0 0

Masonry, &c.

Ford & Trythall, Penzance	652 0 0

Joiner Work, Plumbing, Painting, &c.

William Edwards, Cravan	619 19 7
W. H. Moyle, Chacewater	610 0 0
Thomas Willoughby, Redruth	570 0 0

PYTCHLEY.

For Building Wesleyan Chapel and Sunday Schools at Pytchley. Mr. C. Saunders, Architect, 1 George Street, Kettering.

C. Sharman, Kettering	£516 0 0
T. & C. Berrell, Ashby	513 8 9
T. Lewis, Pytchley	509 7 0
S. & A. Lewis, Isham	499 0 0
J. Coltman, Kettering	497 0 0
W. H. Henson, Finedon	492 0 0
F. Barlow, Rothwell	490 0 0
Stevens & Lewis, Wellingboro'	484 0 0
Clow, Broughton	475 0 0
G. V. Henson, Kettering (*accepted*)	475 0 0

ROCHDALE.

For Small Detached House, Rochdale. Mr. Jesse Horsfall, M.S.A., Architect, Todmorden and Rochdale. Quantities by the Architect.

Thomas Berry & Son, excavator and bricklayer.
Ashworth & Woolfenden, carpenter and joiner.
Robert Woolfenden, slater.
John Targe, plumber.
J. Purday, jun., plasterer.
Total, £500.

SOUTH STONEHAM.

For Alterations and Additions to Infirmary and other Works at Union Workhouse, West End, South Stoneham. Mr. W. H. Mitchell, Architect, Southampton.

Honeychurch & Michelmore, Southampton	£3,610 13 10
Wickham, Bitterne	3,520 0 0
Harvey, St. Deny's	3,468 0 0
Haines, West End	3,412 0 0
Stevens & Sons, Southampton	3,329 0 0
Musselwhite, Sholing	3,312 0 0
Dyer & Sons, Southampton	3,200 0 0
Bull & Sons, Southampton	3,179 0 0
Carden, Southampton	3,091 0 0
Crook & Sons, Southampton	3,087 0 0
Franklin, St. Deny's	3,010 0 0
Rowland, Southampton	2,998 0 0
Blake, Eastleigh	2,997 0 0
Witt,* Bitterne	2,759 10 0
Architect's protecting Tender	3,436 0 0

* Accepted subject to approval of the Local Government Board.

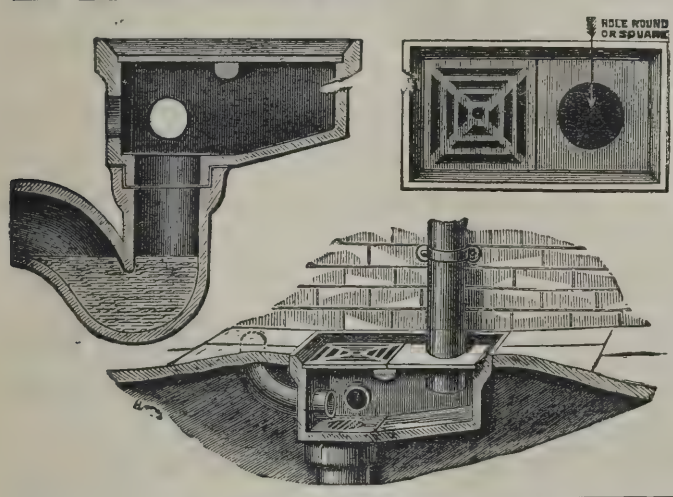
SWANSEA.

For Building Conservative Club, Swansea. Mr. T. P. Martin, Architect, Swansea.

J. White, Swansea	£3,007 0 0
J. Williams, Swansea	2,635 0 0
D. C. Jones, Gloucester	2,588 0 0
W. David, Swansea	2,567 0 0
D. Morgan, Swansea	2,515 0 0
Gwyn, Swansea	2,420 0 0
Thomas, Watkins & Jenkins, Swansea	2,400 0 0
Loveday & Evans, Swansea (*accepted*)	2,315 0 0
Billings, Swansea	2,245 0 0

NOTICE OF REMOVAL.

BELLMAN'S PATENT GULLY.



This Gully possesses the following advantages:—

Receives and disconnects one Rain-water Pipe and Three Waste Pipes.

Avoids all Splashing. | **Forms Drain for Area or Surface.**

Ventilates the Pipes and Trap. | **Is easy of Access for Clearance.**

The ordinary P or S trap to be used in connection with Gully being in a separate piece, can be placed at any angle to meet the drain exactly, thus insuring a perfect joint, the Gully being fixed at right angles. This is a great advantage over other arrangements made with the trap in one piece.

The Holes for Rain-water Pipes are made both Circular and Square and of various sizes.

DESCRIPTIVE CIRCULAR ON APPLICATION.

THIS GULLY IS HIGHLY RECOMMENDED by Authorities on Sanitary Matters.

PRICE AT DEPOT:—EDWARD ST., DORSET SQUARE, N.W., 8s. 6d. each.

Also SINGLE GULLIES, for Sink Wastes only, price 3/9 each.

BELLMAN & IVEY,

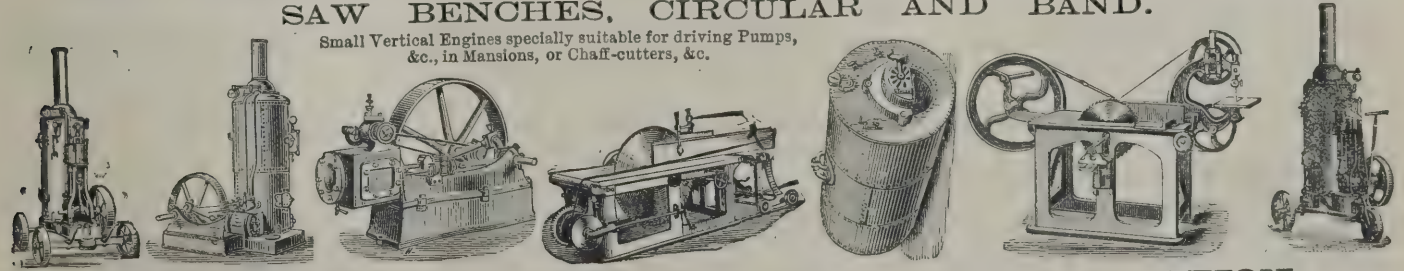
(OFFICE ONLY) 37 PICCADILLY, LONDON, W.

E. S. HINDLEY, 11 QUEEN VICTORIA STREET.

VERTICAL STEAM ENGINES, PORTABLE OR FIXED. HORIZONTAL STEAM ENGINES } WITH OR WITHOUT VERTICAL BOILERS.

SAW BENCHES, CIRCULAR AND BAND.

Small Vertical Engines specially suitable for driving Pumps, &c., in Mansions, or Chaff-cutters, &c.



ILLUSTRATED CATALOGUES FREE ON APPLICATION.

SEVENOAKS.

For Alterations and Additions to Residence at Godden Green, near Sevenoaks, Kent, for Mr. Thomas L. Devitt. Mr. FREDERICK M. SIMPSON, Architect, Rolls Chambers, 89 Chancery Lane, W.C. Quantities by Messrs. William Reddall & Son.

		Alternative Estimate.
Wright, Westminster	£6,104 0 0	£6,489 6 0
Ashby & Horner, London	5,994 0 0	6,270 0 0
Hall, Beddall & Co., London	5,862 0 0	6,095 0 0
G. Mansfield & Son, Tunbridge Wells	5,538 0 0	6,000 0 0
W. Willsher, Sevenoaks	4,849 0 0	5,074 0 0
G. Punnett & Sons, Tunbridge	4,819 0 0	4,998 0 0

THEALE.

For Building Two Bridges, Sheffield Bottom, near Theale, Berkshire. Mr. JOSEPH MORRIS, County Surveyor, Reading. Quantities by the Surveyor.

Contract No. 1.—Small Timber Bridge.

W. Goodchild, Reading	£282 0 0
W. J. M'Kenzie, Wandsworth, S.W.	236 0 0
A. Kimberley, Banbury	177 0 0
W. Goswell, Midgham, near Reading	174 5 0
Smith & Allen, Reading	165 7 0
G. & C. Allen, Reading	164 6 4
Talbot, Caversham, Reading	157 4 9
James Wigmore, Theale, near Reading	154 7 0
H. C. Belch, Slough	149 0 0
W. H. Simonds, Reading	142 10 0
Architect's estimate	135 3 6

Contract No. 2.—Brickwork and Roadmaking for Iron Bridge.

W. J. McKenzie, Wandsworth, S.W.	671 0 0
W. Goswell, Midgham, Reading	410 10 0
James Wigmore, Theale	388 0 0
F. Talbot, Reading	375 4 3
H. C. Belch, Harmondsworth, Slough	335 0 0
W. H. Simonds, Reading	318 0 0
W. Winkworth, Reading	297 18 3
A. Kimberley, Banbury	249 0 0
Architect's estimate	306 16 0

Contract No. 3.—Ironwork.

W. J. McKenzie, Wandsworth, S.W.	£460 0 0
E. C. & I. Keny, Corporation Street, Birmingham	304 0 0
C. Margrett, Reading	299 5 0
A. Kimberley, Banbury	292 0 0
F. Talbot, Reading	263 11 0
Jukes, Coulson, Stokes & Co.	260 0 0
W. H. Simonds, Reading	252 0 0
Charles Williams & Co., Westminster	248 0 0
Reading Iron Works Company, Limited	246 9 0
A. D. Dawnay, London, E.C.	240 0 0
J. S. B. Porter & Co., Lincoln	228 14 0
J. Shewell & Co., Darlington	217 0 0
Rubery Bros., Darlaston	214 1 10
Architect's estimate	250 17 0

TODMORDEN.

For a Pair of Semi-detached Villas, Cornholme, near Todmorden, for Mr. James Ashworth, Mr. JESSE HORSFALL, Architect. Quantities by the Architect.

Accepted Tenders.

Thomas Marshall, Cornholme, excavator and mason.
Abraham Crossley, Todmorden, carpenter and joiner.
Samuel Barnes & Sons, Todmorden, slater.
R. H. Ingham, Todmorden, plumber, &c.
William Mitchell, Cornholme, plasterer.
Total £935.

For a Pair of Semi-detached Villas, Harleywood, near Todmorden, for Mr. Thomas Wrigley. Mr. JESSE HORSFALL, M.S.A., Architect. Quantities by the Architect.

John Barker, Lineholme, excavator and mason.
Thomas Greenwood, Lineholme, carpenter and joiner.
Statham Bros., Manchester, slater.
Henry Whitaker, Todmorden, plumber.
William Mitchell, Cornholme, plasterer.
Total £1,515.

ULVERSTON.

For Building Infant School, Ulverston. Mr. H. BARBER, Architect, Cheetham, Manchester.

J. G. Tyson, Ulverston	£819 10 0
J. Garden, Dalton-in-Furness	799 10 0
Cox & Brown, Barrow-in-Furness	773 10 0
T. WEARING, Ulverston (*accepted*)	750 0 0

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,

STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

WARKWORTH.

For Building House at Warkworth, near Alnwick (carpenters' and joiners' work excepted), for Messrs. Tate Bros. Mr. G. Reavell, jun., Architect, Alnwick.

Accepted Tenders.

E. Laidler, Warkworth, Acklington, mason.
W. Darling, Alnwick, slater.
J. H. Lyall, Amble, Acklington, plasterer.
G. Thompson, Alnwick, plumber.
D. Stewart, Felton, Northumberland, painter and glazier.

WHITEHAVEN.

For Alterations at Black Lion Hotel, Whitehaven. Mr. J. S. Moffat, Architect.

Accepted Tenders.

H. Killip, Harrington, mason and brickwork.
R. D. Mitcalf, George Street, Whitehaven, carpenter and joiner.
W. Strathern, King Street, Whitehaven, plumber and glazier.
J. Brown, Scotch Street, Whitehaven, painting and decorating.
J. Nelson, Carlisle, marble mosaic pavement.
Dorman, Long & Co., Middlesbrough.

WILMSTON.

For a Pair of Semi-detached Villas, Wilmston, for Mr. Thomas Tamock. Mr. Jesse Horsfall, M.S.A., Architect, Todmorden and Rochdale. Quantities by the Architect.

Moses Sumners (*accepted*)	£860 0 0

WORKSOP.

For Pulling Down Old Warehouse, Erecting Fence Walls, Engine-houses, Store-rooms, Sheds, and Conveniences, and for Altering Cottages in Canal Road, Worksop. Mr. D. Waterhouse, Surveyor, Town Hall, Worksop.

Rollitt & Sons, Worksop	£755 0 0
Ilett & Sons, Worksop	740 0 0
Newbold & Bulling, Tuxford	640 0 0
J. Wilson, West Retford (*accepted*)	617 3 8

TRADE NOTES.

The Admiralty have just placed an order with the Woodhouse & Rawson Electric Manufacturing Company for over 7,000 switches, besides fusible plugs, brackets, and other articles.

Messrs. Archibald Smith & Stevens have received instructions to fix one of their patent hydraulic lifts at Mr. Pimm's warehouse, 197 Upper Thames Street. This lift will be of their latest "Reliance" type. The same firm have recently completed a second hydraulic lift for the Aërated Bread Company, Eastcheap House.

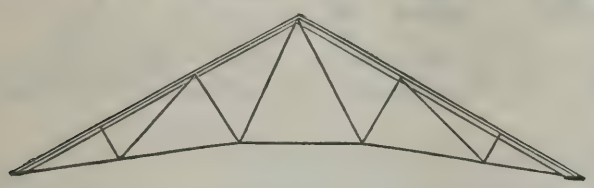
Amongst the most recent applications of the Æolus Waterspray system of heating, cooling, and ventilation, are:—The Churches of St. James, Hope, Lancashire; All Saints, Finchley Road; St. John the Evangelist, Ranmoor, Sheffield; Mr. Hill's House, Cyprus Road, Nottingham; Bible Christian Church, Plumstead; Mary Street Memorial Schools, Taunton; Christ Church, Blacklands, Hastings; Highgate Road Baptist Chapel; Heath Town Chapel, Wolverhampton; Castle Street Board Schools, Bristol, &c., &c.

Messrs. Francis & Co., Limited, cement and whiting manufacturers, have been registered as a joint-stock company, amalgamating at the same time the works of Empson, Holcombe & Co. and Francis, Donald & Johnstone, of Cliffe, both of which have hitherto been partially connected with them. The united businesses will in future be carried on under the style of Francis & Co., Limited. Shares are not offered to the public, as the whole of the interests will be retained by the present partners, their families, and friends.

Messrs. Broad & Co., of Paddington, send us a copy of the fifth edition of their illustrated catalogue. In it we find much useful information, more especially so with regard to the most recently approved methods of domestic sanitation. Messrs. Broad & Co. have shown a considerable amount of enterprise in introducing gully traps, sewer-gas interceptors, half channel pipes and bends made in white enamelled stoneware. Many of these articles are of special design, for which awards have been granted by the Health Exhibition, Sanitary Institute of Great Britain, Society of Architects, &c. This catalogue has been well arranged, and comprises a very large variety of sanitary specialities, ridge tiles, finials, bricks, &c., and forms a very useful book of reference.

The freehold building estate, known as Pleasantfield, near Brondesbury, was sold by auction by Mr. Richard J. Collier, of Finsbury Pavement, on Wednesday, for 16,000*l.* The estate is within about four miles of the Marble Arch, and is situate adjoining the Willesden Green Station of the Metropolitan Railway. It consists of sixteen acres of nicely-timbered land,

WALTER JONES, MAGNET WHARF, BOW BRIDGE, E.,

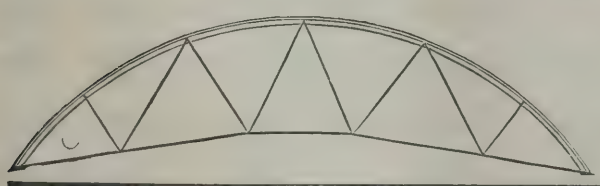


MANUFACTURER OF

WROUGHT-IRON ROOFS,

PLAIN OR ORNAMENTAL,

ADAPTED FOR



GALVANIZED IRON,

SLATES, TILES, or GLASS.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.

OFFICE: 175 STRAND, LONDON, W.C.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS AND MANUFACTURERS,

14 ELM STREET, GRAY'S INN ROAD,

LONDON, W.C.

Designers and Manufacturers

of all kinds of ART WORK

for Ecclesiastic and Domestic Purposes,

in Silver, Copper, Brass, and Iron.

SPECIALITE:

DOOR FURNITURE AND LOCKS.

Write for Illustrated Catalogue.

with also a good family residence, with stabling, outbuildings, and entrance lodge, and altogether is a valuable investment when open areas are becoming scarce in the immediate neighbourhood of the metropolis. Mr. Collier also recently sold by private auction for 9,000*l.* a choice freehold estate of about seven acres at Chiswick, comprising the whole of the east side of Duke's Avenue, the principal approach to Chiswick House, the Duke of Devonshire's historic villa.

WRIGHT'S FIXING BLOCKS.

MESSRS. WRIGHT & CO., 3 Westminster Chambers, Victoria Street, S.W., have sent us a catalogue they have just issued, enlarged and revised. Their patent improved fixing blocks for walls have been successfully applied to buildings of every description during the past five years by architects, contractors, H.M. War Department, &c., with the very best and most satisfactory results. These blocks are fireproof, practically as hard and lasting as brick or stone, yet of such a tough nature that not only will they take nails with facility and retain them, but the hold is firmer than if driven into wood. For walls they are made about the same size as ordinary bricks. They are built into reveals of openings, jambs, &c., without the slightest extra labour or trouble to the bricklayer, and without interfering with the bond of the brickwork.

The blocks simply require bedding in mortar; when the work is sufficiently set, they offer a superior fixing for the wood linings, architraves, &c. These in reality become fixed to the solid wall, dispensing entirely with the troublesome process of using wood pallets, strips, &c., which, among other disadvantages, invariably require "wedging up," involving thereby a loss of carpenter's time. There is no waste when using these blocks, as is the case when wood joint-pieces are employed. The driving of plugs, and consequent injury to new work, is entirely obviated—a frequent source of danger round chimney-breasts and near flues, in party walls, &c. Wright & Co.'s blocks may be safely inserted in these positions without the slightest risk of taking fire. For fixing wood chimney-pieces they are invaluable.

Another application of these blocks does away with the necessity of putting skirting chocks into, and wood grounds upon, walls. They are made for this purpose about three-quarters of an inch wider than the ordinary bricks, offering for the plastering a similar, but from the affinity of the respective materials a better, key than that obtained when using the splayed wood ground. This size block may also be used with great advantage where walls are to be boarded, as in the case of dados, matchboarding, &c., and they may be used for securing fibrous plaster slabs, or similar materials, or where walls are to be battened for slate or tile hanging, &c. By turning straight or slightly cambered arches over ordinary inside openings, and inserting in same a couple of these fireproof blocks as a fixing for the head lining, the wood or concrete lintel may be omitted, shorter arches may be employed, and a saving may thereby be effected. These blocks are applicable to either brick, stone, or concrete walls, and are guaranteed to carry any weight that can be put upon them in a building.

A special new feature for the first time illustrated appears in this catalogue, namely, Wright & Co.'s floor blocks, which, it will be seen from the diagrams, have as secure a hold as a lewis in a block of stone. The particular composition of which Wright & Co.'s blocks are formed unites readily with the

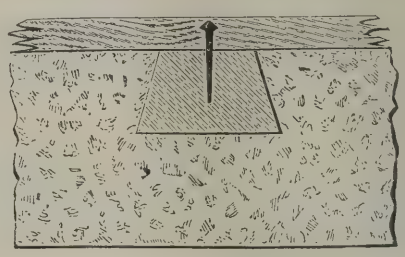


FIG. 1.

general body of the concrete when laid, and in reality it then forms part of the actual floor. A minimum thickness of floor is obtained, and therefore there is a saving of labour and materials. There is a complete absence of the undesirable wood blocks, fillets, strips, and other similar perishable material sometimes introduced into so-called fireproof systems, and which, we submit, must be an element of weakness from the first, this being by no means lessened when in course of time the wood decays, or in case of fire becomes burnt or desiccated. By keeping the blocks flush with the top of concrete (see fig. 1) no spaces

L'ART,

A COSMOPOLITAN ILLUSTRATED JOURNAL,

CONTAINING TWO VERY FINE ENGRAVINGS IN EACH NUMBER,

Will be published simultaneously in LONDON and PARIS on the 1st and 15th of each month, and will contain articles by the best French writers on Architecture, Painting, Sculpture, Art Galleries, Exhibitions, Dramatic Art, Museums, &c., &c. Reviews will also be given of all new books published on these subjects.

MESSRS. GILBERT WOOD & CO.,

OF 175 STRAND,

Being the Sole Publishers for Great Britain, all Communications should be addressed to them concerning Subscriptions, Advertisements, and Copies of Etchings, Engravings, and Medallions in Bronze, &c., &c., of the French Library of Art.

are left under the boards for the accumulation of dirt and impure air, an inexpensive, sound construction is obtained, and one well worth consideration when (as is sometimes the case) the outlay will not admit of an ordinary wood block being laid.

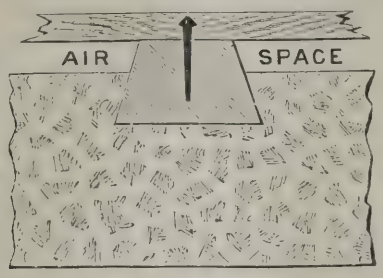


Fig. 2.

If, however, an air space under the boards is considered desirable, the blocks may be kept up as in fig. 2.

Fig. 1. shows the concrete portion of a perfectly fireproof floor, which can, by the aid of Wright & Co.'s improved blocks (and rolled iron joists), be readily constructed by any ordinary contractor; and this system may be applied to any class of

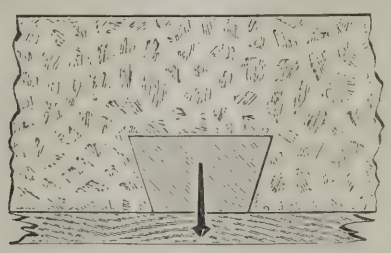


Fig. 3.

building with perfect success, and at less cost than any other method possessing equal advantages.

Fig. 3 illustrates the application of the C size blocks to soffits of floors or ceilings to receive matchboarding, fibrous plastering, or other finishings, without using any objectionable wood blocks, or other perishable material. This system has been successfully adopted in extensive works of the highest possible class.

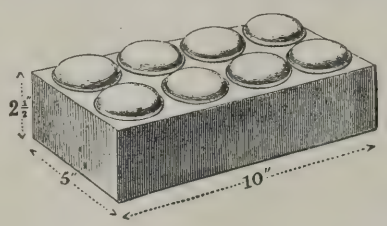
All floor blocks, unless otherwise ordered, are made 1 foot long, the only care necessary to their successful operation being that they should be laid level, with ends touching; the distance apart may vary from 14 to 18 inches, depending upon circumstances.

TORBAY PAINTS.

We have received a catalogue from the Torbay (Wolston's) and Dart Paint Co., Limited, of Dartmouth, Devon. Mr. Wolston claims to be the originator of the genuine Torbay paint, the great merit of which is its being free from any adulterant, and consisting of pure natural oxide. This firm have other works at Dartmouth, and mines at Brixham and Stoke Gabriel. We notice that the firm have a very influential connection, for amongst works completed are Lambeth Bridge, National Gallery, Zion College, Girton College; and this paint is specified in H.M. Government Contract Schedule. No higher testimony of the excellence of this speciality could be given.

TEBBUTT'S PATENT "SAFETY" BRICK.

Mr. C. G. Tebbutt, of Dashwood House, New Broad Street, E.C., has a great improvement on the ordinary stable brick in his patent "safety." Instead of the ordinary square or longitudinally grooved brick, Mr. Tebbutt's patent has a treading

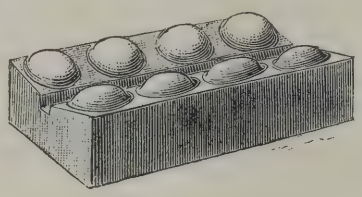


surface upon knobs about 2½ inches across, ½ an inch high, and ⅜ths of an inch apart. The surface of each knob is rounded so as to guide the hoof downward against the next knob when foothold is required. Mr. Tebbutt has laid several floorings for

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.
DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.
SEE HOBBS & Co^os
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON
SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.
SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST, BENTLEY PRIORY, ROYAL, LANGHAM, GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S, BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

stables and markets with the object of preventing injury to horses and cattle, and in every case he has given satisfaction. Mr. Tebbutt is now supplying the establishment of His Royal Highness the Prince of Wales, at Sandringham. It is evident, too, that the patent safety brick must facilitate the drainage of stables, for the raised surface and width between each knob allow of liquid easily passing away, and the floor being easily cleaned. The "patent safety" is made of the best Staffordshire blue ware, hard, non-absorbent, and durable.

We subjoin an illustration of the "patent gutter brick," on the same principle as the "safety." Mr. Tebbutt exhibited at



the Building Exhibition in the Agricultural Hall of April last, at which he was awarded a silver medal—the highest in the class—so that to many of our readers this improvement will have been appreciated. The "patent safety" is certain to become widely adopted on the strength of its great merit.

SHAND, MASON & CO.—VISIT OF THE COLONIALS.

A NUMBER of the Colonial representatives visited the works of Shand, Mason & Co., the well-known fire-engine makers, their object being to witness a trial of two new pattern steam fire-engines made for the Insurance Companies Fire Brigade, Melbourne, Australia. After inspecting the machines, the excellent workmanship and finish of which were greatly admired, steam was raised in three minutes forty seconds, the total time occupied in raising 100 pounds being eight minutes. The water was projected far over the shaft in the works to a height of about 160 feet. An improved London brigade manual fire-engine was also tested with equally satisfactory results. All present, amongst whom were Sir Graham Berry, Agent-General for Victoria; Mr. Bosisto, and Mr. Thompson, President and Secretary of the Victorian Commission; the Hon. W. Wilson, of Melbourne, expressed great satisfaction at the results obtained, and inspected, amongst others, three of the five new steam fire-engines made for the Metropolitan London Fire Brigade; also one for the Midland Railway Company, for use at Derby, and a new steel fire-escape to be drawn by horses for Buenos Ayres.

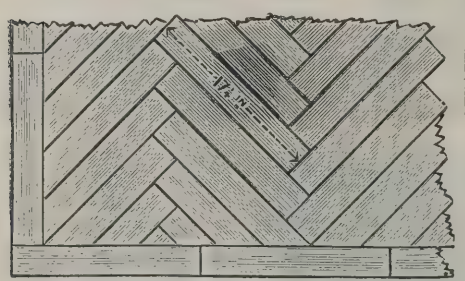
DRAINAGE OF THE HOUSES OF PARLIAMENT.

THESE works, and the ventilating works connected therewith, on the Shone Hydro-pneumatic system, as recommended by the late Committee of the House of Commons, which consisted of Sir H. Roscoe (chairman), Mr. L. H. Isaacs, Dr. Farquharson, Sir Guyer Hunter, Mr. Lyell, Mr. R. Power, Mr. Tatton Egerton, and Mr. Cyril Flower, have just been commenced, and will be carried forward with all possible speed. The engineer for the works is Mr. Isaac Shone, C.E., 4 Westminster Chambers, and the resident engineer is Mr. John Phillips, C.E., of Putney. The Commissioners of Her Majesty's Works and Public Buildings have let the works in three contracts, viz., for the general works to Messrs. John Mowlem & Co., of Westminster; for the pneumatic and hydraulic ejectors, to Messrs. Hughes & Lancaster, of Chester and Liverpool; and the gas-engine air-compressors, to the British Gas Engineering Company, Queen Victoria Street, London. The total amount of the three contracts is under 10,000*l.*

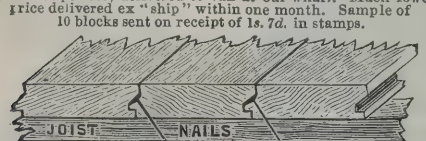
WHITWORTH SCHOLARSHIPS.

THE awards for 1886 have been made as follows:—1, G. C. Humpey, engineer apprentice, Nottingham; 2, R. Holt, engineeer apprentice, Liverpool; 3, R. Chorley, pattern-maker, Manchester; 4, J. H. A. M'Intyre, mechanical engineer, Glasgow; 5, W. C. Borrowman, engineer, Glasgow; 6, T. R. Murray, mechanical engineer, Galashiels (formerly Stafford); 7, J. T. Nicholson, marine engineer, Newcastle-on-Tyne; 8, G. W. Wooliscroft, engineer apprentice and student, London (formerly Crewe); 9, I. Brown, engineer, Glasgow; 10, R. Wallis, engine-fitter, Newcastle-on-Tyne; 11, R. M. Ferrier, engineer, Ardrossan; 12, R. B. Creah, fitter, Crewe; 13, E. Wilson, engineer student, Leeds; 14, E. S. Padmore, engineer student, Birmingham; 15, W. H. Watkinson, engineer student,

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 31s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¼ × 4¼ Dry Wainscot Oak, 54s. 9d. per square; 1×4¼ ditto, 45s.; 1¼×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s. 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone, 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES,
STOVES, TILES, ETC.
WILKINS and SONS
88-92 PENTONVILLE ROAD, N.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

Building Paper. *Chemical Papers Co.,* LIGHT—STRONG—WATERPROOF. In 10 yard rolls, 40 in. wide, 2d. per yard. Sample roll, post free, 2/6. *Use under slate and tiles, under weather boarding, for temporary roofs, and as lining paper for damp walls.* For home and export.—EASTWOOD AND CO., LIMITED, Dealers in Building Materials, BELVEDERE ROAD, LONDON, S.E.

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market:—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.


LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

FIREPROOF FIXING BLOCKS
FOR WALLS AND FLOORS
(Wright's Patent). Wood Joint Pieces, Plugs, Fixing Fillets, Grounds, &c., successfully Superseded without extra cost. Extensively used by Leading Architects and Contractors for several years past; H.M. War Department, &c.
NOTE.—These Fixings take and RETAIN nails equal to wood They never burn, decay, shrink, or become loose, and will carry any weight that can be put upon them in a building.
Colonel W. J. STUART, Commanding Royal Engineers, Chatham, writes:—"The frames are most strongly fixed, and the blocks did not split with the 5½ in. screws that were used."
Write for new catalogue, containing full particulars and references post free.
"Highly Commended" at the Firemen's Exhibition, May 1886.
WRIGHT & CO. { No. 3 Westminster Chambers, Victoria Street, London, S.W.
Manufactories:—Gosport, Hants, and at Carnforth, Lancs.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

NOW READY.
J. & W. KIRKWOOD'S
NEW PATENT
SPRAY BATH.
Write to Leith for Particulars.

Glasgow; 16, R. Johnston, mechanical engineer, London; 17, J. M. Malcolmson, draughtsman, Woolwich; 18, H. Shoesmith, engineer apprentice, London; 19, E. Codling, engineer, Newcastle-on-Tyne; 20, C. Day, engineer apprentice, Stockport; 21, C. Hyde, engineer student, Ebbw Vale; 22, A. Etchills, draughtsman, Hyde; 23, W. Berry, draughtsman, Glasgow; 24, D. Kemp, mechanical engineer, Glasgow; 25, G. H. Follows, engineer apprentice, Manchester. All the six Glasgow men are students of the College of Science and Arts. The first scholar gets 200*l.*, the next eight 150*l.*, and the last sixteen 100*l.*

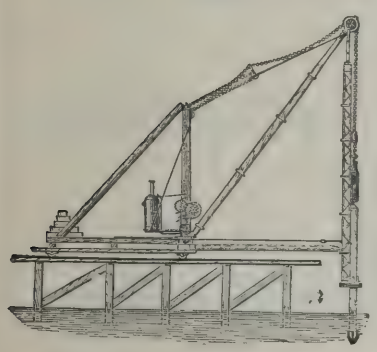
CROYDON CONCRETE.

On Tuesday Richard Moat, builder, was summoned before the Croydon magistrates, under the corporation by-laws, for using improper materials for the foundations of houses which he was about to erect in Crowther Road, South Norwood The Town Clerk, Mr. C. M. Elborough, appeared for the prosecution, and said that the defendant had sent in an application for permission to build some small houses in the above-mentioned road. Leave was given him, but there were certain regulations with with which he had not complied. The Bench knew how much the health of the people depended upon the manner in which houses were built, and, as the corporation considered this case a very bad one, he would ask the magistrates to make an example of the defendant. Mr. Thomas Walker, the borough engineer, deposed that on Thursday, the 6th inst., he was in the Crowther Road, South Norwood, and saw some men in the service of the defendant putting what should have been concrete into the trenches for the foundations of two houses. The so-called concrete was no better than farmyard manure, and was not fit for the purpose for which it was being used. Concrete should be composed of clean gravel, lime, cement, &c., properly mixed with water. When it was set it should be as hard as any stone. The stuff which he saw would not set properly. The trenches were only dug down from 9 to 12 inches. He admitted that the ground was fairly solid, but the material which was being used for the foundations was only good manure. The defendant did offer to remove the stuff and put in proper concrete. The defendant explained that the material was used by his men during his absence. Richard Jones, a sanitary inspector, stated that the concrete produced was not at all suitable to put in as footings for a wall. It would cause a settlement, and give rise to dampness, besides which it would not set. In fact, it was manure more than anything else, and would form a kind of drain under the wall and make the houses unhealthy to live in. The defendant pleaded that the material was used without his knowledge, and that he offered to substitute proper concrete for it. The chairman said it was the duty of the Bench to see that small houses were constructed in a proper manner as well as large ones, and the defendant would be fined 40*s.*, with 13*s.* costs. The money was paid.

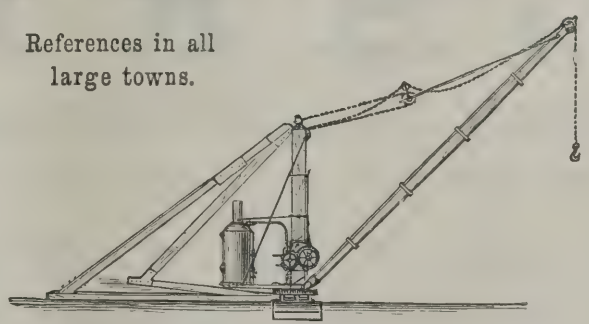
THE ASSESSMENT OF CREWE RAILWAY WORKS.

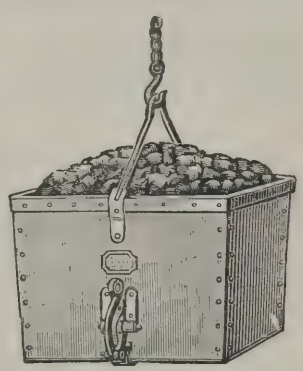
At a full meeting of the Nantwich Board of Guardians on Saturday, Mr. J. Edwards, deputy chairman of the Assessment Committee, reported the result of the interview which the committee had had with Mr. Edmonds, rating agent of the London and North-Western Railway Company, with regard to the valuation of Crewe Locomotive Works and other railway property in the union. He said that three years ago Mr. Marshall, a professional valuer employed by the union, raised the assessment of the railway company to 95,000*l.*, being an increase of 80 per cent. The company on that occasion suggested their willingness to agree to 75,000*l.*, to which the Guardians could not assent. The company then appealed, and were successful, the result being that the whole union had been revalued. Now, however, that the union had been revalued, the company, instead of renewing their old offer, suggested 68,000*l.*, being a reduction of 7,000*l.*, and 27,000*l.* less than that arrived at by Mr. Marshall. The reason assigned for this reduction was the falling off in the traffic receipts of the company. The Assessment Committee did not care to take the responsibility of either accepting or rejecting this offer without the advice and direction of the Guardians. A lengthy discussion followed upon Mr. Edwards's statement, several of the Guardians, also members of the Assessment Committee, urging the Board to endeavour to settle the whole question without having recourse to further litigation. It was stated in answer to the allegation of the company's agent that the traffic receipts had gone down, that there was also great depression in agriculture, but that the four valuers who had revalued the agricultural portion of the Union had not taken that into account in making the reassessments. Mr. Whale, an official of the railway company, said he was there to represent the ratepayers, and he could not see that it was fair to increase the

BUTTERS BROTHERS, ENGINEERS, GLASGOW.
PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.


Crane used for Piling.

References in all large towns.


SCOTCH BUILDERS' CRANES.
Large Stocks. Send for List.


Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8	10 0
¾ „	.	9	10 0
1 „	.	10	10 0

FOR SALE, HIRE, OR HIRE-PURCHASE.

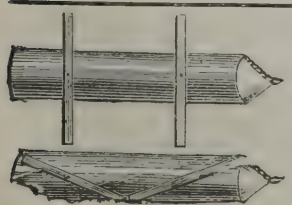
ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustration which has appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing:—

Departure of Crusaders for the Holy Land.

BY G. GUFFENS.

Size, Thirty-six Inches by Fourteen Inches. Price One Shilling; free by post, carefully packed inside patent roller, 1*s.* 3*d.*
May be obtained from all Newsagents or Booksellers, or from the
Publishers, GILBERT WOOD & CO, 175 Strand, London, W.C.



PAIN'S SMOKE ROCKETS FOR TESTING DRAINS.
Cheapest, Simplest, and most Efficient Test yet invented.
Burn from Ten to Fifteen Minutes and emit a dense volume of Smoke.
6*s.* per dozen. 60*s.* per gross.
MANUFACTURED ONLY BY
JAMES PAIN, 9 ST. MARY AXE, LONDON, E.C.

railway property by 80 per cent. and increase the agricultural assessments by only 12½ per cent. Mr. Bateman, in reply, said that while agriculture had been at a standstill, or had declined, there had been an increase in railway work, and railway matters had developed to a great extent in that Union. Eventually four propositions were put to the meeting—1, that the Assessment Committee should take the advice of Mr. Marshall, the professional valuer, before proceeding further, and then see the company's representative; 2, that the committee be at liberty to try and come to terms with Mr. Edwards, not accepting less than 75,000*l.*; 3, that the offer of 68,000*l.* be accepted in order to avoid the expense of any further valuation or litigation; 4, that the question be referred to arbitration. The third proposition received only the votes of the proposer and seconder, both guardians being officials of the railway company; the second and fourth propositions were not largely supported, and the first proposition was carried by a majority of over twenty. The Assessment Committee afterwards decided to invite Mr. Marshall to an interview as early as possible. The matter is likely to come before the Cheshire Quarter Sessions again.

BUILDING WITHOUT AN ARCHITECT.

AT the Birmingham Assizes, on Monday, an action was tried before Mr. Justice Wills which had been brought by James Parsons, of Fazeley, builder, against Thomas Ellis, of Kingsbury, butcher, to recover 130*l.*, balance of account. By agreement the case was heard without a jury. The plaintiff contracted to rebuild a house and outbuildings for the defendant. The contract was 403*l.* The specifications on which the contract was based, according to the plaintiff, were very imperfect, and no proper architect was consulted. The result was that an unusual number of "extras" had to be done, the bill for these amounting to 47*l.* The completion of the work was delayed for some weeks beyond the specified time, according to plaintiff, entirely through the weather and the extra work. Defendant disputed the extras, and put in a counterclaim of 40*l.* for damages and 220*l.* as penalties for delay in the execution of the contract. Plaintiff and professional witnesses having given evidence as to the details of the work, his lordship gave judgment for the plaintiff on the claim, with the costs of the action, and for 10*l.* on the counterclaim, with costs on that amount.

MASONRY DAM AT THE VYRNWY WATERWORKS.

A DESCRIPTION of the great works which are in progress at Vyrnwy, for the purpose of constructing a reservoir for the supply of water to Liverpool, appears in the *Liverpool Post*, from which we take the following:—

A drive of about two hours from Llanfyllin brings one right to the foot of the valley which is eventually to become the Vyrnwy reservoir, and where what is generally spoken of as the embankment, but which is really a masonry dam, is being constructed. This dam will, when completed, block up the entire valley, and when the reservoir is filled with water it will constitute a lake five miles long, with an average width of half a mile and a maximum width of three quarters of a mile. Some conception of the vastness of this great reservoir may be gathered when we mention the fact that Bala lake is only three and three-quarters of a mile long, and that, although Loch Katrine, from which Glasgow obtains its water supply, is considerably greater in area, the Vyrnwy reservoir when completed will contain a very much larger storage of water than even Loch Katrine, which is about double the length, and will, in fact, be the largest lake in the Principality. The greatest depth of water in the lake will be 84 feet.

In the centre of the valley is the village of Llanwddyn, with a population of about three or four hundred people, with its parish church, schoolroom, and three public-houses, all of which, with several farms, and Ennant Hall—formerly a shooting box owned by Sir E. Buckley, but now utilised by the Corporation of Liverpool for the accommodation of those members of the City Council and the Water Committee who from time to time visit the works—will be submerged when the reservoir is full. The inhabitants of the village will doubtless find ample accommodation at a new village called Cynon-isaf which has sprung into existence in the neighbourhood of the dam since the works were commenced, whilst a new church and a vicarage have been erected by the Corporation of Liverpool in the same locality. It has also been necessary to make two new roads—one on each side of the reservoir—to compensate for the absorption of the existing road, which now runs through the valley towards Bala. These roads have been admirably constructed under Mr. Deacon's direction, and, with the various bridges which have had to be built at several points in each, have cost 3,500*l.* per mile, their total length being over 10 miles. When the new lake is filled in they will form one of

L'ART,

A BI-MONTHLY ILLUSTRATED JOURNAL,

1st and 15th of every Month.

Director and Editor-in-Chief: M. EUGÈNE VÉRON.

Artistic Director and Editorial Secretary: M. PAUL LEROI.

Publisher: M. J. ROUAM.

SOLE PUBLISHERS FOR GREAT BRITAIN:

GILBERT WOOD & CO.,

175 STRAND, LONDON, W.C.

PRICE TWO SHILLINGS PER COPY (2 frs. 50 c.).

The Choicest Etchings of celebrated works, and **STEEL** and **COPPERPLATE ENGRAVINGS** of the works of the leading artists of Europe, as well as articles by the ablest living writers on Art and cognate subjects, appear in every number. Size of plates, 18 inches by 12 inches. May be ordered through any Newsagent or Bookseller, or at any Railway Bookstall in the United Kingdom, or from **GILBERT WOOD & CO.**, 175 Strand, London.

the finest drives to be found either in Wales or any other part of the country. The chief work in connection with the construction of the reservoir is, of course, the masonry dam, which is rapidly proceeding towards completion, and when finished the reservoir will practically be completed for the purposes of impounding. The valley itself will be left pretty much as nature has made it, though here and there something may have to be done in the way of facing the sides of the valley with stone or concrete.

The total area of the new lake will be 11,000 acres, and will be capable of containing 12,000,000,000 gallons of water available for supplying the wants of Liverpool, though, of course, the lake itself will contain a much larger quantity. If required, a supply equal to 40,000,000 gallons per day could be obtained from the lake, but at present it is proposed to take off only about one-third of that quantity. Whenever it is found necessary, however, to increase that quantity, two additional drainage areas could be drawn upon and brought into Lake Vyrnwy, namely, Marchant and Cowny, and the Act of Parliament authorises the Corporation, whenever found necessary, to construct two tunnels to bring the water from those drainage areas into the lake, those proposed tunnels being in close proximity to the embankment at the bottom of the valley.

The water for Liverpool will leave the new lake by means of a tunnel 7 feet in diameter, and 2½ miles long, and which will be sufficient to draw off not merely 13,000,000 gallons per day, as is now proposed, but 40,000,000 should it ever be found necessary to resort to that amount. After leaving the tunnel, the water will be conveyed to Prescot in iron pipes 40 inches in diameter, most of them being underground, but occasionally, where valleys intervene, they will be laid on arches. At Runcorn they will cross under the Mersey. Should it become necessary to increase the supply afterwards, two additional lines of pipes can be laid, both of which will be served with water from the existing Hirnant tunnel. The total distance between the lake and Prescot reservoir is about 76 miles, and the pipes for the greater part of this distance have already been laid.

In the construction of the dam, as everybody knows, has lain the most arduous part of the great undertaking. Mr. Hawksley was at first associated with the work as chief engineer, and both he and Mr. Deacon were understood at first to be in favour of an earth embankment, but the original scheme was eventually departed from, and a masonry dam decided upon. Before fixing the site of the dam the position of the rock beneath the beds of alluvial and glacial deposits which cover the whole valley was determined by 13 shafts and 177 borings or probings. Before the autumn of 1882 the lowest surfaces of the rock were uncovered, and it was found, as had been anticipated from previous examination of the exposed rocks on either side of the valley, that the rock foundation was continuous from side to side. Geologically, the rock belongs to the Caradoc group of the lower silurian system. It is commonly known as clay slate, is frequently interspersed with the hard volcanic ash of the Bala series, and ranges from a close-grained grit of dark bluish-grey colour to a fine slate texture.

The masonry employed in the construction of the dam may be classed with that generally known as "Cyclopean rubble," though both the materials used and the precautions taken in connection with the workmanship give this particular work a much higher value as masonry than is generally attributed to rubble work even of the best kind. The quarry is at a distance of about a mile from the masonry dam, and is connected therewith by a double line of railway of 3-feet gauge, having a gradient of about 1 in 30 downwards to the dam. The rock, like that of the foundation, belongs to the Caradoc group of the lower silurian system. The sound beds, which are alone employed, yield a hard and durable dark grey stone, weighing 2·06 tons per cubic yard, and having a specific gravity of about 2·721, from which, with great labour, even ashlar of excellent quality may be produced. The difficulty of working the rock arises from the fact that the planes of cleavage with which it abounds are neither perpendicular to the beds nor to each other, so that neither by blasting, plugging, nor wedging can stones of rectangular form be obtained. Various methods have been tried for detaching the rock, but none have proved so satisfactory as simultaneous electric blasting with powder. The quantity of powder used from the beginning of the work has been only 2·6 ounces per ton of stone quarried, and for the last year only two ounces. This is just sufficient to detach the mass, which is afterwards subdivided by plugging into the largest available blocks, subject to none of them exceeding in weight when subsequently dressed seven or eight tons each.

The greatest care is taken in preparing the stone taken from the quarry for the purposes of the dam. The lower surface is made almost smooth, with just sufficient roughness to make it grip the cement in which it is embedded, whilst every stone is carefully washed with a strong jet of water to insure that not a single particle of dirt adheres to the stone before it is put in

THE BRITISH DINNER COMPANY, LIMITED.

Incorporated under the Companies' Acts, 1862 to 1883, whereby the liability of each Shareholder is limited to the amount of his Share.

CAPITAL £25,000, divided into 25,000 Shares of £1 each,

Payable 2s. per Share on Application and 8s. per Share on Allotment, after which further calls will be made as required for the development of the business. It shall be optional, however, for Shareholders to pay up in full at a reduction of 5 per cent. Where no Allotment is made the application money will be returned in full.

DIRECTORS.
CHARLES REEVE, Esq., 177 New Bond Street, London, W., Chairman.
S. WILKINS, Esq., 1 Vincent Terrace, London, N.
J. G. LYLE, Esq. (Messrs. James Lyle & Co.), 57 Bishopsgate Street Within, London, E.C.
Captain Sir ATWELL KING LAKE, Bart., 39 Carlton Hill, London, N.W.
C. J. NASMYTH, Esq., 65 Regent Street, London, W.

BANKERS.—The London and County Bank, Limited, 325 High Holborn, London, W.C.

SOLICITOR.—ARTHUR TOOVEY, Esq., 18 Orchard Street, Portman Square, London, W.
GENERAL MANAGER.—Mr. EMANUEL DURET.
AUDITOR.—HENRY NORMAN HOLE, Esq., Bond Court House, Walbrook, London, E.C.
SECRETARY.—EUSTACE A. S. HOUNSELL.
TEMPORARY OFFICES.—15, 16, 17 The Outer Temple; 222-5 Strand, London, W.C. (opposite the Royal Courts of Justice).

This Company has been formed for the purpose of establishing Depôts over the Metropolis and elsewhere to supply good, wholesome, nutritious, well-cooked food suitable for working classes and others of small means at the lowest possible cost.

On the Continent and in Scotland there are numerous establishments where substantial dinners, at low prices, are provided for the people, yielding handsome dividends to the Shareholders.

Good meat dinners, with portions of potatoes, and a second vegetable—turnips, cabbage, or other seasonable kind—and a first course of either good soup or fish and bread, can be supplied for sixpence, and yield a profit equal to 25 per cent., which is proved to demonstration in Glasgow, where similar food is supplied with a good profit at even a lower price.

It is a well-known fact that New Zealand mutton and American beef (both of first quality) can be bought on the London markets at prices ranging from 4½*d.* to 5*d.*, and 5*d.* to 5½*d.* per lb. respectively, both of which are served daily in first-class London restaurants as "prime Scotch or English meat."

All the food will be of good quality, and carefully prepared, so that the nutritive properties are retained. Families will find this the best opportunity for obtaining ready-cooked dinners at less cost than they could be prepared at home.

The Directors have secured the services for five years of Mr. Emanuel Duret as General Manager at a nominal salary and commission, *pro rata*, after the Shareholders *first receive* dividends of not less than 5 per cent. Mr. Duret has had great and varied experience, and has made the matter of "cheap food for the million" his special study for over a quarter of a century, practically and theoretically, both on the Continent and in England. He has had the greatest and most varied experiences as Manager and Caterer. He is thoroughly conversant with the management of large establishments, and well acquainted with the best markets for meat, fish, provisions, &c.

1. He managed the St. James's Hall Restaurant, Regent Street and Piccadilly.
2. Was Contractor and Caterer to the Admiralty.
3. The Directors of the North-Eastern Railway Company selected him out of about 300 candidates, and appointed him Manager of their Hotel and Refreshment Rooms at York, which he opened and conducted to the entire satisfaction of the Board.
4. He was Proprietor and Manager of the Manor House Hotel at Leamington, and holds the highest and most complimentary testimonials from those by whom he was employed, as well as from the Speaker of the House of Commons, the Earl of Camperdown, and many other distinguished noblemen and gentlemen, testifying in the strongest terms to his great ability, courtesy, and efficiency as a public caterer.

The philanthropist and economist combine when placing a cheap, nutritious, palatable meal within the reach of the working-man at a fair profit. It has been statistically proved that a working-man spends about

60 per cent. of his wages in Food.
15 „ „ Rent.
10 to 12 „ „ Clothing.
13 to 15 „ „ Gas, coals, rates, taxes, education, &c.

This enormous expenditure of 60 per cent. shows that food ranks first amongst the necessaries of life, and that the claims for food assert themselves before all others; therefore the question of a thorough food reform is of much more importance than the question of housing, and deserves the greatest attention on the part of the public. If a working man were provided with a house, rent free, the effect would only be a saving of 15 per cent., but a rational food reform would save him 30 per cent., or twice as much as the whole of his house rent.

It is well known that one of the most successful private commercial undertakings in London is Lockhart's Cocoa Rooms, now established all over London and throughout the large provincial cities and towns. The trade, however, is confined principally to tea, coffee, cocoa, cakes, &c.

The Aerated Bread Company (Limited) also supply tea, coffee, cocoa, bread, butter, cakes, eggs, and some cold or preserved meats, and, like Lockhart's, they have and are continually opening depôts all over the metropolis, paying steadily increasing dividends, and the shares consequently are at very high premiums.

The British Dinner Company (Limited) intends to supply not only what can be obtained at the before-mentioned establishments, but also what a working man requires most—namely, a substantial dinner, consisting of a basin of good soup or fish, a plate of meat, and a portion of both potatoes and another vegetable and bread, for sixpence, well prepared; a comfortable room, tables scrupulously clean, with good and prompt attendance.

This Company will buy meat, vegetables, tea, coffee, and all other provisions in large quantities for cash, obtaining them at very much lower prices than private individuals. It is contemplated to buy provisions, potatoes, cabbages, turnips, onions, and eggs direct from the farmers, thus saving all intermediate profits.

The only contract that has been entered into is made between the Temple Syndicate and Mr. Eustace A. S. Hounsell as Trustee for and on behalf of the Company, whereby the Syndicate contracts to pay all Rent of Offices, Salaries of Secretaries and Clerks, Printing, Stationery, Postages, Advertising, and all Costs and Expenses incidental to the registration, formation and floating of the Company generally up to the date of allotment of Shares for the sum of £750 and 750 fully paid Shares in the Company.

Prospectuses and Forms of Application may be had of the Bankers, or at the offices of the Company. The agreement above referred to and the Memorandum and Articles of Association may be seen at the offices of the Company.

Applications for Shares may be made to the Bankers, or to the Secretary. All cheques should be crossed with the name of the Company's Bankers, and made payable to the Secretary.

position on the embankment. The particular stone used in the construction of the dam is of a specially durable character, owing to the peculiar homogeneity which characterises it, and is said to be even more durable than the hardest of granite. On the dam and at the quarry there are in all about 1,400 men employed, and on a visit to Vyrnwy on Saturday forenoon every available man was found busily at work. At the quarry the men are engaged on piecework, but, owing to the importance of attention to minute details in the construction of the dam, it is considered undesirable to give the builders any direct interest in the quantity of work done on the embankment, and they are therefore paid a weekly wage. Not only is the masonry required to be of exceptional strength, but it must be watertight, as far as that can possibly be secured.

The superintendence of the work on the embankment is of the most complete character. The men are divided into gangs, of which one man has charge, and two officials are constantly on the spot seeing that each stone is properly put down, and that every precaution is taken to insure the stability of the work, whilst the whole of the staff is under the control of Mr. Martin, the chief superintendent, who discharged similar duties at Rivington, the construction of the dam and the general arrangements being of course carried on under the direction and personal supervision of Mr. Deacon, who is now sole engineer for the new works. The stone is brought down from the quarry by wagons drawn by locomotives at the rate of 500 tons a day. The blocks are lifted upon the wall by seven steam cranes, one of which is generally in the "hospital," in other words undergoing repairs, and there are about the same number of locomotives for bringing the stone from the quarry, whilst the number of wagons engaged in this and other works is between 300 and 400. The number of horses employed in carting material to the works is very little short of a hundred, and, notwithstanding the bad roads they have to encounter, every one of them seemed in first-class condition.

At first sight the dam itself looks comparatively insignificant. This is partly due to the magnitude of the natural surroundings, and partly to the fact that 60 feet of the dam is entirely under ground, excavations to that depth having to be made before a rock foundation was found. When completed it will attain a height of 84 feet above the surface, making a total height of 144 feet. That it is in reality a much more colossal work than it at first sight appears may be gathered from the fact that when completed the wall will be half as long again as Lord Street, its length being 1,250 feet. At the base it is much broader than Lord Street, and if placed on a level with the houses in that thoroughfare it would be considerably higher. Above the dam will be a viaduct with several arches, connecting the two new roads skirting the lake. The total amount of material required to complete the wall is 536,000 tons, and our readers will be able to judge for themselves as to what stage the dam has reached when we mention that already 360,000 tons of stone and concrete have been utilised in its construction.

The Corporation, under the Act of Parliament, are bound to turn into the Vyrnwy below the dam compensation water to the Severn Commissioners at the rate of 10,000,000 gallons a day. This compensation water will be discharged through a tunnel on either side of the masonry dam, and will on an average be greatly in excess of the water which, by means of the Vyrnwy, at present finds its way into the Severn. The rainfall in the gathering ground which will feed the lake is so great—last year at the head of the proposed new lake there was a rainfall of no less than 117 inches—that at times there will most certainly be more water than the lake will be able to hold, and this flood water will make its escape over the top of the embankment and underneath the arches of the viaduct which in time is to be constructed.

Of the total number of men employed on this great undertaking, quite one-half of them are natives of that part of Wales, who had practically to be taught the work, their former occupation being that of farm labourers. The remainder are chiefly English, very few, if any, Scotch or Irish being on the job. The work has now been going on for over five years, having been practically begun early in 1881 or late in December of 1880. In two years Mr. Deacon hopes the whole work will be completed, and that by that time they will be able to begin to impound the water. Another year will probably elapse before the supply can be drawn upon, so that we may anticipate that within three years from now Liverpool will have at its disposal 13,000,000 gallons of water daily in addition to its present supply. The cost of this new supply will be 1,750,000*l.*, about a quarter of a million more than was originally estimated, but this increase is largely due to the substitution of a masonry dam for an embankment. This will probably meet all the requirements of the city and district for twenty years, but, as we have stated, this additional supply can be doubled or trebled without going elsewhere whenever the necessity arises, the total cost involved in completing the scheme so as to afford a daily supply of 40,000,000 gallons of water being 3,250,000*l.*

The Medical Battery Company, Limited.

ADVICE FREE, Personally or by Letter.

52 OXFORD STREET, LONDON, W.

The following are a few Extracts from the many

THOUSANDS OF TESTIMONIALS RECEIVED:—

GOUT. "Derived the greatest benefit."—*His Majesty the King of Holland.*

RHEUMATIC FEVER. "I can positively speak of its advantages."—*Dr. C. Lempriere, D.C.L., Senior Fellow, St. John's College, Oxford.*

NERVOUS DEBILITY. "Entirely recovered."—*W. Oliver, Esq., Hylton.*

HYSTERIA. "The Belt has done wonders."—*Mrs. M. Oriel, Dowlais.*

SCIATICA. "Worth fifty pounds."—*Mr. R. J. Watson, Harwich.*

NEURALGIA. "A most complete success."—*M. A. Langdale, Esq., Leacroft.*

LUMBAGO. "It has been an untold comfort to me."—*Miss Hudson, Twyford.*

CONSUMPTION. "Benefited immensely."—*Rev. H. L. Norden, Southampton.*

KIDNEY DISORDERS. "I am like a new man."—*Mr. W. P. Pougher, Plymouth.*

LIVER COMPLAINT. "I have no pain now." *Mr. T. Smith, Hey, Lees.*

PRICE 21s. POST FREE.

HARNESS' ELECTROPATHIC BELT.

PRICE 21s. POST FREE.

A NATURAL AND CERTAIN CURE FOR GOUT, RHEUMATISM, SCIATICA, LUMBAGO, INDIGESTION, CONSTIPATION, EPILEPSY, KIDNEY DISORDERS, NEURALGIA, LIVER COMPLAINTS, NERVOUS DEBILITY, &c.

FOR THE NERVES, STOMACH, LIVER, KIDNEYS, and other organs.

LADIES' AILMENTS.—Dr. Anna Kingsford, M.D., advises every lady to write for a new pamphlet on the Diseases of Women just issued by Mr. C. B. Harness, Consulting Electrician to the Medical Battery Company, Limited. It is simply invaluable, and should be read by every lady in the kingdom Sent, under cover, free by post, on application to the Medical Battery Company, Limited, 52 Oxford Street, London, W.

NOTE.—When ordering send size of waist (next skin).

MR. C. B. HARNESS, The Eminent Consulting MEDICAL ELECTRICIAN, has been specially retained by the Company, and may be consulted daily (WITHOUT CHARGE) on all matters relating to HEALTH and the application of CURATIVE ELECTRICITY. Residents at a distance, and those unable to avail themselves of a personal consultation, are invited to write for a Private Advice form, which will be forwarded POST FREE on application to

WRITE FOR NEW PAMPHLET. POST FREE.

The Medical Battery Company, Limited,

52 OXFORD STREET, LONDON, W.

ART PLATES FROM "THE ARCHITECT."



Proof Impressions of the following Illustrations which have appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing.



THE MARTYRDOM OF ST. STEPHEN.

AWARDED THE GOLD MEDAL AT THE INTERNATIONAL HEALTH EXHIBITION.

By E. J. POYNTER, R.A.

Size, Forty Inches by Fifteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE AURORA.

By GUIDO RENI.

From the Celebrated Painting in the Rospigliosi Palace, Rome.

Size, Thirty-eight Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.
A few Tinted Proofs may be obtained at Two Shillings and Sixpence each, including postage and packing.

THE FLITCH OF BACON.

By THOMAS STOTHARD, R.A.

Size, Forty Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE CANTERBURY PILGRIMS

By THOMAS STOTHARD, R.A.

Size, Forty Inches by Sixteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE REVENGE OF ATHALIE.

By XAVIER SIGALON.

Size, Thirty-two Inches by Twenty-one Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

SHAKSPERIAN DECORATIVE PANELS.

By H. STACY MARKS, R.A.

Printed in Colours.

1. Scene from "The Tempest."
2. Scene from "Midsummer Night's Dream."
3. Petruchio and the Tailor.
4. Falstaff in the Buck Basket.
5. Touchstone, Audrey, and William.
6. Falstaff acting the King.
7. Parolles' Eyes Unbound.
8. Malvolio in the Garden.

Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.
Or the set of Eight, Five Shillings; by post, Five Shillings and Sixpence.

THE BANQUET.

The well-known and beautiful Chromo-lithograph by

H. STACY MARKS, R.A.

Size, Thirty-nine Inches by 15 inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE HISTORY OF ART.

In Two Plates, reproduced from the Splendid Painting around Cupola in Place St.-George's, Paris.

By M. FRANCOIS EHRMANN.

Showing Typical Figures of Ancient and Modern Styles of Art.

Size, Thirty-six Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence each.

AN IDYLL.

By ALBERT HYNAIS.

A BEAUTIFUL TINTED INK PHOTOGRAPH.

Size, Nineteen Inches by Fourteen Inches.
Price Sixpence.
Free by post, carefully packed inside patent roller, Eightpence.

THE GUITAR PLAYER.

From the Painting by Charles Sprague Pearce.

Size, Nineteen Inches by Fourteen Inches.
Price Sixpence.
Free by post, carefully packed inside patent roller, Eightpence.

ARCADIA.

By P. P. PRUDHON.

Size, Nineteen Inches by Thirteen and a half Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE ARTS.

DECORATIVE PANELS.

By M. F. EHRMANN.

Printed in Colours.

1. The Architect.
2. The Engraver.
3. The Goldsmith.
4. The Painter.
5. The Potter.
6. The Sculptor.

Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.
Or the set of Six, Three Shillings and Sixpence; by post, Four Shillings and Sixpence.

THE BARD.

Facsimile of Cartoon by Prof. Maillart.

Size, Thirty-six Inches by Twenty-two Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE BATTLE OF THE AMAZONS.

By PETER PAUL RUBENS.

Size, Thirty-five Inches by Twenty-seven Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

LA FONTAINE'S ALLEGORY OF WAR.

From the Painting by ADRIEN MARIE.

Size, Thirty Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE FAREWELL BEFORE EXILE.

From the Picture by MONS. COESSIN DE LA FOSSE.

Size, Thirty Inches by Twenty Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

THE DEATH OF KING CHILPERIC.

From the Painting by MONS. E. V. LUMINAIS.

Size, Twenty Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

MARIONKA.

From the Painting by M. FRANCOIS SHOMMER.

Size, Twenty Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

A VENETIAN WEDDING.

(Saint Mark's, XV. Century.)

From the Painting by M. JACQUES WAGREZ.

Size, Twenty Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

DEPARTURE OF CRUSADERS FOR THE HOLY LAND.

By G. GUFFENS.

Size, Thirty-six Inches by Fourteen Inches.
Price One Shilling.
Free by post, carefully packed inside patent roller, One Shilling and Threepence.

May be obtained from all Newsagents or Booksellers, or from the

PUBLISHERS, GILBERT WOOD & CO., 175 STRAND, LONDON, W.C.

"THE PEDESTAL VASE,"

JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,

SANITARY ENGINEER, STANGATE, LONDON.

A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



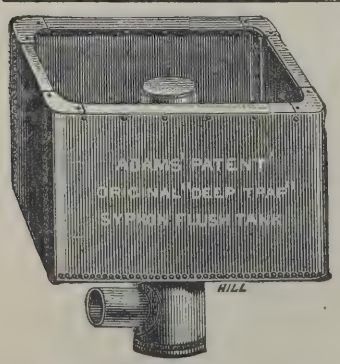
ELECTRIC & PNEUMATIC BELLS.

NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.

MECHANICAL TELEPHONES. Everything for a line complete for £3.

PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

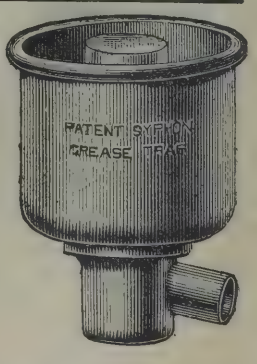


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
" **FLUSH SYPHONS** for Sewer Flushing.
" **FLUSH LATRINES** for Barracks, Schools, &c.
" **FLUSH URINALS** " " "
" **TROUGH CLOSETS** " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, August 13, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, AUGUST 20, 1886.

L'ART,

Price Two Shillings, can be ordered from all newsagents, and at any railway bookstall; or through the publishers for Great Britain, Messrs. GILBERT WOOD & CO., 175 Strand, W.C.

The scale of charges for Advertisements is as follows, and Advertisements intended for insertion in the following Number must reach the Office not later than the 24th or 8th of the month:—

ADVERTISEMENT SCALE.

For Two Lines and under (nine words to the line)	£0 5 0
For every additional Line	0 1 6
Per Quarter Page	6 0 0
Per Half Page	11 0 0
For a Page	21 0 0
For 1 inch deep by 2½ wide	0 15 0

Special arrangements may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 Strand, London, W.C.

NOTICE.

We have appointed Mr. JOHN BERGER, *of New York, our agent for the United States and British North America, for receipt of Advertisements and Subscriptions to* THE ARCHITECT AND CONTRACT REPORTER.

PLUMBERS' REGISTRATION.

IT will be seen from an announcement in another column that the Plumbers' Company again invite all qualified plumbers to protect themselves (and the public as well) by having their names recorded in the register of the Company. From the constitution of the special committee, it will be impossible for any competent applicant to be rejected. Men who have belonged to the trade prior to March 1, 1886, are not, unless in exceptional cases, required to submit to any examination; and when it is considered advisable to test the candidate's qualification, the Examining Board is composed mainly of practical plumbers. The whole of the rules are inspired by a spirit of justice, and we hope masters and men will aid the Company in their efforts to enable the public to discriminate between competent and incompetent plumbers.

COMPETITIONS OPEN.

HALIFAX.—Sept. 1.—Plans for proposed Board School are invited from Architects of the Town. Mr. Robert Ostler, Clerk to the School Board, Halifax.

MAIDSTONE.—Sept. 5.—Designs for the Erection of Girls' School are invited by the Governors of the Girls' Grammar School. Mr. H. Monckton, Town Clerk's Office, Maidstone.

CONTRACTS OPEN.

ABERGAVENNY.—Aug. 26.—For Construction of Iron Roof, Hydraulic Main Pipes, Ironwork for Retorts, and Sulphate Ammonia Apparatus. Mr. J. T. Rutherford, Clerk to the Improvement Commissioners, Town Hall, Abergavenny.

BANCHORY.—Aug. 21.—For Construction and Maintenance of 9⅜ miles of Cast-iron Pipes (350 tons), with Two Concrete Reservoirs, Tanks, Valves, Hydrants, &c. Messrs. Jenkins & Marr, C.E., 16 Bridge Street, Aberdeen.

BELFAST.—Sept. 1.—For Building Shops and Offices, and General Reconstruction of Methodist Church Property in Donegal Place. Mr. J. J. Phillips, Architect, 21 Arthur Street, Belfast.

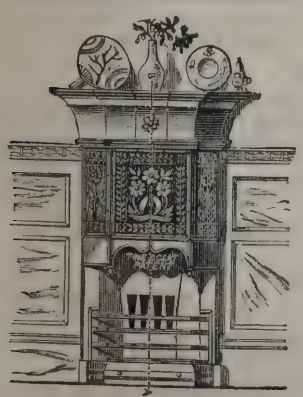
CARDIFF.—Aug. 21.—For Rebuilding Premises, St. Mary Street. Mr. J. P. Jones, Architect, 27 Park Street, Cardiff.

CARDIFF WATERWORKS.—Aug. 26.—For Construction of Reservoirs, Filters, Pipe Laying, &c. Mr. J. A. B. Williams, C.E., Queen's Chambers, Queen Street, Cardiff.

CLACTON-ON-SEA.—Aug. 24.—For Building Congregational and Baptist Church. Mr. T. H. Baker, Architect, Clacton-on-Sea.

CHURCH COPPENHALL.—Aug. 25.—For Enlargement of Board Schools, Maw Green. Mr. E. Furber, Surveyor, Hightown, Crewe.

CLACTON-ON-SEA.—Sept. 1.—For Erection of a School-room. Rev. A. Gregory, Clacton-on-Sea.



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

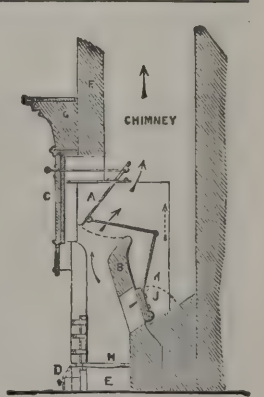
WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.



DRUMOAK.—Aug. 26.—For Additions to Public School. Messrs. Matthews & Mackenzie, Architects, 225 Union Street, Aberdeen.

DUBLIN.—Aug. 28.—For Erection of Waiting-room at Prospect Cemetery, Glasnevin. Mr. R. W. Walsh, Architect. Mr. C. Coyle, Secretary, 7 Lower Ormond Quay.

DUDLEY.—Aug. 27.—For Alterations and Additions to Workhouse School. Messrs. Wood & Henry, Architects, West Bromwich. Mr. T. Allen Clerk, Dudley.

GRAVESEND.—Sept. 3.—For Erection of Hospital for Contagious Diseases. Mr. G. E. Sharland, Town Clerk, Gravesend.

HALIFAX.—Aug. 20.—For Laying Iron Water Pipes (1,440 yards). Mr. J. A. Paskin, Waterworks Engineer, Town Hall Chambers, Halifax.

HALIFAX.—Aug. 24.—For Building Eight Houses, Haugh Shaw Estate. Messrs. G. Buckley & Son, Architects, Waterhouse Street, Halifax.

HEADINGLEY.—Aug. 27.—For Erection of Ten Houses for Leeds Tramway Company. Mr. C. S. Nelson, Architect, Albert Chambers, Park Row, Leeds.

KILLYLEAGH.—Aug. 21.—For Building Lecture Hall and Classrooms in connection with First Presbyterian Church. Messrs. Young & Mackenzie, Architects, Donegall Square East, Belfast.

LEEDS.—Aug. 20.—For Building House and Stabling, Kelsall Estate, Woodsley Road. Mr. Thomas Winn, Architect, 18 Park Lane, Leeds.

LEYTON.—Sept. 6.—For Enlargement of Newport Road Board Schools. Mr. J. T. Newman, Architect, 2 Fen Court, Fenchurch Street, E.C.

MULROY, CO. DONEGAL.—Sept. 1.—For Building Coastguard Station. Mr. W. B. Soady, Office of Public Works, Dublin.

NORTHWICH.—Aug. 21.—For Building Gauge House, Forming Road, Laying Pipes for intended Waterworks. Mr. H. Bancroft, C.E., 83 Mosley Street, Manchester.

PAISLEY.—Sept. 22.—For Enlargement and Reconstruction of Passenger Stations on Glasgow and Paisley Joint Line. Messrs. Blyth & Cunningham, Engineers, Edinburgh. Mr. J. Hay, Secretary, Bridge Street Station, Glasgow.

PAISLEY.—Aug. 31.—For Construction of Harbour and Works to the River Cart. Messrs. Miller & Bell, C.E., 204 St. Vincent Street, Glasgow.

PORTSMOUTH.—Aug. 25.—For Building Town Hall, Municipal Offices, Police Court and Cells, Reading Room, and Library. Mr. W. Hill, Architect, 25 Park Square, Leeds.

RIPLEY.—Aug. 31.—For Building Board School, Street Lane. Mr. J. R. Naylor, Architect, Old Bank Chambers, Irongate, Derby.

SWANSEA.—Aug. 26.—For Erection of Church at Cwmbwrla. Mr. T. Lewis, Architect, Swansea.

WIGAN.—Sept. 1.—For Alterations and Additions at Wigan Infirmary. Mr. W. Taberner, Secretary.

YARMOUTH.—Aug. 26.—For Building Five Cottages. Mr. W. B. Cockrill, Architect, Glencoe House, Gorleston.

TENDERS.

AYLESBURY.

For Erection of Farm-house and Buildings at Quarrenden. Mr. ARTHUR VERNON, F.S.I., Architect, 26 Great George Street, Westminster, and High Wycombe.

Gibson	£1,483 0 0
Grist	1,198 0 0

For Erection of Farm-house and Cow-sheds at Kimble Marsh, near Aylesbury. Mr. ARTHUR VERNON, F.S.I., Architect, 26 Great George Street, Westminster, and High Wycombe.

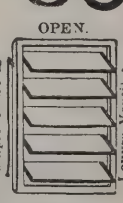
Grist	£408 10 0
GIBSON (*accepted*)	371 10 0

BURNHAM (ESSEX).

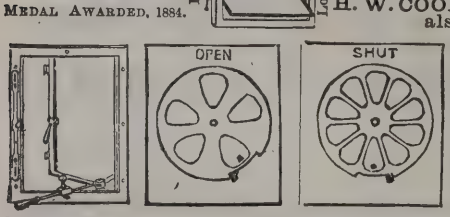
For Construction of Outfall Sewers, &c. Mr. ALAN STEWART, Engineer. Quantities by the Engineer.

W. Wood, Chelmsford	£675 15 0
Neave, Leytonstone	659 0 0
Standen, Harlesden	621 0 0
Cook, Burnham	502 7 4
Thorn, Messing	477 19 0
FOSTER & DICKSEE, Rugby (*accepted*)	466 10 8
Potter, Lower Clapton	465 0 0

HOLDEN & CO.'S PATENT ZINC ROOFING
WITH THEIR
PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,
Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.
Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.
ZINC AND IRON WORKERS AND COPPERSMITHS.
Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.
HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

H. W. COOPER & COMPANY, LIMITED,
HEALTH EXHIBITION, MEDAL AWARDED, 1884.


Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).
Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.
H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.


GLASS SELLERS' COMPANY EXHIBITION, MEDAL AWARDED, 1876.


Improved Casement. Circular Glass Revolving Ventilator. Glass Sliding Ventilator. Improved Hopper for Skylights. Hopper Ventilator. Casement.
Steam Works: Little Queen St., Upper George Street, Edgware Road, W.
Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.



SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.
LONDON DEPOT:
Kinson Wharf,
Albert Embankment,
LAMBETH, S.E.
CARTER, JOHNSON & CO.,
ENCAUSTIC TILE MANUFACTORY,
St. George's Works,
WORCESTER.
20 Victoria Buildings,
Victoria Street, MANCHESTER.
Agents:—STURGEON & SMITH,
3 Cross Lane, Eastcheap, E.C.

BOOTLE.

For Erection of a Lodge at the North Park, for the Corporation. Mr. W. BLAIR, Borough Surveyor.

Webster, Bootle	£663	10	0
Wilkinson, Bootle	640	0	0
W. & G. Johnson, Seaforth	639	0	0
Lloyd, Bootle	565	0	0
R. C. & J. Eskrigge, Seaforth	542	0	0
Sinclair Bros., Bootle	496	0	0
Smith, Bootle	485	0	0
Bridge, jun. & Co., Bootle	476	0	0
Bell & Burnie, Bootle	450	0	0
WALSH, Bootle (*accepted*)	390	0	0

BRENTWOOD (ESSEX).

For the Erection of Villa, Ongar Road. Mr. ARTHUR WOODS, Architect, Brentwood. Quantities by the Architect.

Winter Brothers, Brentwood	£890	0	0
Alderton, Brentwood	847	0	0
Corney & Perkins, Brentwood	781	10	0
ROGERS, Brentwood (*accepted*)	719	0	0

BRIGHTON.

For Laying about 800 yards of 7 feet 6 inches by 5 feet Brick Sewer in the London Road Works, and connected therewith. Mr. P. C. LOCKWOOD, C.E., Borough Surveyor.

Cheesman & Co., Brighton	£11,200	0	0
J. Harrison, Brighton	10,700	0	0
N. J. Botterill, Cannon Street, E.C.	10,558	0	0
C. Dickinson, Loughborough Junction	7,970	0	0
G. Olliver, Brighton	7,500	0	0
J. Longley, Brighton and Crawley	7,277	0	0
J. G. B. Marshall, Brighton	7,000	0	0
G. Felton, Kilburn, N.W.	6,650	0	0
BUSTER, Brighton (*accepted*)	6,567	0	0

CONWAY.

For Building Additions to Glasfryn, for Mr. T. E. Parry. Mr. T. B. FARRINGTON, Architect.

R. Jones & Son	£590	0	0
H. Williams	534	0	0
J. Berth Jones	530	0	0
J. Roberts	480	0	0
E. ROBERTS (*accepted*)	460	0	0
J. Griffiths	265	0	0

CONWAY—*continued.*

For Additions to Workhouse. Mr. T. FARRINGTON, Architect.

Robert Jones & Son	£391	0	0
William Thomas	345	0	0
J. Berth Jones	310	0	0
H. Williams	310	10	0
EDWARD ROBERTS (*accepted*)	248	0	0

EXNING (SUFFOLK).

For New Cottages at Exning. Mr. JOHN FLATMAN, Architect, Newmarket.

Smith	£417	0	0
Simpson & Son	375	0	0
Cowell	355	0	0
Hook & Tebbitt	353	0	0
Linzell	339	0	0
KERRIDGE & SHAW, Cambridge (*accepted*)	285	0	0

FLEETWOOD.

For Construction of a Sea-wall, Carriage-drive, and Promenade. Section No. 1. Mr. M. S. GUALTER, Surveyor.

Cardwell Bros., Blackpool	£1,739	15	5
Bush, Preston	1,465	0	0
Stansfield, Todmorden	1,448	7	10
Garnett & Warhurst, Fleetwood	1,400	0	0
R. JONES, Fleetwood (*accepted*)	1,420	0	0
Surveyor's estimate	1,436	6	7

GESTINGTHORPE.

For Erection of a Villa. Mr. G. PAGE, Architect, Colchester.

Mason & Son, Haverhill	£295	0	0
W. Wanford, Sudbury	292	0	0
Grimwood & Sons, Sudbury	288	0	0
J. BEARD, Chappel (*accepted*)	250	0	0

GRAYS (KENT).

For Building Coffee Tavern, for the Grays and District Peoples' Café Company. Mr. F. T. MULLETT, Architect. Quantities by the Architect.

Thompson & Son	£1,148	5	0
Page	1,080	0	0
Seed	990	0	0
J. Brown	982	6	0
Staines & Son	975	0	0
Prentis & Co.	950	0	0
Snow	933	1	0
H. J. Carter	849	10	0
G. & H. Rons	837	0	0

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,

Is admitted to be the best ever put before the Public.

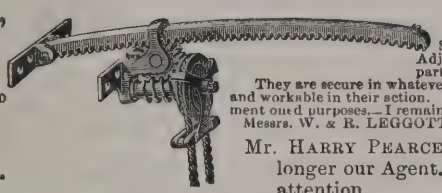
From 5s. each.

Write for REDUCED PRICE LIST and Testimonials to

W. & R. LEGGOTT,

70 Park Road, Bradford, Yorkshire.

N.B.—Size and height of window no object.



TESTIMONIAL.

BANGOR, N. Wales: September 14, 1885.

Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-ment oned purposes.—I remain, yours obediently, R. DAVIES, Architect.

Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

MELLOWES & DARBY,

FORMERLY PRIMROSE & Co. CHURCH ST. SHEFFIELD.

"ECLIPSE" PATENT ROOF GLAZING

NO PUTTY, PAINT, ZINC OR OTHER PERISHABLE MATERIAL.

IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c.

NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.

PRIZE MEDAL AWARDS: KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882-3.

THE ONLY GLAZING AWARD, INTERNATIONAL HEALTH EXHIBITION, 1884.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.

Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

GUILDFORD.

For Building Culvert or Bridge, Cemetery Road, Stoke, for the Guildford Highway Board.

H. Knight, Northfleet	£65 0 0
W. G. Mason, Guildford	47 0 0
W. Smith & Sons, Guildford	38 0 0
A. GLEW, Stoke Guildford (*accepted*)	37 0 0

HANWELL.

For Alterations and Additions to the Probationary Ward, New Laundry, &c., Central London School District. Mr. A. G. LANGDON, Architect, 17 Craven Street. Quantities by Messrs. Fowler & Co., 9 Craigs Court.

	Alterations and Additions.	Plastering.
Holloway Bros., Battersea	£3,596 0 0	£222 0 0
Nightingale, Lambeth	3,520 0 0	220 0 0
Randell, Woolwich	3,420 0 0	160 0 0
G. Lyford, Uxbridge Road	3,393 16 9	157 17 0
Simpson, Borough	3,371 0 0	116 0 0
J. Edwards, Ealing	3,277 0 0	149 0 0
E. C. Howell & Son, Lambeth	3,249 0 0	142 0 0
J. A. Wilson, Uxbridge	3,198 0 0	133 0 0
W. Martin, Willesden	3,170 0 0	102 10 0
Pack Bros., Brixton	3,089 0 0	160 0 0
Stevenson, Bishopsgate	3,030 0 0	111 0 0
W. Johnson, Wandsworth	2,950 0 0	82 0 0
Kirk Bros., Battersea	2,940 0 0	106 0 0
Albert Kimberley, Banbury	2,930 0 0	163 0 0
Clissold, Ealing	2,834 0 0	140 0 0
Belch, Slough	2,756 12 4	106 0 0
Gibson, Southwark	2,662 0 0	119 0 0
Green, Eagle Street, W.C.	2,548 0 0	157 0 0

HANLEY (STAFFS.).

For Erection of Printing and Lithographing Works, for Messrs. Atkinson Bros. Messrs. R. SCRIVENER & SONS, Architects, Hanley. Quantities by the Architects.

H. & R. Inskip, Langton	£2,349 0 0
William Cooke, Burslem	2,306 13 0
Nathan Barlow, Stoke-on-Trent	2,159 0 0
Cornelius Cornes, Hanley	2,120 0 0
John Brindley, Burslem	2,100 0 0
THOMAS GODWIN, Hanley (*accepted*)	1,889 0 0
James Bowden, Burslem	1,875 10 0

IRTHLINGBOROUGH.

For Erection of Sixteen Cottages. Mr. E. SHARMAN, Architect, Croyland Abbey.

E. Brown, Wellingborough	£3,065 5 0
G. Henson, Wellingborough	2,680 0 0
A. Lovell, Raunds	2,674 0 0
W. Stevens, Wellingborough	2,668 0 0
J. Underwood, Wellingborough	2,635 0 0
A. Thompson, Irthlingborough	2,629 10 0
W. H. Henson, Finedon	2,594 0 0
G. Hacksley, Wellingborough	2,575 9 0
Smith & Son, Raunds	2,474 0 0
Sparrow, Rushden	2,465 0 0
CLAYSON BROS., Cooknoe (*accepted*)	2,146 0 0

LONDON.

For Erection of the Surrey Houses on the Victoria Embankment and Norfolk Street, Strand, for the Law Land Company. Mr. J. DUNN, F.R.I.B.A., Architect. Messrs. Nixon & Raven, Surveyors.

Holland & Hannen	£36,761 0 0
Higgs & Hill	35,990 0 0
Patman & Fotheringham	35,973 0 0
Bywaters	33,966 0 0
Conder	33,585 0 0
Boyce	33,497 0 0
Mowlem	33,393 0 0
Trollope & Sons	33,268 0 0
Morter	32,967 0 0
Patrick & Son	32,744 0 0
Chappell	32,549 0 0

For Pulling Down the Shakespeare Beerhouse and two adjoining Houses in Baker's Row, Whitechapel, and Erecting two Houses with Shops, for Messrs. Truman, Hanbury & Co. Mr. GEORGE LOW, Architect. Messrs. R. Low and H. Paine, Surveyors.

Dove Bros.	£1,875 0 0
Holliday & Greenwood	1,739 0 0
Conder	1,699 0 0
Hawkins	1,694 0 0
Jackson & Todd	1,597 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

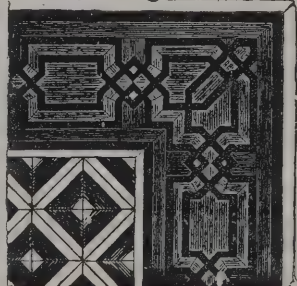
PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING.
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

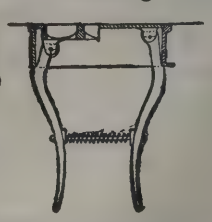
TO BRICK MANUFACTURERS, FOREMEN, ETC.
THE advertiser, who has had great experience in making GLAZED BRICKS in white and many colours, at one burning, is willing to sell the secrets. Results guaranteed. Samples sent for inspection. Red or Fire Clay. Also the preparation of a Rich Blood Red Slip, which serves as a Coating for Red Bricks of inferior colour.—Address "BRICKS," "The Architect," London.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered. PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT.

NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

LONDON—*continued.*

For Erection of Cutlers' Hall, Warwick Lane, E.C. Mr. T. TAYLER SMITH, Architect to Company.

Lascelles	£12,512 0 0
Mowlem	11,980 0 0
Higgs & Hill	11,540 0 0
Colls	11,390 0 0
Stimpson	11,220 0 0
Stevens & Bastow	10,999 0 0
Grover	10,890 0 0
Brass	10,877 0 0
Chappell	10,840 0 0
Morter	10,489 0 0

Additional, if Joiner's Work in Dining-rooms and Two Court-rooms is executed in

	Walnut.	Wainscot.	Chestnut.
Grover	£1,123	£1,123	£1,094
Morter	1,018	1,018	1,020
Lascelles	790	790	721
Higgs & Hill	646	646	667
Chappell	550	620	480
Stevens & Bastow	472	472	422
Mowlem	412	412	915
Stimpson	383	380	850
Colls	360	470	400
Brass	345	412	412

Additional, if Joiner's Work to principal Staircase and Entrance-hall is executed in

	Walnut.	Wainscot.	Chestnut.
Lascelles	£850	£908	£754
Grover	835	910	915
Morter	829	910	913
Chappell	680	740	610
Higgs & Hill	648	655	664
Stevens & Bastow	636	697	561
Colls	512	630	540
Mowlem	496	811	984
Stimpson	490	740	920
Brass	483	557	557

YOU will really enjoy yourself if you smoke the excellent cigars supplied direct to consumers, at wholesale prices, by HELMCKE & Co., 32 Great St. Helen's, London, E.C. Write for price list. Sample collections sent on receipt of 10*s.* 6*d.* or 21*s.*

LONDON—*continued.*

For Alterations and Additions at 75 Rockingham Street, Newington. Messrs. G. LANSDOWN & HARRIS, Architects, Warwick Street, Charing Cross.

H. & E. Lea	£1,693 0 0
Perry & Co.	1,680 0 0
Canning & Mullins	1,547 0 0
Tarrant & Son	1,528 0 0
W. Smith	1,433 0 0
G. Parker	1,419 0 0
W. & F. CROAKER (*accepted*)	1,374 0 0

For Building Shop and Dwelling-house, &c., for Mr. A. S. Tyers. Mr. ALBERT L. GUY, Architect, Lewisham.

S. J. Jerrard	£1,193 0 0
Balaam Bros.	1,150 0 0
D. & R. Kennard	1,070 0 0
H. Bridel	920 0 0
T. KNIGHT (*accepted*)	879 0 0
H. Barber	820 0 0

For Building Billiard Room in the Lewisham Conservative Club. Mr. ALBERT L. GUY, Architect.

Balaam Bros.	£460 0 0
H. Bridel	430 0 0
H. L. Holloway	428 0 0
S. J. Jerrard	398 0 0
H. Bennett	397 0 0
T. KNIGHT (*accepted*)	370 0 0

For Alterations and Extension at Nos. 16 and 18 King's Road, Chelsea, S.W., for Messrs. Lester & Co. Mr. J. WILLIAM STEVENS, Architect and Surveyor, 21 New Bridge Street, E.C.

Burton & Son	£927 0 0
Downs	795 0 0
Prestige & Co.	724 0 0
Yardley & Son	722 0 0
BRAID & Co. (*accepted*)	650 0 0

For Sundry Alterations and Repairs at 22 Dorset Street, Baker Street, W., for Messrs. Day, Son, & Hewitt. Mr. W. F. POTTER, Architect.

R. Perkins, Marylebone	£187 0 0
H. H. EVANS, Marylebone (*accepted*)	175 0 0
J. Hooper, Herne Hill	147 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, ontinuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

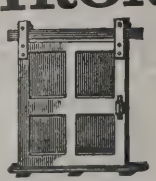
SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

WHITLAND ABBEY GREEN SLATE QUARRIES.
REDUCTION IN PRICE.
THESE Stout, Durable SLATES, which are so much sought after by Architects for Mansions, Churches, Chapels, and other Public Buildings on account of the permanency of their beautiful colour, are now offered by the Proprietor, Mr. MUSCOTT (whose name is so well known in connection with these Green Slates for the last twenty years), at a reduction of Twenty per Cent.—For Testimonials, Samples, Price Lists, &c., apply to the old address, as under.
Mr. MUSCOTT, {Whitland Abbey Green Slate Quarries Clynderwen R.S.O., South Wales.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK.
PICTOR & SONS, Box, Wilts.



IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, [illegible]. (only address).

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Desins.

LONDON—*continued.*

For Building the Beaconsfield Hotel, and Shop adjoining, Green Lanes, Finsbury Park. Messrs. ALEXANDER & GIBSON, Architects, 9 Great James Street, Bedford Row. Quantities by Mr. H. Burton.

J. BEALE (*accepted*)	£5,400 0 0

For Hall in connection with St. James's Church, Stanstead Road, Forest Hill. Messrs. TOLLEY & SON, Architects.

Roberts	£3,100 0 0
Bryan	2,870 0 0
Marriage	2,754 0 0
Gould & Brand	2,728 0 0
Waddington	2,093 15 0

NEWMARKET.

For Erection of House in Park Lane, for Mr. H. Peck, exclusive of Plumbing, Painting, Glazing, and Ironwork. Mr. JOHN FLATMAN, Architect, Newmarket.

Smith	£952 0 0
Simpson & Son	940 0 0
Kerridge & Shaw	917 0 0
Plummer	815 0 0
Cowell	785 0 0
Linzell	709 0 0
BLYTH & HUNT, Newmarket (*accepted*)	694 10 0

QUEENSFERRY, N.B.

For Building Dwelling-house, South Queensferry, N.B. Mr. JOHN AITKEN, Architect. Quantities by the Architect.

A. KIRKWOOD, Kirkliston (*accepted*)	£361 0 0
J. Cook, South Queensferry, mason	184 0 0
T. Peattie, Bo'ness, mason	170 19 6
J. Sommerville, South Queensferry, mason	169 2 4
W. Coutts, Edinburgh, carpenter	152 10 0
Knox & Henderson, Edinburgh, carpenter	133 4 0
G. Bowmaker, Kirkliston, carpenter	132 17 6
R. Martin, slater, plasterer and plumber	58 13 6
A. R. McPherson, Kirkliston, slater, plasterer and plumber	55 1 0

Ham Hill Stone! Ham Hill Stone!!! For Ham Hill Stone of best quality and workmanship, apply to JOHN HANN & SON, Quarry Owners, Montacute, Ilminster. Established 1837. Agents, MATTHEWS & GEARD, Albany Wharf, Regent's Park Basin, N.W. [ADVT.

RIPLEY (SURREY).

For Erection of Residence at Manor Cottage Farm. Mr. W. S. CROSS, Architect. Quantities by Mr. H. E. Pollard.

Mitchell Bros., Shalford	£3,100 0 0
Clemence	2,950 0 0
Strudwick, Guildford	2,921 0 0
Rider & Son	2,698 0 0
Laing & Son	2,672 0 0
Whitburn, Woking	2,600 0 0
Macey & Son	2,542 0 0
Mackie, Camberwell	2,297 0 0
Wood, Cobham	2,285 0 0

ROMFORD (ESSEX).

For Rebuilding the Woolpack and Shop adjoining, High Street, for Messrs. Ind, Coope & Co. Mr. JOHN HUDSON, Architect, 80 Leman Street, E. Quantities by Mr. E. Stanger.

Holland & Hannen	£4,244 0 0
W. Brass & Son	3,036 0 0
J. & J. Greenwood	3,001 0 0
Brown, Son & Blomfield	2,960 0 0
J. Bentley	2,912 0 0
HAMMOND & SON, Romford (*accepted*)	2,861 0 0

SOUTHAMPTON.

For Alterations and Additions to the Infirmary and other Works at the Union Workhouse at Westend. Mr. W. H. MITCHELL, Architect, Southampton.

Honeychurch & Michelmore, Southampton	£3,610 13 10
Wickham, Bitterne	3,520 0 0
Harvey, St. Denys	3,468 0 0
Haines, Westend	3,412 0 0
Stevens & Sons, Southampton	3,329 0 0
Musselwhite, Sholing	3,312 0 0
Dyer & Sons, Southampton	3,200 0 0
Bull & Sons, Southampton	3,179 0 0
Carden, Southampton	3,091 0 0
Crook & Sons, Southampton	3,087 0 0
Franklin, Portswood	3,010 0 0
Rowland, Southampton	2,998 0 0
Blake, Eastleigh	2,997 0 0
WITT, Bitterne (*accepted*)	2,750 10 0
Architect's estimate	3,436 0 0

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers. LONDON, E.C.

SHEPTON MALLET.

For Supplying and Laying 2,300 yards of 3-inch Stoneware Pipes, 1,272 yards of 2-inch Iron Pipes, and 588 yards of Galvanised Iron Pipes, and for Construction of a Storage Tank to hold 10,800 gallons, for carrying out the Gurney-slade Water Supply. Mr. J. S. PHELPS, Surveyor, Croscombe.

Mereweather & Rider	£844 0 0
G. Whatley & Son	660 0 0
F. Flower	589 0 0
Ambrose & Son	575 0 0
C. Badman & Son	573 0 0
H. Allen & Son	455 0 0
S. Emery & Son	395 0 0
W. SMITH, Shepton Mallet (*accepted*)	380 0 0

THAMES DITTON.

For Repairs, Painting, &c., to the Thames Ditton Schools. Mr. W. H. HOPE, Architect, Kingston-on-Thames.

W. Hickinbotham	£289 10 0
W. Gaze	199 18 0
Wheatley	167 0 0
J. A. Webb	167 6 0
W. CALLINGHAM, Thames Ditton (*accepted*)	168 10 0

ULVERSTON.

For Building an Infants' Department to the Dale Street Schools, for the Ulverston and Mansriggs School Board. Mr. HENRY BARBER, A.R.I.B.A., Architect, Herbert Street, Cheetham, Manchester.

T. F. Tyson, Ulverston	£819 10 0
J. Garden, Dalton-in-Furness	799 10 0
Cox & Brown, Barrow-in-Furness	773 10 0
THOMAS WEARING, Ulverston (*accepted*)	750 0 0

WALLINGTON.

For Erection of Baptist Church in Queen's Road, for the Trustees. Mr. HENRY J. WHITE, Architect, Wallington, Surrey.

E. J. Burnand	£4,117 0 0
Coxhead	4,063 0 0
Smith & Son	3,973 0 0
W. H. Castle	3,827 0 0
Allen & Son	3,817 0 0
D. Brown & Co.	3,790 0 0
D. Stewart	3,468 0 0
R. Humphris, Sutton	3,220 0 0

TRADE NOTES.

MESSRS. LEGRAND & SUTCLIFF, hydraulic engineers of London, are boring an artesian tube well at the residence of the Earl of Lovelace, East Horsley Towers, Surrey. The upper greensand has just been reached at the depth of 825 feet from the surface. The chalk was first met with at 33 feet, as the site of the boring is but a short distance from its outcrop; hence its total thickness has now been demonstrated to be 792 feet. Contrary to the general rule, very little water was found in the upper chalk, and it was not until 500 feet was reached that a good supply was obtained. Below this depth the chalk proved practically waterless. The water, when first reached, stood at 119 feet below the surface, and as the boring progressed rose to within 106 feet, or nearly 200 feet above Ordnance datum, but upon piercing the upper greensand it fell to 117 feet. The flint beds extended down to no less than 380 feet into the chalk, after passing through which the boring tool employed has been a 40-feet cylinder, which rotates automatically, and can be lowered 800 feet, and raised to the surface in the short space of thirty minutes. The total depth at present reached is 840 feet.

AN important addition has been made to Tilstock Church, Salop, by the erection of a reredos, which has been executed by Messrs. Jones & Willis, of Birmingham and London. The reredos is of oak, and contains five panels of decorated zinc, embellished with texts and sacred monograms.

THE Canadian Pacific Railway is likely to be used largely for exporting timber from the Dominion. Thirty-five hundred car-loads of square timber, representing two million square feet, arrived in Montreal within the last two months from Georgian Bay and Lake Nipissing districts. These consignments were formerly sent down by water.

MR. W. BIRKMYRE lately read a paper on "Revival of Trade by the Development of India" before the Glasgow Chamber of Commerce. It is now published in pamphlet form. The following passage will serve to explain the author's theory:—Give India adequate railway accommodation. In this you have also the key-note to improve trade for many years to come to nearly every industry in the United Kingdom. True, the iron trade would receive the largest and most immediate benefit, but as it is one of our largest industries, and the inter-dependence of trade is so linked in this country, that

THE ÆOLUS WATERSPRAY

SYSTEM OF

HEATING, COOLING, & VENTILATING

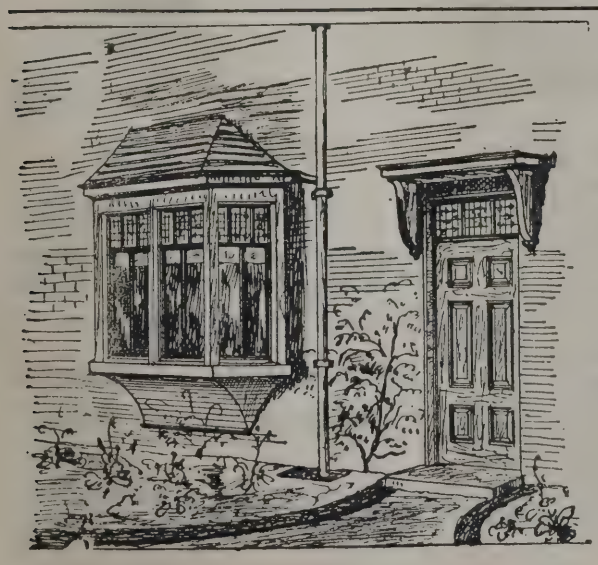
IS THE

CHEAPEST AND BEST.

For Particulars apply to

MANAGER, 235 HIGH HOLBORN, LONDON, W.C.

Applications for Agencies invited.



PROVISIONALLY PROTECTED.

FIRTH'S

Improved Disconnecting Trap,

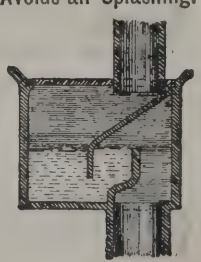
FOR FALL PIPES, &c.

COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.

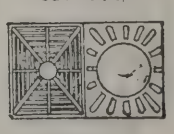
FOR PARTICULARS APPLY TO

GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing.



SECTION.



PLAN.

we do not exaggerate when we say that setting about in earnest to give India railways commensurate to the requirements of the country would mean the revival of trade to many of our industries—in short, it would be the opening out to capitalists and traders of a new industrial America, and at the same time add to the wealth of our fellow-subjects in India.

THE English Consul at Hiogo, Japan, reports that in the importation of iron machinery and plant on Japanese Government orders, a transfer of business has of late taken place from British to German firms, and probably, along with this, a transfer to some extent from articles of British to articles of Continental origin. In connection with this, there has been also a similar transfer of private business in these articles. This shows that the Germans are fighting English traders in other parts of the world as well as in Europe.

NOTES ON NOVELTIES.

MESSRS. WINCH BROS., of 24 Old Bond Street, have now on view a most attractive collection of photographic studies of Italian peasant life, taken instantaneously and printed by the platinotype process, the delicate softness and colouring of which greatly enhances the artistic effect of the grouping and the delicate play of light and shade. The series consists of some hundreds of pictures, principally landscapes, although among them will be found a goodly number of architectural studies, forming charming backgrounds to the picturesque groups of peasantry which really form the subjects of the pictures. The grace and naturalness of the posing of these figures, engaged as they are in their everyday occupations of drawing water, gathering olives, and plucking flowers, or indulging in local pastimes, leave nothing to desire—indeed, they are in many cases quite idyllic; while the innumerable details of Italian vegetation, quaint pottery, and costume, which are given with remarkable clearness and precision, should render them of the utmost value to artists and students as studies for handy reference.

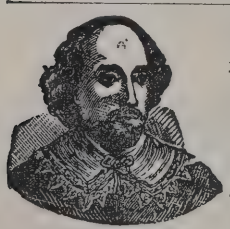
X. L. MOSS LITTER.—Mr. John Bennett, of Railway Docks, Goole, seems likely to make the success of moss litter a reality. He has recently commenced the experiment of converting an extensive area of moor land to its manufacture, and claims that his genuine moss litter—as opposed to the spurious foreign stuff of that name—has decided advantages. Mr. Bennett's speciality is meeting with great favour not only for bedding purposes, but as a manure, being much less in bulk than straw, and consequently easier to remove. The price of the X. L. moss litter—manufactured at home—is, of course, cheaper than the ordinary imported article, and Mr. Bennett, being a large shipowner, with docks near the works, must have special facilities for a home and export business.

BUILDING IN BRADFORD.

THERE is much building going on at Bradford, and in this respect appearances remind one of the state of things which prevailed for some years before the staple industry became depressed. Probably there could be no better indication of the extent to which matters are returning to their former position, and certainly nothing more confirmatory of the confidence felt as to the commercial prospects of Bradford, than the activity of the building trade. A large extent of cottage property is being erected in some of the outlying parts of the town, especially in the Bradford Moor District, and in the neighbourhood of Barkerend Road, and it is surprising how quickly tenants are found for such as are completed. The same remark will apply to cottages recently built in the West Bowling and Brownroyd districts. The building trade has also received a "good lift" through the action of the School Board in deciding to have four large schools erected for the accommodation of children hitherto taught in various schools rented by the Board. These are at Fairweather Green; Thornton Lane, Little Horton; Cross Lane, Great Horton; and Drummond Road, Manningham. The latter is the most important, and its erection will cost about 10,000*l.*, exclusive of the site. It is intended to provide accommodation for about 1,200 scholars. Works of enlargement of some of the Board schools are also in progress. A large Catholic church, at the upper part of Manchester Road, is being erected, and will shortly be completed. A fine building at the junction of Cotewall Road and Manchester Road, comprising public baths and premises for a branch free library, which has been built by the Corporation, is receiving its finishing touches and will shortly be opened. The style of architecture is Gothic, the main feature of the building being an

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
TRADE W MARK
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.



Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

SHOP SHUTTER SHOES.
NO SHUTTER BARS REQUIRED.
HARRISON'S PATENT SELF-FASTENING BEST MALLEABLE IRON SOLID BEAD SHOES
Extensively specified, and used by Architects, Surveyors, and Builders. The Solid Bead greatly protects the Corners of Shutter from wear in removal. Terms Cash. Illustrated List on application.
JAMES HARRISON, 35 Union Street, {BOROUGH, LONDON.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

octagonal tower. It is the first of a series of district baths which the Council sanctioned about two years since. The new post-office, at the junction of Bolton Road and Well Street, is now approaching completion; and although, in comparison with some of the surrounding warehouses, it appears dwarfish, in form and structure the building is an acquisition to the town.

STEAM FIRE-ENGINES FOR THE METROPOLITAN FIRE BRIGADE.

A NUMBER of engineers and scientific gentlemen attended the works of Shand, Mason & Co., of Blackfriars, London, to witness the trial of a steam fire-engine, made for the above brigade, being the completion of an order for five, making forty-six now in use by them, thirty-one of which have been supplied by the above firm. These engines embody all the latest improvements that have been introduced in any steam fire-engine, the principal features in these being increased size of steam cylinders, so that a higher pressure of water for the same amount of steam is obtained, and safety valves of a design which renders it impossible for the man in charge to obtain too high a pressure, and there is a very simple and effective feed water arrangement, while the axles are entirely of steel. Steam was raised in two and a half minutes from lighting the fire, cold water being used in the boiler, and at eight minutes a pressure of 100 lbs. to the square inch was indicated, and a stream of water was projected to a height of about 160 feet. High satisfaction was expressed by all present at the results obtained, and the trial was considered eminently successful.

EMPLOYERS' LIABILITY ACT.

THE Select Committee to whom the Employers' Liability Act (1880) Amendment Bill, and the Employers' Liability Act (1880) Amendment (No. 2) Bill were referred, and who were instructed to inquire into the operation of the Employers' Liability Act (1880), have considered the matters referred to them, and have agreed to the following report:—

Pursuant to the instructions of the House, your Committee have taken much evidence as to the operation of the Employers' Liability Act (1880). They have examined employers and workmen engaged in the leading industries, shipowners, seamen and fishermen, and legal witnesses of experience.

A general concurrence of opinion was expressed as to the advantages which the workmen have derived from the existing Act. The apprehensions as to its possible results in provoking litigation and imposing heavy charges upon employers have proved groundless, while a useful stimulus has been given to the establishment of provident funds and associations, in many cases liberally supported by the employers.

The following resolutions will supply the groundwork for further legislation:—

1. The operation of the Act of 1880 has been attended with no hardship to the employers, whilst it has been of great benefit to the workmen, and it is desirable that such Act should, with certain amendments, be renewed and made permanent.

2. No contract or agreement made or entered into with a workman shall be a bar or constitute any defence to an action for the recovery under this Act of compensation for any injury, unless on entering into or making such contract or agreement there was other consideration than that of such workman being taken into or continued in the employment of the defendant.

3. Such other consideration shall be—(*a*) That the employer shall have contributed to an insurance fund, for the benefit of such workman, against every accident arising in such employment. (*b*) That it has been certified by a competent authority that the employer's contribution to such fund bears a full proportion to the contribution of such workman, and that the benefit to be received by such workman from such fund is fully adequate, having regard, amongst other things, to the amounts recoverable as compensation under the Act. Provided always that if any amounts payable by such society or fund shall not be paid in accordance with the rules, the employer shall be liable to make good any deficiency so arising.

4. Wherever an employer enters into a contract, either written or verbal, with an independent contractor to do part of such employer's work, or wherever such contractor enters into a contract with a sub-contractor to do all or any part of the work comprised in such contractor's contract with the employer, such contract or sub-contract shall not bar the liability of the employer in respect of injuries sustained by any of the workmen of such contractor or sub-contractor, by reason of any defect in the condition of the ways, works, machinery, or plant, if such ways, works, machinery, or plant be the property of or furnished by the employer, and if such defect arose or had not

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER 700 ENGRAVINGS OF DIFFERENT PERIODS, AND NOTICES.

BY PAUL ROUAIX.

NEW EDITION. Price, Single Volume, 5*s.*; Complete Series, 12 Volumes (by Subscription), £2 8*s.*

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

LONDON: GILBERT WOOD & CO., 175 STRAND.

been discovered or remedied owing to the negligence of the employer, or of some person entrusted by him with the duty of seeing that the ways, works, machinery, or plant were in proper condition. Provision should be made to reserve any right of action which any workman may have against his immediate employer, or any right of action which the principal employer may have against his contractor or sub-contractor.

5. So much of Section 8 of the Act as defines the expression "person who has superintendence entrusted to him" as "a person whose sole or principal duty is that of superintendence, and who is not ordinarily engaged in manual labour," should be repealed.

6. The court should have power to allow an action for compensation to proceed, though no notice of injury should have been given, or, notwithstanding any insufficiency in the notice actually given, if the court should be of opinion that there was reasonable excuse for such want of notice or defective notice.

7. Where a workman is injured, and in the opinion of the judge who tries the action, or if the action is tried by a jury, in the opinion of the jury the amount of three years' wages, calculated as directed by section 3 of the principal Act, is an inadequate compensation for the injury in respect of which the action is brought, then upon an express finding to this effect, compensation may be awarded by such judge or jury to the extent of a sum not exceeding 150*l*.

8. Provision should be made enabling the judge before whom the case is to be tried, upon good cause shown, to order that the action should be tried before a special jury. In Scotland the parties should have the same rights as to trial by jury as exist in England.

9. The term "workman" shall include, besides the persons included in the definition in the eighth section of the principal Act, seamen, and all persons, including omnibus and tramway servants, who have entered into or work under a contract of service made with the employer, either verbal or in writing, and whether the work be performed in the employer's workshop, or elsewhere, and whether involving manual labour or not. The benefits of the Act should be extended to seamen in cases of accidents arising in home ports. As regards accidents occurring elsewhere than in home ports, the operations of the Act should be limited to those arising from defective equipment.

Your Committee do not consider it necessary under existing circumstances to amend the bills which have been referred to them, and have therefore agreed to report them without amendment.

GERMAN COMPETITION ON THE CONTINENT.

THE report on the condition of trade in Spain, by Mr. Audley Gosling, which was issued last week by the Foreign Office, gives another instance of the efforts which are being made by Germany to monopolise the trade which at one time belonged to this country.

One of the most remarkable features in the commercial movement in this country during the last five years, he says, is the impetus given to the German export trade to Spain. As will be seen from the following figures, it has bounded from 2,052,752*l*. in 1881 to 3,547,169*l*. in 1884, and that in spite of universal depression of trade. Were reliable statistics forthcoming, the increase up to date (May 1886) would be equally suggestive of the German struggle for commercial supremacy in the Peninsula.

German Exports to Spain.

1881	£2,052,752
1882	3,309,661
1883	3,466,603
1884	3,547,169

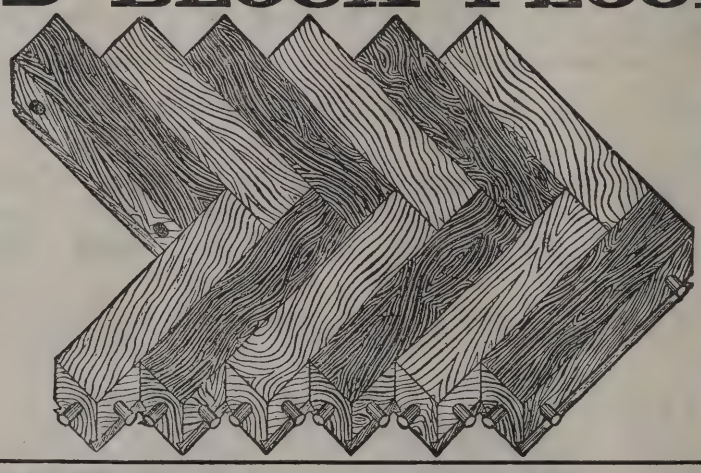
Spanish Exports to Germany.

1881	£348,717
1882	283,865
1883	403,947
1884	302,634

Spanish economists are alarmed at the abnormal disproportion between the imports and exports, the latter falling short of the former by over nine-tenths. In 1865 the whole export and import trade with Prussia and the German States amounted to only 147,063*l*., so that in twenty years it has actually increased over twenty-six fold. There is said to be a growing anti-German feeling in Spain in respect to that country's too successful commercial competition in the Peninsula. The German commercial traveller is indefatigable throughout the Peninsula, and being well backed and supported, makes considerable headway against his English and French rivals.

Mr. Gosling is assured that a practice obtains, which, if true, is highly reprehensible. *A* enters a shop and asks for English goods. The shop assistant produces articles which *A* perceives are not of British manufacture, and, on saying so, the assistant points to the trade label written in English. A

M. C. DUFFY & SON'S Improved and Perfectly "Immovable Acme" System of
WOOD BLOCK FLOORING
(W. DUFFY'S PATENT)
OBTAINED THE
HIGHEST AWARDS
AT ALL THE
International Exhibitions, 1885.
SUITABLE FOR
Churches, Schools, Warehouses, Basements, Railway Station Booking Offices and Platforms, Mansions, Hospitals, Banks, AND Public Buildings Generally



PRICES and full PARTICULARS on application to the Manufacturers,
M. C. DUFFY & SON,
At their Chief Office,
66 STORKS ROAD, S.E.
ALSO AT
GLASSHOUSE STREET, Albert Embankment, S.E.
UNION ROAD, Rotherhithe, S.E.;
STATION ROAD, Spa Road, S.E.;
VAUXHALL WALK, S.E.;
AND AT
GREAT YARMOUTH.

THE IMPERIAL HAND GRENADE FIRE EXTINGUISHER.

Their Royal Highnesses the Prince and Princess of Wales and Suite witnessed a Practical Experiment in Fire Extinguishment at Norwich, during the Royal Agricultural Society Show, July 14, 1886.

"The fire extinguisher displayed in presence of the Royal party and a large company was the Imperial Hand Grenade, and the trial was conducted in a meadow next Trowse Church, under the direction of Mr. T. H. Tilton and Mr. Alfred Barnard (of Barnard, Bishop & Barnards, who are wholesale agents for the East of England). The experiments were a thorough success. A wooden chimney 14 feet in height was ignited, and the flames shot up quite 10 feet beyond; a large structure representing the section of a house and a smaller structure were also set on fire, and all were instantaneously extinguished by four grenades. The Prince and Princess both expressed their surprise and pleasure at the efficacy of this novelty in quickly putting out fire, and ordered that several might be sent on to Sandringham. The Royal party then moved off amid the cheers of the crowd."—*The Norfolk Chronicle and Norwich Gazette*, July 15, 1886.

BARNARD, BISHOP & BARNARDS,
WHOLESALE and RETAIL AGENTS, 91, 93 & 95 Queen Victoria St., E.C.; and Norwich.

case of this kind occurred recently to a gentleman, who protested that the goods were palpably of German make. The shopkeeper admitted that this was so, adding that the deception was practised to insure a ready sale at enhanced prices.

Now that a commercial *modus vivendi* has been arrived at between Great Britain and Spain, it is to be hoped that our trade with the Peninsula and the Colonies will be rapidly extended. A leaf might, however, be advantageously taken out of the books of German commercial travellers and agents in this country. Numbers of young men destined for business careers are sent over to Spain and placed in Spanish houses to learn the language and to study the tastes of the people—a task of easy accomplishment attainable with an ordinary share of intelligence within a twelvemonth. It stands to reason that a commercial traveller or agent enjoying these advantages is more than a match for one who can only recommend his wares through the medium of an interpreter or by the mere exposure of his price-list, and if we hope to fight Germany successfully on the field of commerce we must adopt her excellent and intelligible plan of educating foreign commercial agents.

At Malaga there is quite a German colony of young business men, who, after a year or two's residence there, return home well prepared for entering into the employ of firms having commercial relations with Spain.

THE NEWCASTLE JUBILEE EXHIBITION.

THE plans prepared by Mr. William Glover, vice-president of the Northern Architectural Association, and the architect for the Jubilee Exhibition at Newcastle, have been submitted to the Town Improvement Committee, and after explanation and commendation they were passed. It appears from the adopted plans that the main entrance in the North Court, to be constructed of three 50 feet spans, will be on the North Road, just beyond the end of the Bull Park wall. The height of the centre span will be 40 feet, and the two side spans will be 35 feet to the apex. The two side courts will each have a central avenue 50 feet wide and two side avenues 20 feet. The South Court will be similar, and the whole will thus form a square, enclosing an area of about 2¼ acres, which will be laid out as a garden and recreation ground, with a bandstand in the centre. At the four angles there will be refreshment buffets and dining-rooms, concert and art saloons will be placed south of the South Court. About three acres to the north of the exhibition buildings are reserved for mining operations and exposed exhibits, the grounds being connected with the ornamental lake. It is expected that the buildings will be in the hands of the contractors within a month. The date fixed for the opening is Her Majesty's birthday, May 24, 1887. The land occupied by the exhibition, mining operations, and exposed exhibits contains about 11 acres, and the covered area, including the main buildings, concert and art saloons, dining-rooms, offices, &c., will contain about 226,500 superficial feet. The reservoir at the south-west corner will be preserved for marine models, hydraulic, life-saving, and fire-extinguishing apparatus. The trees on the eastern boundary next the Bull Park wall will be preserved. In the North Court provision is made for a bandstand under cover.

SCOTTISH ARBORICULTURAL SOCIETY'S EXCURSION.

THE members of the Scottish Arboricultural Society lately undertook their annual excursion, the forests of the Marquis of Bute at Rothesay, and of the Duke of Argyll at Inverary, being selected for the occasion. The excursion occupied three days.

At Rothesay the party was met by Mr. Kay, wood manager on the Bute estates. After visiting the ruined castle of Rothesay, and measuring the old thorn tree near the chapel, the party drove to Mountstuart House, and spent the remainder of the day in inspecting the house policies and woods, and in taking measurements of the more remarkable trees. The grounds of Mountstuart have long enjoyed a reputation for great natural beauty, but they were a good deal devastated by storms in December 1883 and January 1884. On these occasions no fewer than 2,000 trees were blown down, and damage otherwise done which it will take a lifetime fully to repair. The bulk of the fallen timber, however, has now been removed, and already the signs of the wreck have been greatly covered over by a luxuriant crop of bracken. Among other trees which were measured, the tape being passed in all cases round the trunk at a height of 5 feet, were a Douglas fir, 5 feet 3 inches in circumference, and 63 feet high; a Menzies fir, 39½ feet high, and 2 feet 7½ inches in girth; a beech, 14 feet in girth, with a spread of branches of 66 feet; a cedar of Lebanon, 6 feet 11 inches in circumference, with a straight bole up to 25 feet; a Californian hemlock spruce, 48 feet high and 4 feet in girth; a Spanish chestnut, 8 feet 5 inches in girth; a *pinus insignus*, 3 feet

DOOR FURNITURE, LOCKS, &c.

EDGAR KEELING, TEALE & CO.,

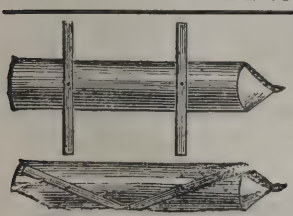
ART METAL WORKERS,

IRONMONGERS, MANUFACTURERS, &c.

SHOWROOMS:—14 ELM STREET, GRAY'S INN ROAD, LONDON, W.C.

Designers and Manufacturers of all kinds of Art Work for Ecclesiastic and Domestic purposes in Silver, Copper, Brass, and Iron.

PLEASE WRITE FOR ILLUSTRATED PRICE LIST AND ESTIMATES.



PAIN'S SMOKE ROCKETS FOR TESTING DRAINS.

Cheapest, Simplest, and most Efficient Test yet invented.
Burn from Ten to Fifteen Minutes and emit a dense volume of Smoke.
6s. per dozen. 60s. per gross.
MANUFACTURED ONLY BY
JAMES PAIN, 9 ST. MARY AXE, LONDON, E.C.

VOLUME XXXV. OF THE ARCHITECT.

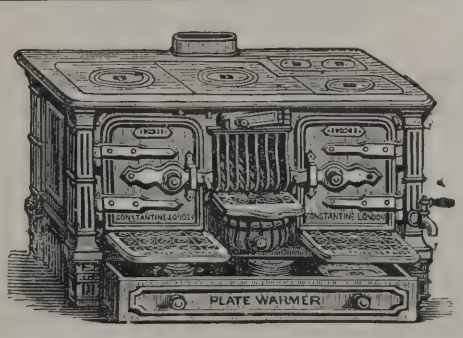
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

A HOUSEHOLD TREASURE.

75 per cent. less Fuel burnt by using

CONSTANTINE'S
PATENT TREASURE
COOKING RANGE,

With the Patent Rising Fire Grating for reducing or enlarging the Fire.



THE FIRST PRIZE

Was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS.

Perfection in Cookery.
Economy in Fuel.
Smoky Chimneys effectually Cured.
Unsurpassed for Durability.
May be placed anywhere.

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 Fleet Street, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions.

10 inches in girth; four Scots firs, from 8 feet to 8 feet 11 inches in girth. The trees seen were, perhaps, not so large as have been measured on other occasions, but one feature about them was the luxuriant way in which they were furnished with foliage. Several beautiful avenues of limes and beeches were traversed, and in the gardens the company was very much struck to see plants and shrubs growing in the open air which only do so in such climates as that of the South of France or Spain. One feature which gave great pleasure was to view the "nursery park," which was laid out from the Marquis of Bute's own designs in 1871, and is in its way a perfect picture.

On the following morning the members went by steamer to Inverary, where Mr. Wyllie represented the Duke of Argyll. The policies are very heavily timbered, many of the hard woods and firs alike being well-grown, handsome trees. A striking character of the trees on the lawn was their splendid foliage, which extended from the topmost to the very ground. Many of those examined could not have been less than 300 years old, and were of great height and girth. Some of the measurements obtained were considered worthy of special note. An old ash on the castle lawn girthed 15 feet 2 inches, a beech by the side of the river was 18 feet 6 inches in circumference, and upwards of 100 feet high, and a grand plane at the narrowest part of its bole gave 14 feet 5 inches. Oaks and Spanish chestnuts so heavy as those examined are not often seen in so great abundance on this side of the border. Out of quite a large number of oaks around which the tape was passed, one measured 12 feet 11 inches in circumference, another 12 feet, a third 11 feet 7 inches; while of the Spanish chestnuts, one was 17 feet 8½ inches in girth, a second, near the farm offices, measured 19 feet 9 inches. The stem of this tree was twisted like a rope and not a few of its gnarled boughs were covered with the hard fern. The soil, especially on the slopes of Dun, seems particularly well suited to the growth of coniferous trees, the woods in that respect recalling to mind some of the best timber districts of Perthshire. There is a tradition that the Scots firs on Inverary were planted by Atholl men, and it can be said for them that they do credit to themselves and to the estate. They are of the genuine Scottish family, with grand, scaly bark, and they have grown to a great size. One of the largest which was measured was 13 feet in girth and 116 feet high, and there were many others little inferior in bulk. A larch which was taped was 10 feet 5 inches in girth and 136 feet high, the height in all cases being determined by dendrometer measurement. A great many magnificent silver firs were met with on Duniquaich. One of these turned out to be the talles tree measured. Its height was 144 feet, and its girth 13 feet 8 inches. One adjoining was 15 feet 3 inches in circumference, but not quite so high. The spruces in the same locality were growing splendidly. One, which was planted fifty years ago, is now 80 feet in height, and girths 8 feet 4 inches.

The third day's excursion was devoted to the woods along the northern shore at Inverary. Taking their way by the famous beech avenue which opens into the town, several trees were there taped. One of the beeches girthed 18 feet 6 inches, and there were not a few not far short of that measurement. The avenue has suffered a good deal of late by violent storms; but it was noted with satisfaction that the gaps were nearly all filled up with the same kind of trees. In the Kilbride, Clonary, and Barrvrack woods the company had frequent occasion to admire the great size and quality of the silver firs, growing for the most part on the hillsides upon rocky soil. One of these is quite a historical tree, having been planted by the present duke's grandfather, who commanded the Argyleshire Highlanders at Culloden. It is now a grand tree, running up 45 or 50 feet as straight as an arrow before "forking," and girthing at 5 feet up 16 feet 4 inches. Mr. Kay's dendrometer was tried upon it, and gave it a height of 121 feet. Another great silver (in the Barrvrack wood) girthed 16 feet 10 inches, had a height of 134½ feet, and by the usual calculations was estimated to contain 750 feet of serviceable timber. Among other trees around which the tape was passed in the course of the drive was what is known as the marriage tree, in the avenue, where a curious ingraft between two great limbs of a beech has taken place. At the narrowest part of the bole the girth was 15 feet 4 inches, and at 5 feet up it was 16 feet 2 inches. A very fine plane was also measured, it being, however, less remarkable for its size than for its beautiful head. Its girth, however, was by no means contemptible, the measurement giving 12 feet 8 inches. A remarkably fine lot of oaks and Scots firs were also met with on the journey, which included a visit to an old Roman bridge on the Douglas water still in a remarkably good state of preservation. In returning to town an opportunity was given to the party by Mr. Stewart, the forester, to see a number of his young mixed plantations. By violent gales within the past few years the Inverary woods, which extend to about 4,000 acres, suffered very severely. Most of the blown timber has been removed, and to supply the gaps made, a good deal of Douglas fir—which seems to thrive here remarkably well—has been planted out.

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
Legal and Commercial Stationery.

A. J. SHAW,
58 & 60 Gower Street, Sheffield,
MANUFACTURER OF
Coloured Varnishes & Wood Stains,
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.

HEALTH EXHIBITION,
YORK.
Including Sanitary Apparatus and Appliances, Heating and Cooking Apparatus, Articles Relating to Personal Hygiene, Domestic Economy, Foods, Clothing, &c., to be held from SEPTEMBER 21 to OCTOBER 16, 1886, in connection with the Ninth Autumn Congress of the Sanitary Institute of Great Britain,
PRIZE MEDALS and CERTIFICATES will be Awarded for approved Exhibits.
Forms of application for space and all particulars can be obtained from the Curator, Mr. E. L. BOX, 74A Margaret Street, London, W.

HILL & HEY,
Inventors, Patentees, and Sole Makers of their Patent
"EXCELSIOR" Syphon and Outlet VENTILATORS,
For the Ventilation of Schools, Churches, Mission Rooms, Staircases of Residences, Stables, Billiard Rooms, &c.
WORKS, HALIFAX
SUCCESSORS TO THE
ORIGINAL "WATSON'S" VENTILATOR WORKS. ESTAB. 1852
Prices, Descriptive Pamphlets, Testimonials, &c., on application.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE


LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

FIREPROOF FIXING BLOCKS
FOR WALLS AND FLOORS
(Wright's Patent). Wood Joint Pieces, Plugs, Fixing Fillets, Grounds, &c., successfully Superseded without extra cost.
Extensively used by Leading Architects and Contractors for several years past; H.M. War Department, &c.
NOTE.—These Fixings take and RETAIN nails equal to wood. They never burn, decay, shrink, or become loose, and will carry any weight that can be put upon them in a building.
Colonel W. J. STUART, Commanding Royal Engineers, Chatham, writes:—"The frames are most strongly fixed, and the blocks did not split with the 5½ in. screws that were used."
Write for new catalogue, containing full particulars and references post free.
"Highly Commended" at the Firemen's Exhibition, May 1886.
WRIGHT & CO. {No. 3 Westminster Chambers, Victoria Street, London, S.W.
Manufactories:—Gosport, Hants, and at Carnforth, Lancs.

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market:—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.

VOLUME XXXV. OF THE ARCHITECT.
handsomely bound in Cloth, Gilt Lettered, price 12s. 6d.
Office 175 Strand, London, W.C.

THE MANCHESTER EXHIBITION OF 1877.

It was announced last week in *The Architect* that the design by Messrs. Maxwell & Tuke, of 29 Princess Street, Manchester, had been selected by the Council of Guarantors for the Jubilee Exhibition which is to be held next year. The remaining prizemen were Messrs. Salomons & Ely, Mr. Alfred Darbyshire, and Messrs. Pennington & Bridgen.

The new exhibition building is divided into five sections. The general plan of the main building consists of a lofty nave and transepts arranged in the form of a Latin cross, with low buildings supporting it on each side. These low buildings or courts are each 30 feet wide, and this division has been preferred above the usually greater width, as it allows in each court side exhibits and a central gangway. In the art portions of the buildings this method of spacing is of manifest advantage. Section No. 2 (machinery in motion and processes) is divided into three sub-sections—one for motive power, electrical machines, and machinery in motion of a hazardous description; one for machinery in motion not hazardous; and the south-west angle (separated from the rest by the nave), for processes not requiring power and not hazardous. The floors of two of these sub-sections in the north-west angle are 4 feet 6 inches below the level of the rest of the floors. Section No. 4 occupies the portions comprising "Old Manchester and Salford," and is partly used as a screen, so that the whole of the front towards the Botanical Gardens will be faced with ancient buildings representing portions of "Old Manchester and Salford" or historic buildings in the neighbourhood. Section 6 (fine arts) is separated from the rest of the building by fireproof screens. The doorways are deeply recessed to prevent the spread of fire. In Section 7 is a music-room, 150 feet by 100 feet, divided from the rest of the building with fireproof screens. This hall is accessible from the gardens or from the central nave. In addition to this room the architects provide a band gallery at the end of the north transept, so arranged with movable shutters that the band can be heard either in the building or in the gardens. The refreshment department is said to be very ample, and has been arranged with special reference to the public convenience and its facilities for service and kitchen accommodation. The gallery of approach from Chester Road will be filled with statuary, interspersed with shrubs and flowers, so as to form a striking *coup d'œil* upon entering. The entrance from Talbot Road is marked by a carriage porch, the whole width of the street. The old 60 feet gallery, it is added, will in all probability be retained after the exhibition as a permanent exhibition, and for this purpose the designers propose to encase it almost entirely with glass. The purlins would need a little strengthening, but otherwise the building was in their opinion strong enough for its purpose. The curved portion of the top would be covered with corrugated iron bent to the sweep. Considering the valuable collection that would be housed within the building, and the enormous charges made for insurance, which in this case would for building and contents, if fully covered, amount at least to 4,000*l.*, they had used nothing inflammable in the building except the windows, the skylights, and the outside cornice and the doors. Always bearing the above consideration in mind, and after a careful study of the strongest materials and searching calculations as to the first cost, the ease and economy of erection, the value of the materials if broken up and resold, and the value of the building if sold for re-erection, they had decided to recommend the use of gas or water pipes as the material of which to construct the framework of the building. The Corporation of Manchester used every year an enormous quantity of gas-tubing of the sizes specified, and as this tubing would be improved by the coat of paint it would receive in the building, the cost of the building by its use would be greatly reduced—(*a*) by the resale value of the materials, and (*b*) the ease with which the same could be constructed and taken down. According to the plan, the whole of the framework of the building, except the roof of the nave and the dome, would be constructed either of cast or wrought tubes, including the pillars, principals, and purlins. The architects furnish details showing the method of construction, and state that these, if taken in conjunction, more fully explain themselves than anything that could be said in a written report. The gutters throughout are strong cast iron, sufficiently capacious to carry off the water of the heaviest floods. The portions of the roof and sides where glass will be glazed with one-eighth rolled sheet, without putty. The rest of the roofs will be covered with corrugated sheet iron. All divisions in the building where not shown brick will be made with Johnson's patent wire and plaster studding. The outer casing to the building where not glass will also be made of this material, but the exposed surface will be cemented. The question of a fireproof floor being of paramount importance, it is proposed to use cement slabs 4 inches thick. With regard to protection from fire, the architects state that that question has been para-

BRITISH PATENT GLAZING Co.
(LIMITED).
MACKENZIE'S PATENTS
HAVE OBTAINED THE HIGHEST AWARD
SILVER MEDAL,
AT THE INTERNATIONAL INVENTIONS EXHIBITION, 1885.

NO ZINC, which is the MOST PERISHABLE of all the METALS which are used in ROOF CONSTRUCTION.

PRACTICALLY AN IRON ROOF.
FULL PARTICULARS ON APPLICATION.

OFFICES: 24 Finsbury Circus, LONDON, E.C.
WORKS: Wellington Foundry Yard, Charles Street, City Road, LONDON, E.C.

REGENERATIVE GAS LAMPS
(WENHAM'S PATENTS).

Whereas it has recently come to the notice of the WENHAM COMPANY, Limited, Sole Proprietors of the above Patents, that REGENERATIVE GAS LAMPS are being manufactured and offered for Sale in infringement of the above Patents: Notice is hereby given that Legal Proceedings will, without further notice, be taken against all Persons manufacturing, selling, or using REGENERATIVE GAS LAMPS so made in infringement of the said Patents.

April 20, 1886. J. HENRY JOHNSON, 47 Lincoln's Inn Fields, W.C., Solicitor.

mount with them, and not only have they designed the use of fireproof materials wherever the cost would permit, but have so divided and separated the buildings that the risk of fire has been reduced to a minimum. The central portion of the building has been divided by four 14-inch brick walls from the sections on either side, so as to prevent a spread of fire. A fire occurring in one of the art galleries, for instance, could not possibly spread to another gallery or to the main building. They recommend, in addition to these and other precautions, that wire curtains be hung between the brick walls below the door to within 7 feet of the floor, and that these should be dropped down to the floor after the exhibition closes at night. On the subject of reduction of loss by resale, the architects state that the framework of the building being made of iron tubes, nothing but the special couplings would be waste or scrap. Looking at the building's capacity for sale or re-erection, the nave would form an excellent workshop, or it could be sold in sections. In the provisional committee's report reference was made to the cost per yard of the exhibitions at Liverpool and Edinburgh, which they feared might prove a little misleading. In Liverpool the building, although largely of iron, was a second-hand erection, and they believed that a large amount had been spent on the foundations which did not appear in the cost of 17*s.* per yard. In Edinburgh the cost in the authorised catalogue was given at 22*s.* 7*d.* per yard, and not at 16*s.* per yard. While it was true this cost included the area of and expenditure upon the permanent building, it was to be considered that the whole of their nave, transepts, and dome were built in as solid a manner as the most permanent portion of the Edinburgh building. The framework of the proposed building would be constructed of iron throughout, and the floor would be of solid concrete. The schedule of areas and prices per yard—pillars of cast iron, and all other ironwork of wrought iron—shows a total of 37,305 superficial yards, at an average cost per yard of 17*s.* 6*d.*, making 32,653*l.* 14*s.*, which is given as the amount of the estimated cost of buildings, exclusive of "Old Manchester and Salford."

The architects, in dealing with the subject of the valuation of the building at the close of the exhibition, state that it is of course always possible that the building or portions of it might be sold for re-erection as workshops, railway stations, or warehouses; but they consider that the only safe way is to anticipate waste and to estimate the resale at breaking-up prices. They consider that it should realise 50 per cent. on the original cost.

PROPOSED FEVER HOSPITAL AT HANWELL.

AT the monthly meeting of the managers of the Central London School District, held on Monday last, tenders received for the proposed alterations and additions to the probationary ward at Hanwell, with a view of converting it into a hospital for infectious cases, and the formation of a new laundry, were opened. Mr. E. Clarke, chairman of the Board, presided, and there was a full attendance of managers. The contract (terms of which were recently advertised in the columns of *The Architect*) was divided into two parts, the first being to provide the alterations and additions specified in the plans prepared by Mr. Langdon, the architect, and the second for plastering the same.

Mr. Mann said, prior to the tenders being opened, he should like to know in what papers the advertisements inviting them had been inserted.

The clerk (Mr. G. E. East) replied *The Architect*, the *Builder*, *Building News*, the *Standard*, and a local newspaper published in the vicinity of Hanwell.

Mr. Parrett moved that the tenders be referred to the special committee for examination, with the plans and specification, and that they should report to the managers at their next meeting.

The Chairman thought they did not want any consideration, as the specification had been thoroughly gone into by the committee. The unfortunate part of the matter was that they had not got sufficient money to carry out the work.

Mr. Mann had been rather taken aback by the large amounts of the tenders. They could buy the land and the mansion for the money, and to expend so large a sum was a serious matter for the ratepayers.

In reply to a question, the Chairman said the surveyor's estimate for the whole of the work was 2,200*l.*

Mr. Tattersall agreed with a previous speaker that the whole matter should be sent back to the committee for reconsideration.

Mr. Parrett did not want to delay the work, but thought the house committee should make a further investigation into the entire subject.

The Chairman pointed out that the matter had already been thoroughly considered and decided upon, and the drawings had been submitted to the committee in every way.

Mr. Hart said the tenders were before them, and must be disposed of at once.

BRYANT, POWIS & BRYANT LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.

Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.

Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT LIMITED,

Mr. Parrett: But we do not know what the tenders are for.

The Chairman: You attended the committees, who took a great deal of trouble in going through the drawings and plans, which were approved.

Mr. Tattersall argued that there were a few infectious cases existing, perhaps three or four, but sometimes there were none. To expend 3,000*l.* in altering their probationary wards was absurd, although that would be preferable to laying out 6,000*l.* or 7,000*l.* in the erection of a new hospital. He moved that none of the tenders be accepted, but that they be referred to a committee to see if some other arrangement could not be made. He did not see that because the plans had been gone into and approved the Board was, therefore, necessarily tied to them.

The Chairman said the work had to be done, and they had received the assent of the Local Government Board. They had, moreover, borrowed money for the purpose, and he did not see how they could help themselves.

Mr. Mann rejoined that they were still in this difficulty—they had not borrowed enough money. [The Chairman: We shall have to get more.] They had been misled by the approximate estimate of their architect; and, having already waited three years, they could wait until next spring. He hoped this Board would not receive the tenders, for he was astonished that this large expenditure had been forced upon the ratepayers.

Mr. Hart had always been of opinion that there was no necessity for this infectious hospital, but now they had invited and received twenty tenders, one of which was as low as 2,700*l.*, he did not see how they could abandon the matter. The only reason why he voted for the alterations was from what their medical officer said. To reject the tenders seemed to be a very wretched conclusion to come to after waiting three years.

Mr. Colegrave remarked that the Local Government Board had urged the provision of this hospital for many years.

Mr. Day did not know whether it was possible to eliminate anything from these tenders, and so to effect a reduction in the prices quoted. Estimates given by architects were seldom below the mark. He thought it would be a good plan for these tenders to go back to the committee, to see whether the prices could be reduced.

The Chairman did not think he could put the motion that the tenders should be sent back to the committee. It would stultify all that they had done.

Mr. Colegrave seconded Mr. Day's amendment.

Mr. Hawkins moved that the matter be adjourned for two months, and that in the meantime the house committee consider the whole question with the architect, with a view to seeing what reductions could be made.

Mr. Hart: Then we shall have to advertise for new tenders.

The Chairman: You would then have to put it off until next year.

Mr. Tattersall: And a good job, too.

The Chairman: Better leave it to the new Board, which will be appointed in two months' time.

Mr. Wagstaff seconded Mr. Hawkins's amendment, which, after an animated though desultory conversation, was ultimately carried, so that the matter stands adjourned for two months.

THE MESSINA TUNNEL.

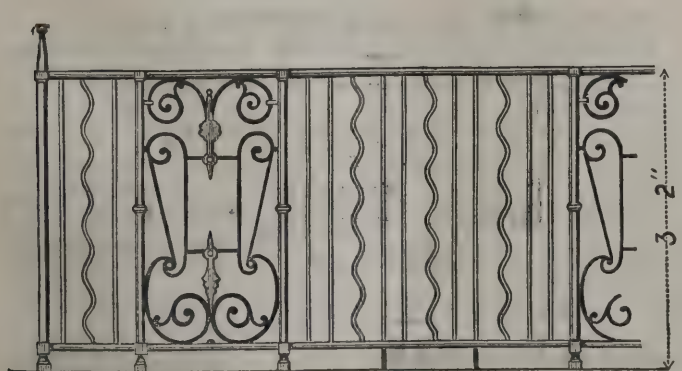
THERE appears to be a great probability that the proposed tunnel under the Straits of Messina will be constructed, the Italian Minister of Public Works having instructed the engineer, Carlo Navone, to carry on investigations on the basis of the plans prepared by the engineer Gabelli. The latter brought the subject before the Italian Parliament as early as 1879, and in 1882 he delivered a lecture at Rome, in which he dwelt upon the necessity of joining the railways of Sicily and Southern Italy both for commercial and military reasons, and demonstrated the practicability of the undertaking from a scientific point of view. According to Professor Seguenza, of Messina, a geologist, the formation of the strata under the straits is favourable to the construction of a tunnel. Its cost is estimated by Gabelli at 2,840,000*l.*, and the time of construction at from four and a half to six and a half years. The tunnel would have to be made about 500 feet below the level of the sea, this depth to be reached by spiral approaches from the land ends. Its total length would be about eight and a half miles. There is an alternative proposal for joining the island of Sicily with the Italian mainland by means of a bridge thrown across the Straits of Messina, which is about eight miles wide at its narrowest part. Whichever scheme is adopted, there seems to be no doubt that the closer connection of the island with Italy is much wanted. Sicily has made great economical progress since its union with the Italian kingdom, its several railways having now reached a length of over five hundred miles, while its population, according to the last census, is about three millions.

GEORGE WRIGHT & CO.

The GOLD MEDAL, 1886, for Grates, Stoves, and Ranges. | WORKS:—ROTHERHAM. ESTABLISHED 1854. | CAUTION.—No Connection with any other Firm.









Staircases, Balusters, Gates, Railing and Verandahs, Rain-Water Goods, Baths, and Boilers.

ORNAMENTAL IRONFOUNDERS, STOVE, GRATE, FENDER, & KITCHEN RANGE MANUFACTURERS, MARBLE and CARVED WOOD CHIMNEYPIECES, TILE PANELS, and HEARTHS.

THE LARGEST STOCK IN LONDON. PLEASE OBSERVE OUR ADDRESS: THE LARGEST STOCK IN LONDON.

Entrance also 238 Upper Thames Street. 155 QUEEN VICTORIA STREET, E.C. (Close to Blackfriars and Ludgate Hill Stations.)

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED;

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

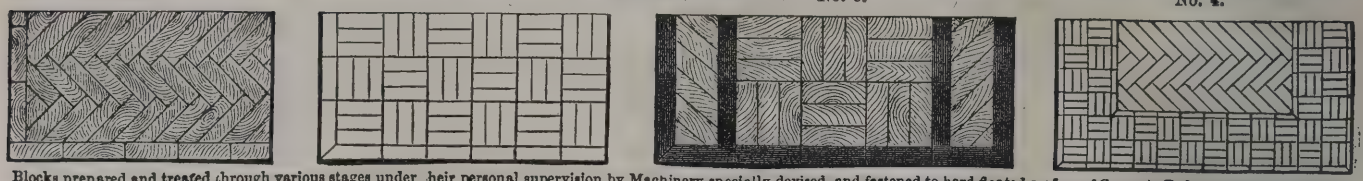
THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

PATTERNS.

No. 1. No. 2. No. 3. No. 4.



Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS,

ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus

ESTABLISHED 1844.

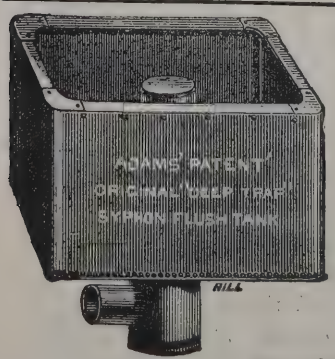
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL ..... St. Philip's Marsh.
EXETER ..... Basin Head.
SOUTHSEA ..... Beaufort Road.
READING ..... Caversham Road.
DUBLIN ..... 14 St. Andrew's Street.
MANCHESTER ... 20 Cross Street.

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

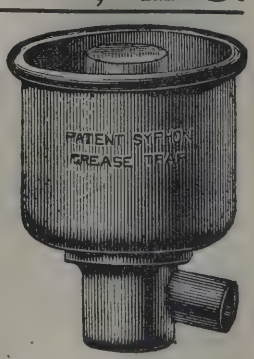


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, August 20, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, AUGUST 27, 1886.

Terms, Post Free.
SIX MONTHS, 10/-.
TWELVE MONTHS, 20/-.

SPECIAL NOTICE.

Price Fourpence.
EVERY FRIDAY.

On receipt of this Memorandum, signed, THE ARCHITECT AND CONTRACT REPORTER will be forwarded regularly.

..... 188

To Messrs. GILBERT WOOD & CO., Proprietors of

The Architect and Contract Reporter,

175 STRAND, LONDON, W.C.

Please forward a Copy of THE ARCHITECT AND CONTRACT REPORTER weekly to

NAME. | ADDRESS.

COMPETITIONS OPEN.

BISHOPWEARMOUTH.—Sept. 25.—Plans, &c., are invited for the Erection of School Buildings for 1,300 Children. Mr. T. W. Bryers, Clerk to the School Board, Sunderland.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

HALIFAX.—Sept. 1.—Plans for proposed Board School are invited from Architects of the Town. Mr. Robert Ostler, Clerk to the School Board, Halifax.

LEEDS.—Sept. 30.—Designs are invited from Architects of Leeds for proposed Art Gallery and Museum. Mr. G. W. Morrison, Town Clerk, Leeds.

LEWES.—Oct. 9.—Designs and Estimates are invited for Public Hall and Offices, by way of addition to present Buildings. Mr. A. Holt, Borough Surveyor, Town Hall, Lewes.

MAIDSTONE.—Sept. 5.—Designs for the Erection of Girls' School are invited by the Governors of the Girls' Grammar School. Mr. H. Monckton, Town Clerk's Office, Maidstone.

CONTRACTS OPEN.

BELFAST.—Sept. 1.—For Building Shops and Offices, and General Reconstruction of Methodist Church Property in Donegal Place. Mr. J. J. Phillips, Architect, 21 Arthur Street, Belfast.

BRADFORD.—Sept. 1.—For Building Five Shops, Darley Street. Messrs. Fairbank & Wall, Architects, 155 Swan Arcade, Bradford.

BRADFORD.—Aug. 31.—For Building Three Warehouses, St. James's Market. Mr. J. H. Cox, Borough Surveyor, Town Hall, Bradford.

BRIXHAM.—Sept. 10.—For Building Coastguard Station and Battery. The Director of Works Department, Admiralty, 21 Craven Street, W.C.

BURNLEY.—For Extensions to Lancashire and Yorkshire. Hotel. Mr. C. Parsons, Architect, 9 Grimshawe Street, Burnley.

CAPEL.—Aug. 27.—For Building Infectious Hospital, Caretaker's Cottage, and other Buildings. Messrs. H. H. & E. Cronk, Architects, Mount Ephraim Road, Tunbridge Wells.

CARDIGAN.—Sept. 4.—For Additions and Alterations to Derry Ormond Mansion. Mr. D. E. Thomas, Architect, Haverfordwest.

CARLISLE.—For Alterations to Main Building of the Fever Hospital, Pulling-down Ward, and Erecting new Wards and Laundry Buildings, &c. Mr. G. D. Oliver, Architect, Bank Chambers, Carlisle.

CASHEL.—Sept. 1.—For Rebuilding No. 22 Main Street, and Works to No. 21. Mr. Robert Walker, Architect, 17 South Mall, Cork.

CHEADLE HEATH, STOCKPORT.—For Building School. Mr. J. H. Burton, Architect, Warrington Street, Ashton-under-Lyne.

CLACTON-ON-SEA.—Sept. 1.—For Building Schoolroom, Wesleyan Chapel. Rev. A. Gregory, Clacton-on-Sea.

COEDPENMAEN.—Aug. 28.—For Enlargement of Board Schools. Mr. Thomas Rowland, Architect, Market Buildings, Pontypridd.

CORK.—Sept. 2.—For Altering and Refitting Closets in Male Hospital. Mr. D. J. Coakley, Architect, 86 South Mall, Cork.

DERITEND.—For Erection of Buildings for Working Boys' Home. Mr. F. J. Yates, Architect, Queen's Chambers, Colmore Row, Birmingham.

DINGLE.—Sept. 8.—For Building Light Keeper's Dwelling. Mr W. B. Soady, Secretary, Office of Public Works, Dublin.

DUBLIN.—Aug. 28.—For Erection of Waiting-room at Prospect Cemetery, Glasnevin. Mr. R. W. Walsh, Architect. Mr. C. Coyle, Secretary, 7 Lower Ormond Quay.

DUDLEY.—Aug. 27.—For Alterations and Additions to Workhouse School. Messrs. Wood & Kendrick, Architects, West Bromwich. Mr. T. Allen Clerk, Dudley.

GLASNEVIN.—Aug. 28.—For Building Waiting-room at Entrance to Cemetery. Mr. Richard W. Walsh, C.E., 7 Lower Ormond Quay, Dublin.

HALIFAX.—Sept. 3.—For Building Two Shops, Nine-stall Stable and Coach-house. Messrs. G. Buckley & Son, Architects, Waterhouse Street, Halifax.

HARLOW.—Sept. 1.—For Providing Marble and Alabaster Pulpit for Parish Church. Messrs. Weaver & Adye, Architects, Bradford-on-Avon.

HEADINGLEY.—Aug. 27.—For Erection of Ten Houses for Leeds Tramway Company. Mr. C. S. Nelson, Architect, Albert Chambers, Park Row, Leeds.

HEATON.—Sept. 1.—For Building Stationmaster's House. Mr. W. Bell, Architect, Central Station, Newcastle-on-Tyne.

HELLESDON.—Aug. 30.—For Constructing Exits in Case of Fire at the Norwich City Asylum. The City Architect, Norwich.

KELLS.—For Building House, Oristown. Mr. F. Nulty, Kells.

KESWICK.—Aug. 31.—For Building Shops, Show-rooms, Dwelling-houses, &c., Lake Road. Mr. G. P. Abraham, Keswick.

KIRTON.—Aug. 30.—For Building Cemetery Chapel. Mr. J. H. Bellamy, Kirton, near Boston.

LEEDS.—For Additions to 32 Park Square. Messrs. Smith & Tweedale, Architects, 12 South Parade, Leeds.

LEICESTER.—For Building Two Villas, Knighton Drive. Mr. Thomas P. Bown, Architect, New Street, Leicester.

LEYTON.—Sept. 6.—For Enlargement of Newport Road Board Schools. Mr. J. T. Newman, Architect, 2 Fen Court, Fenchurch Street, E.C.

MILLOM.—Sept. 9.—For Additions to Oxenbows. Messrs. Settle & Farmer, Architects, County Square, Ulverston.

MULROY, CO. DONEGAL.—Sept. 1.—For Building Coast-guard Station. Mr. W. B. Soady, Office of Public Works, Dublin.

NANTYGLO.—Aug. 30.—For Building Schoolroom and Cottage. Mr. D. Morris, Orchard Street, Brynmawr.

NEWBURY.—Aug. 27.—For Additional Classroom and Alterations to Curridge School, Berks. Mr. James H. Money, Architect, Broadway, Newbury.

PAISLEY.—Sept. 22.—For Enlargement and Reconstruction of Passenger Stations on Glasgow and Paisley Joint Line. Messrs. Blyth & Cunningham, Engineers, Edinburgh. Mr. J. Hay, Secretary, Bridge Street Station, Glasgow.

PAISLEY.—Aug. 31.—For Construction of Harbour and Works to the River Cart. Messrs. Miller & Bell, C.E., 204 St. Vincent Street, Glasgow.

RIPLEY.—Aug. 31.—For Building Board School, Street Lane. Mr. J. R. Naylor, Architect, Old Bank Chambers, Irongate, Derby.

SHERIFF HUTTON.—Aug. 27.—For Enlarging House. Mr. Charles Waterhouse, Waterloo, Pudsey.

SHOREDITCH.—Sept. 6.—For Rebuilding Public Mortuary. The Surveyor to the Vestry, Town Hall, Old Street, E.C.

SILLOTH.—For Building Warehouse at Chemical Manure Works. Mr. T. Taylor Scott, Architect, 14 Bank Street, Carlisle.

STANWIX.—Sept. 4.—For Construction of Brick and Pipe Sewers, Gosling Beck, Supply of Bricks, Ironwork, Fencing, &c. Mr. David Russell, C.E., 18 Norfolk Street, Carlisle.

ST. MARYLEBONE.—Sept. 7.—For Fireproof Floor, Iron and Glass Roof, Foundations for Engine, Laundry Appliances, &c., at Public Laundry. Mr. J. Waldram, C.E., Surveyor, 16 Craven Street, Charing Cross.

SUNDERLAND.—Aug. 28.—For Building Primitive Methodist Mission Church. Mr. W. Hallam, Architect, Chester Road, Sunderland.

SWINDON.—Aug. 31.—For Building Stabling at the Repository. Mr. W. H. Read, Architect, Corn Exchange, Swindon.

THIRSK.—Sept. 4.—For Restoration of South Porch of Church. Mr. C. H. Fowler, Architect, The College, Durham.

ULVERSTON.—Sept. 2.—For Building Fire-engine House, Steam-roller House, Cart Sheds, &c. Mr. H. Whitlow, Surveyor, Theatre Street, Ulverston.

WARWICK.—Aug. 30.—For Altering and Adding to Board School. Mr. F. H. Moore, Architect, 2 Northgate Street, Warwick.

WIGAN.—Sept. 1.—For Alterations and Additions at Wigan Infirmary. Mr. W. Taberner, Secretary.

WINDERMERE.—Sept. 4.—For Building Business Premises. Mr. Robert Walker, Architect, Windermere.

TENDERS.

ALNWICK.

For Converting Workshops into Cottages, Alnwick. Mr. G. REAVELL, jun., Architect, Alnwick.

Wilson & Sons, Alnwick	£262 10 0
W. V. Smith, Alnwick	251 7 0
T. Fortune, North Sunderland	237 0 0
Davison & Sons, Alnwick	227 9 9
J. WHINHAN, Alnwick (*accepted*)	212 0 0

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

BRADFORD.

For Building House, Warehouse, Stable, and Five Shops in Sterling Street and Crowther Street. Mr. J. R. WHITEHEAD, Architect, 24 Tudor Street, Bradford.

Accepted Tenders.

G. Day, Bradford, mason	£470 0 0
W. G. Bogg, Manningham, joiner	252 0 0
T. Sutcliffe, Bradford, plumber	69 0 0
J. Throp, Bradford, plasterer	50 0 0
J. Smithies, Bradford	47 10 0

Whole of Works.

J. Moulson & Sons	1,114 0 0
Humphreys & Moulson	1,001 19 0
W. Binns	980 2 2

CHINGFORD (ESSEX.)

For Sewerage Works, Chingford, for the Epping Rural Sanitary Authority.

Wilson, Walthamstow	£14,296 18 5
Green & Parker, Cardiff	13,558 8 6
H. Hill, High Wycombe	11,569 19 6
L. Botton	11,501 10 0
J. Young, Buckhurst Hill	11,332 1 9
E. P. & W. Iles, Wimbledon	11,325 6 7
J. W. & J. Neave, Leytonstone	11,152 0 0
T. Ford, Westminster	10,999 0 0
J. J. Robson, London	10,814 3 4
Wood, Mile End	10,766 0 0
Hill & Co., Plymouth	10,742 0 0
J. Wood, Birmingham	10,672 0 0
Small & Son, Birmingham	10,491 6 10
Reed & Sons	10,316 1 0
J. Jackson, Enfield	10,070 18 7
W. Nicholls, Wood Green	9,864 18 6
H. Wells, Woodford Green	9,749 11 6
W. French, Buckhurst Hill	9,650 0 0
C. Martin & Sons, Chingford	9,559 0 0
Bentley	9,355 0 0
Arnold & Sons, Doncaster	9,152 0 0
Hayward, Eastbourne	9,140 8 7
C. DICKINSON, Loughborough Junction (*accepted*)	7,990 0 0

BRISTOL.

For Alterations and Additions to Shop and Premises, Clarence Road, Bristol, for Mr. T. Lamb. Mr. THOS. HODGES, Architect. Quantities by Mr. A. Barratt, Surveyor, Corn Street, Bristol.

G. Humphreys	£948 0 0
E. GAY *	870 0 0
J. James	830 0 0
Graham	725 0 0

* Accepted subject to modification of drawings.

DERBY.

For New Premises, situate East Street, Derby, for the Midland Drapery Company. Messrs. COULTHURST & BOOTY, Architects, 4 Albert Street, Derby.

Walker & Slater, Derby £2,500 0 0

Twenty-two tenders received.

For Shop Front and Internal Shop Fittings.

T. Sage & Co., London £750 0 0

For Building Three Villa Residences, Mill Hill Road, Derby, for Mr. J. Bailey, J.P. Messrs. COULTHURST & BOOTY, Architects.

J. Parker £1,185 0 0

For Alterations and Additions (including Double Bowling Saloon and Billiard-room for Three Tables) at the Beaconsfield Club, Full Street, Derby. Messrs. COULTHURST & BOOTY, Architects.

FORD & CO. (*accepted*, schedule).

Three tenders (by schedule).

DUBLIN.

For Construction of Billiard Saloon, Fleet Street, Dublin. Mr. HAMPDEN SHAW, Architect, Westmoreland Street, Dublin.

Sibthorpe & Co.	£310 0 0
G. Crampton	290 0 0
J. Pemberton	260 0 0
R. Farquharson	255 0 0
W. Graham	239 0 0
TODD, BECKET & CO. (*accepted*)	230 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.
THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER
And every other description of
WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,
MANUFACTURED BY
EDWIN LUMBY, SON, & WOOD,
WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.
COMPLETE ILLUSTRATED LISTS ON APPLICATION.

MELLOWES & DARBY,
FORMERLY PRIMROSE & Co. CHURCH ST. SHEFFIELD.
"ECLIPSE" PATENT ROOF GLAZING
NO PUTTY, PAINT, ZINC OR OTHER PERISHABLE MATERIAL
IN EXTENSIVE USE FOR RAILWAY STATIONS, MILLS, &c.
NO OTHER GLAZING CAN BE WARRANTED INDESTRUCTIBLE.
PRIZE MEDAL AWARDS: KENSINGTON, MANCHESTER, LIVERPOOL, DONCASTER 1882-3.
THE ONLY GLAZING AWARD, INTERNATIONAL HEALTH EXHIBITION, 1884.

THE
LONDON & EDINBURGH IRON BUILDINGS CO.,
PATENTEES,
IRON MERCHANTS & FACTORS.
Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.
Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.
Special Plans prepared to meet the requirements of our Customers.
Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

DEVONPORT.

For Alterations to Devonport Workhouse.

J. Dart, Devonport	£47 10 6
J. M'Burney, Devonport	45 0 0
H. Hill, Devonport	40 5 0
H. Gill, Devonport	40 0 0
R. PEARSE, Devonport (*accepted*)	39 14 0

DURHAM.

For Building Sunday-schools, Stanley, near Crook. Mr. ROBERT W. THOMPSON, Architect, Bishop Auckland.

Accepted Tenders.

T. Hilton, Crook, mason	£200 0 0
J. Rawes, Crook, joiner	123 0 0
E. Thompson, Bishop Auckland, painter, glazier, and plumber	53 15 0
J. Mascoll, Bishop Auckland, slater	37 15 0
Total	£414 10 0

Exclusive of internal fittings.

HALIFAX.

For Building Two Houses, Stump Cross, Halifax. Mr. JOSEPH F. WALSH, Architect, Halifax. Quantities by the Architect.

Sam Mitchell, Hipperholme, mason and bricklayer.
William Ratcliffe & Sons, Halifax, carpenter and joiner.
Henry Crowther, Sheffield, plasterer and slater.
Plumber and Glazier Work not let by Contract.

For Building House at the Haugh, Northowram, near Halifax. Mr. JOSEPH F. WALSH, Architect, Halifax. Quantities by the Architect.

William Hanson, Sheffield, mason and bricklayer.
Joshua Booth, Hipperholme, glazier, carpenter and joiner.
Henry Crowther, Sheffield, plasterer and slater.
Plumber Work not let by Contract.

HARPENDEN.

For Additions to Premises, Harpenden. Mr. A. E. ANSCOMBE, Architect.

Dawson	£630 5 11
Giddings	617 7 9
Sparrow	587 5 0
WHITE (*accepted*)	545 0 0

HAVANT.

For Building Petty Sessions Room, Havant. Mr. JAMES ROBINSON, C.E., County Architect, Winchester. Quantities by the Architect.

P. Peters, Horsham	£620 0 0
J. Edwards, Hants	583 0 0
W. H. Dearle, Chichester	571 9 0
Woolgar & Son, Horsham	539 0 0
J. H. Corke, Southsea	538 0 0
L. W. Quick, Southsea	477 0 0
G. STALLARD, Havant (*accepted*)	445 0 0

HECKMONDWIKE.

For Street Improvement Works, Heckmondwike. Mr. T. GLEDHILL, Surveyor.

George Street.

G. Horsfall, Liversedge	£554 6 0
J. Slinger, Cleckheaton	553 2 6
R. Naylor, Scholes, Bradford	543 0 0
Parker & Sharpe, Batley	511 8 10
A. Drake, Hartshead	502 0 0
T. Hirst, Batley	493 0 0
Hart & Brier, Dewsbury	449 0 0
W. OLDROYD, Heckmondwike (*accepted*)	447 18 0
Surveyor's estimate	453 2 0

Carr Street.

J. Slinger, Cleckheaton	327 10 6
W. Oldroyd, Heckmondwike	285 0 0
G. Horsfall, Liversedge	276 14 6
Parker & Sharpe, Batley	272 10 0
R. Naylor, Scholes, Bradford	272 0 0
T. Hirst, Batley	254 0 0
A. Drake, Hartshead	253 0 0
HART & BRIER, Dewsbury (*accepted*)	231 0 0
Surveyor's estimate	210 10 0

KILLAMARSH (DERBYSHIRE).

For Painting Board School and Master's House, Killamarsh.

S. Baldwin, Handsworth	£69 15 6
C. Putterell, Killamarsh	65 0 0
G. Stubbs, Sheffield	60 0 0
F. N. AIKEN, Clay Cross (*accepted*)	37 15 0
F. Wilson, Eckington	37 10 0
A. Machin, Sheffield	30 0 0
H. Hobson, Sheffield	29 14 0

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING.
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.

Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.

Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

Building Paper.
LIGHT—STRONG—WATERPROOF. In 10 yard rolls, 40 in. wide, 2d. per yard. Sample roll, post free, 2/6. *Use under slate and tiles, under weather boarding, for temporary roofs, and as lining paper for damp walls.* For home and export.—EASTWOOD AND CO., LIMITED, Dealers in Building Materials, BELVEDERE ROAD, LONDON, S.E.
Chemical Papers Co.,

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

GRUNDY'S PATENT
WARM-AIR
VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

LEEDS.

For Building Houses and Shops, Ellerby Terrace and Ellerby Avenue, Clark Lane, Leeds, for Mr. J. T. Pearson. Mr. T. BUTLER WILSON, Architect, 12 East Parade, Leeds, and Harrogate.

P. Rhodes, bricklayer and mason	£740 0 0
J. Johnston, carpenter and joiner	407 10 0
G. Thompson, plumber and painter	115 10 0
E. Hemingway, plasterer	100 0 0
J. Atkinson & Son, slater	67 7 0
Total	£1,430 7 0

LEYTONSTONE.

For Erection of a Shop and Dwelling-house, High Road, Leytonstone, for Mr. R. Skelton, M.R.C.V.S. Mr. F. A. ASHTON, Architect, Stratford, E.

Coxhead	£944 0 0
Roome	905 0 0
Mansell	875 0 0
Hearle & Son	847 0 0
J. & J. Bane	844 0 0
NICHOLLS (*accepted*)	815 0 0

LONDON.

For Alterations to the Vincent Tavern, Canning Town, for Mr. J. Gooch. Mr. F. A. ASHTON, Architect, Stratford, E.

Mansell	£525 0 0
Scotney	473 0 0
Nicholls	415 0 0
Taylor	410 0 0
J. & J. BANE (*accepted*)	383 0 0

For Alterations to Stamford Street Chapel, Blackfriars. Messrs. CATT & SMITH, Architects, 4 Furnival's Inn. Quantities supplied by Mr. J. Scott.

Rice	£329 0 0
J. Holloway	315 0 0
Rider & Son	308 0 0
F. Higgs	290 0 0
Smith	242 0 0
T. DOWLING (*accepted*)	233 0 0

For Decorations.

J. BOCKBINDER (*accepted*).

LONDON—*continued.*

For Erection of a Congregational Church at Corner of Evering and Rectory Roads, Stoke Newington. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within, E.C.

	For Church and Works connected.
Boyce	£9,280 0 0
Patman & Fotheringham	8,983 0 0
Nightingale	8,685 0 0
Goodall	8,652 0 0
Dabbs	8,547 0 0
Shurmur	8,480 0 0
Perry & Co.	8,200 0 0
Stephenson	7,991 0 0
Morter	7,987 0 0
Dove Bros.	7,695 0 0
Jackson & Todd	7,650 0 0
Lawrance & Sons	7,575 0 0

	For Temporary Roof of Tower.	For Upper Part of Tower and Spire.	For Boundary Walls, Gates, and Fences.
Perry & Co.	£35 0 0	£650 0 0	£270 0 0
Dove Bros.	35 0 0	540 0 0	240 0 0
Goodall	32 0 0	749 0 0	277 0 0
Dabbs	32 0 0	670 0 0	298 0 0
Shurmur	31 0 0	734 0 0	250 0 0
Stephenson	31 0 0	689 0 0	257 0 0
Boyce	30 0 0	840 0 0	290 0 0
Nightingale	30 0 0	762 0 0	300 0 0
Morter	30 0 0	618 0 0	258 0 0
Jackson & Todd	27 10 0	625 0 0	225 0 0
Patman & Fotheringham	27 0 0	693 0 0	279 0 0
Lawrance & Sons	25 0 0	601 0 0	210 0 0

SITTINGBOURNE.

For Interior Painting and Renovation of Town Hall, Sittingbourne. Mr. W. L. GRANT, Surveyor.

E. Cullen, Sittingbourne	£150 0 0
W. Cullen, Sittingbourne	140 0 0
H. Knowles, Sittingbourne	128 7 0
L. Seager, Borden	124 0 0
H. Iron, Sittingbourne	108 9 0
G. Pavey, Sittingbourne	100 0 0
DENNE & SON, Sittingbourne (*accepted*)	94 9 8
Surveyor's estimate	95 0 0

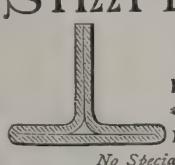
SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream.
SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET SOHO. LONDON, W.
ESTABLISHED YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

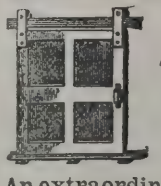
SIMPLEX LEAD GLAZING

For ROOFS, ********
****** SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL ***** PARTICULARS (SENT POST FREE). *****

KNOWLES & ESSEX
(Late W. CUNNINGTON & Co.),
Manufacturers of
ARTISTIC WALL-PAPERS,
Park Walk, Chelsea, London, S.W.
Specialities—Patent Frosted Gold, Crystal Damask and Raised Flock Decorations.

VOLUME XXXV. OF THE ARCHITECT. handsomely bound in cloth, gilt lettered. Price 12s. 6d.—Office: 175 Strand, London, W.C.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

MANOR PARK.

For Erection of Dwelling-house and Shop, Manor Park, Essex, for Mr. G. T. Hough. Messrs. BROWN & PRITCHETT, Architects, Theobald's Road, W.C. Quantities not supplied.

MANSELL, Stratford *	£640 0 0
Arthur, Kentish Town	635 0 0
Architect's estimate	615 0 0

* Accepted at £615.

STRATFORD.

For Building Soap Factory, for Messrs. Harris & Sons, Stratford, Essex. Mr. T. T. NEWMAN, F.R.I.B.A., Architect, 2 Fen Court, E.C. Quantities by Mr. C. Stanger, 21 Finsbury Pavement, E.C.

Taylor	£3,929 0 0
Hawkings	3,855 0 0
Morter	3,848 0 0
Reid	3,818 0 0
Higgs & Hill	3,795 0 0
Larke	3,726 0 0
Gregar	3,647 0 0
Lawrence	3,593 0 0
Hack	3,494 0 0
Hearle	3,493 0 0
Architect's estimate	3,525 0 0

THETFORD.

For Building Girls' School, Thetford, for the Governors of the School and Hospital Foundation.

W. Chapman, Norwich	£2,998 0 0
Ludkin & Son, Banham	2,960 0 0
G. E. Halls, Norwich	2,860 0 0
S. Chapman, Norwich	2,634 19 0
W. Boughton, Thetford	2,603 0 0
S. HOLDEN, Thetford (*accepted*)	2,527 11 0
Architect's estimate	3,200 0 0

TWICKENHAM.

For Alterations and Additions at Hill Villa, Twickenham, for Mr. J. B. Chancellor. Messrs. BROWN & PRITCHETT, Architects, Theobald's Road, W.C. Quantities not supplied.

Rose & Sons, Twickenham	£670 0 0
Jolliffe, Notting Hill	643 0 0
ARTHUR, Kentish Town (*accepted*)	630 0 0
Architect's estimate	630 0 0

TUNBRIDGE WELLS.

For Building Church Mission Room at High Brooms, Tunbridge Wells, for the Rev. Hay Chapman. Mr. BRETT A. ELPHICKE, Architect, Tunbridge Wells and Great Queen Street, Westminster. Quantities by Mr. J. T. Carew.

Judd	£1,829 10 0
Strange & Son	1,776 0 0
Beale	1,616 19 0
Denne	1,582 0 0
Paramor	1,564 0 0
Gallard	1,561 0 0
JARVIS *	1,485 0 0

* Mr. Jarvis reduced to 1,012*l.*, and accepted.

TRADE NOTES.

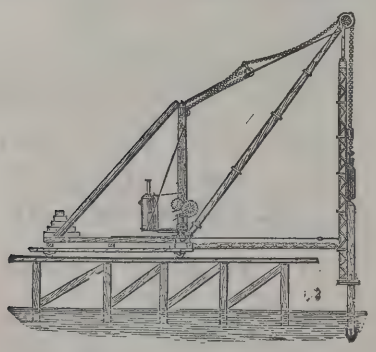
A VERY large mosaic picture, representing *The Last Supper*, after Leonardo da Vinci, has been put up by Messrs. Dr. Salviati & Co., of Regent Street, in St. Bridget's Church, Wavertree, Liverpool. It is said to be the largest representation of the Last Supper ever done in mosaic, measuring 17½ feet long and 9½ feet wide.

MR. MATTHEW T. SHAW, of Cannon Street, died suddenly on the 14th inst. The business of the iron trade will continue to be carried on by the remaining partners—Mr. Harry T. Shaw and Mr. Charles Chittick.

THE Æolus Waterspray General Ventilating and Electrical Engineering Company, 235 High Holborn, have received instructions to apply their complete system of heating, cooling, and ventilating to the library and reading-room of the Four Courts, Dublin.

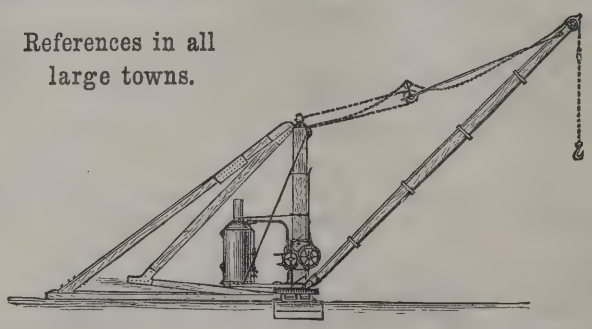
COOKING by gas is now daily becoming more frequently adopted. At the present low price of gas it is even more economical than coal, which has the great disadvantage of causing dirt, dust, and smoke, whilst gas is cleanly, at all times ready for use, and always under control; the heat is more rapid and more uniform. Mr. Leoni, of the Adamas Works, Islington, is justly acknowledged to be the pioneer of scientific gas-cooking apparata. He fitted up the kitchens of the London Hospital more than a year ago, where they cook daily for upwards of 1,000 persons. The results have proved so satisfactory that a testimonial has been sent by the chairman, Sir Edmund Hay Currie, testifying to the merits of Leoni's

BUTTERS BROTHERS, ENGINEERS, GLASGOW.
PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

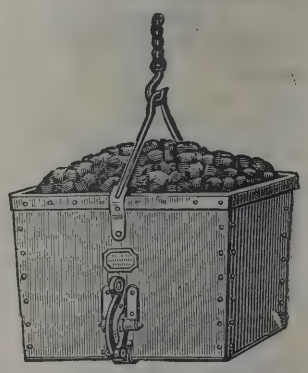


Crane used for Piling.

References in all large towns.



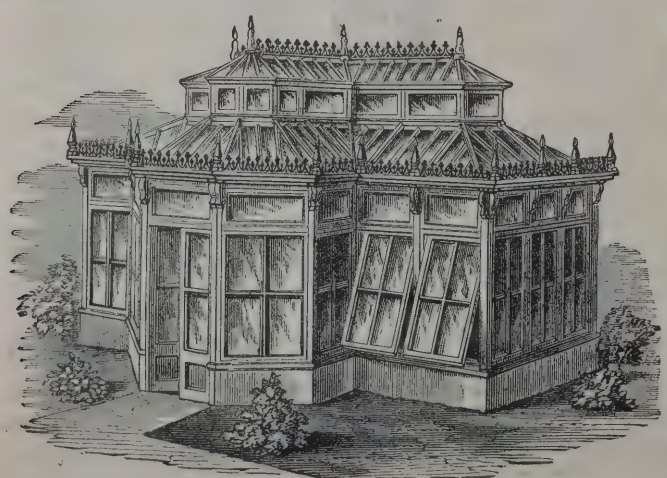
SCOTCH BUILDERS' CRANES.
Large Stocks. Send for List.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	£8 10 0
,, ¾ ,,	9 10 0
,, 1 ,,	10 10 0

FOR SALE, HIRE, OR HIRE-PURCHASE.



R. HOWARD,
Horticultural Works,
DONCASTER.

HORTICULTURAL BUILDINGS erected, with hot-water apparatus complete, in any part of the Kingdom, by experienced workmen. All the newest improvements in machinery for ventilation.

SILVER MEDAL awarded by the Society of Architects at the Architectural and Building Trades Exhibition, Sheffield, February 1886.

Also PRIZE MEDAL and CERTIFICATE, the highest and only award for excellency of Horticultural Buildings and Machinery for Ventilation, at the International Architectural Trades Exhibition, London April 1886.

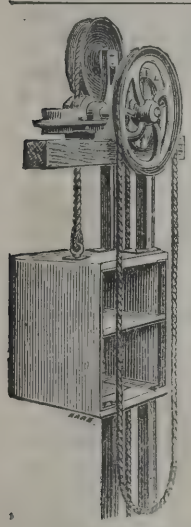
apparatus. The cost of gas consumed is only about 7*s.* per day, and the saving in meat in consequence of the reduced waste during cooking is proportionately great. Mr. Leoni has also fitted up an apparatus for Mr. Whiteley, of Westbourne Grove, to cook by gas and steam for 3,000 persons daily, and received a testimonial stating the saving per annum to be over 800*l.* Mr. Leoni has received favourable testimonials from Guy's Hospital, St. Luke's Hospital, Darenth Asylum, Poplar and Stepney Sick Asylum, Lambeth Infirmary, Paddington Infirmary, St. Saviour's Union, and numerous hospitals, infirmaries, &c., throughout Great Britain and on the Continent, as well as from several of the most important hotels, restaurants, and clubs, and from many of the Government and public offices. We have great pleasure in bringing before our readers so much useful work by one man, who must be well known to many of the most distinguished members of the profession who recommended him on important occasions, and who have seen his manufactures at the various exhibitions, where he generally carries the highest awards. Mr. Leoni has received gold or silver medals from upwards of thirty exhibitions in Europe and America.

NOTES ON NOVELTIES.

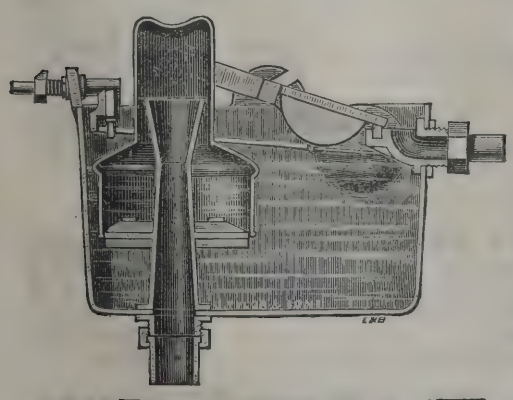
A GREAT improvement on the ordinary method of wood-planing machinery has been introduced to the trade by Mr. John Rawlings, of Hackney Road, London. It is called the spiral cutter, and in a treatise on the subject Mr. Rawlings tersely describes its advantages. After attributing to the straight blade in general use the inability to plane smoothly on account of the "simultaneous chop" peculiar to it, which makes the work uneven and unfinished, he says, "The spiral cutter is designed to obviate the foregoing difficulties. It cuts only a small portion of the wood, but is cutting that small portion continuously during the whole revolution of the blade. It cuts at an angle of twenty-two and a half degrees, and gently drawing into its work takes off the finest shaving, shearing a small portion from side to side of the work. When a blade has worked to 7½ inches from one side of the wood another blade commences cutting, so that, with a 30-inch cutter, all the blades will be working at the same time, and that continuously, working smoothly and evenly, and causing no vibration or shock whatever to the work or the cutter." These are the essential advantages claimed by the patentee, which we insert because they seem to us correct. We attended a test given at Mr. Rawlings's establishment in the Hackney Road, with most satisfactory results. The patentee has had the enterprise to fit up two machines—a hand-feed surfacer and a roller-feed thicknesser—in a commodious building, surrounded with various specimens of wood for use in the tests, and a visitor can see any piece planed. Some of the roughest possible wood was put in the machine, and came out perfectly smooth and unchipped. The knots were made as smooth as any other part of the wood, and in figured specimens the level method brought out the figuring admirably; indeed, the work is in a finished condition and ready for use after leaving the machine, thus dispensing with the usual amount of extra hand labour. We saw several difficult specimens that had been passed through the machines and polished direct from the planers, without any other preparation whatever, the surfaces appearing equal, if not superior, to carefully prepared hand-work. The spiral cutter is fed at about the rate of 15 feet per minute, a rate that is kept up without any stoppages. There is a receptacle for the



shavings in the shape of a pillar-box, thus preventing impediment to the working of the machine. The spiral cutter is peculiarly adapted for resisting strain, each blade being *drawn* diagonally through the cut. The four blades are twisted completely round the cutter shaft, and are bolted on all sides to it, thus firmly guarding against the blade being thrown, as is not unusual in ordinary machines running at a high speed. Mr. Rawlings claims that "cutting at an angle is the only scientific mode of cutting wood, and that this particular treatment is more adapted to the planing of valuable woods requiring special attention." The difficulty of grinding the blades has been met by the patentee with a grinding machine, called the "Spiral Grinder." This is made either on a separate stand for grinding any number of machines, spiral or otherwise, and the other is erected on the top of the planer, there to grind the blades in position. The grinder consists of an emery wheel mounted on a swing carriage, which works with mechanical accuracy, and, from an inspection, we can say that it answers the purpose admirably. There is no doubt that it is only a matter of



LIFTS! LIFTS!! LIFTS!!!
PATENT A.B.C. SELF SUSTAINING LIFTS, FOR HAND OR POWER.
CANNOT RUN DOWN, AND FREE FROM JERKY MOTION.
DIRECT ACTING AND MULTIPLYING CYLINDER HYDRAULIC LIFTS,
CONTINUOUS, AND WATER BALANCE INCLINE LIFTS.
LIFTS OF ALL KINDS FOR GOODS OR PASSENGERS,
WORKED BY STEAM, GAS, HYDRAULIC, OR HAND POWER.
SHUTTERS & DIVISIONS,
FOR SHOP FRONTS, GATE OPENINGS, SCHOOL PARTITIONS, ETC.
A. ATTWOOD & CO., LATE Salmon, Barnes, & Co.
LONDON OFFICE:
20 BUCKLERSBURY, E.C.
ULVERSTON, LANCASHIRE.



BEAN'S PATENT DIRECT-ACTING VALVELESS WASTE-PREVENTING CISTERNS.
These Waste-Preventers are simple in construction and rapid and powerful in action. The working parts have been improved and are well balanced. The arrangements for charging the siphon are such that a slight pull by hand is all that is necessary to cause the immediate and automatic discharge of the contents of the Cistern.
THE CHIEF ADVANTAGES are—(1) the direct-acting method of charging the siphon, by which the full flush is obtained at once; (2) simplicity of construction; (3) no valve in the bottom of the cistern to cause leakage; (4) no tight-fitting parts to corrode or get out of order; (5) no waste incurred by fastening the "pull"; (6) insures a rapid and regulated flush without holding down the pull.
PRICES AND PARTICULARS ON APPLICATION.
SOLE MAKERS—
J. TYLOR & SONS,
SANITARY AND HYDRAULIC ENGINEERS AND BRASSFOUNDERS,
2 NEWGATE STREET, LONDON, E.C.

time for this improvement in wood-cutting to become generally adopted, for it is based on doing work better, easier, and cheaper than heretofore.

A Patent Interchangeable Rubber Tread.—A long-felt want in this direction has just been brought out on the market by Messrs. Hendrad Gooding, of North Road, Holloway. The special feature of this patent tread is that it consists of a metallic keeper, fitted with pieces of india-rubber or other material, which project above the metal and form the wearing surface, affording a safe footing under all circumstances and in all weathers. They can be adapted to any staircase, iron, stone, or wood, spiral or otherwise, and are especially of advantage for gangways and bridges of vessels, invaluable for entrances to railway and other carriages, and station steps, &c. Hitherto in entrances to places where there is continual foot-traffic one could perceive the centre of the steps worn away, even to the hardest material, such as stone, concrete, &c. By this invention, which is cheap and durable, one at the onset can apply these treads, and having seen the set that are fixed to one of the cars of the London Street Tramway Co. running from Euston Road to the Archway Tavern, Highgate, we can safely say that they are of the utmost utility. In the case of iron staircases, a plate is simply screwed down and a tread inserted in the groove, being easy to change at will. The idea is a good one, and we can safely say that if they are once used they will continue to be in great demand.

A Simple Cure for Smoky Chimneys.—His Grace the Duke of Northumberland recently consulted with Messrs. Verity Bros., of Regent Works, Regent Street, London, relative to the smoke proceeding from the chimneys of the laundry portion of the domestic offices at his residence, at Syon House, Isleworth. This portion of the premises is situate against the main building, but being of a lower elevation, the smoke from the chimneys in question (which is of great volume, comprising, as it does, the combined products from two boilers, a steam-engine, a large ironing stove) was, with certain winds, directed against the windows of the chief apartments, and also seriously interfered with clothes drying, carried on immediately around. The difficulty was to get rid of this smoke without attaching any appliance that would deteriorate from the architectural aspect of the mansion. The problem was overcome in the following manner:—To the offending chimneys were fitted a syphon, which was continued with a 15-inch galvanised iron tube down the side of the building, where it was connected to the drains. By the aid of two of the patent annular water-spray jets (manufactured by this firm) fixed, one near the syphon and the other some distance below, they were enabled to direct the smoke down this shaft, and by the action of the water-spray, to precipitate all the floating particles of soot, leaving only the lighter portions of the smoke to be disposed of. This courses along the main drain, and what remains is finally extracted by one of Messrs. Verity's 24-inch patent exhaust heads (worked by a fine jet of water) placed at the outfall of the sewer, which is a quarter of a mile from the house. It will be noted that this continuous passage of smoke through the drains has a deodorising effect on the sewage matter contained in them. The drain under consideration was very large for the purpose of a private mansion, being 3 feet by 2 feet 4 inches, and, as this depends upon the storm water alone for flushing, it was more or less charged with matter; but since this novel system has been in action a noticeable improvement in the absence of sewer-gas is acknowledged, owing also, doubtless, to the increased ventilation. This method of treating nuisances of this character is, therefore, a practical one, and at the same time affords a means for the continuous deodorising of sewers. We may remark that the entire arrangement is self-acting, is not liable to get out of order, and a very important item is that it does not require the slightest attention when once fixed.

EXAMINATION QUESTIONS IN GENERAL CONSTRUCTION.

THE following is a copy of the last examination paper given to candidates who are desirous of employment in the constructive departments of the Municipality of New York:—

N.B. In case candidate does not remember formula or method of solving any problem submitted to him, let him name any work upon the subject where such formula or method may be found.

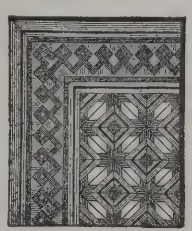
1. What is Civil Engineering?

2. Have you ever pursued a course of study in any educational institution, or with any civil engineer, which would fit you for the position of assistant engineer? If so, state when and with whom; state also, in detail, what experience you have had.

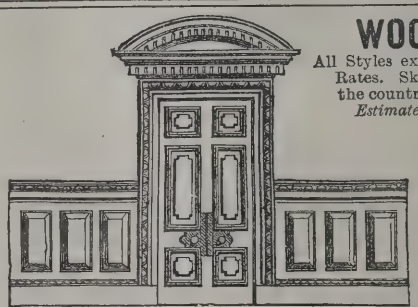
3. Have you ever had responsible charge of any public work? If so, state particulars.

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD., 22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.
150,000 ft. super. in Stock, ready for Laying.
RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.
Immense Stock always ready for Laying.



THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction



WOOD CARVINGS.
All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.
Estimates and Designs on Application.



ARTISTIC JOINERY.



ORNAMENTAL PARQUET.
DEAL BACKING.



PROVISIONALLY PROTECTED.

FIRTH'S

Improved Disconnecting Trap,

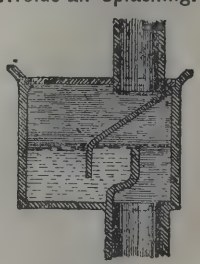
FOR FALL PIPES, &c.

COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.

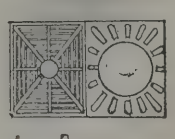
FOR PARTICULARS APPLY TO

GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing.



SECTION.



PLAN.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth Gilt Lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.

4. Solve the following according to the algebraic signs :—

$$\sqrt{\frac{(6\frac{2}{7}-4\frac{5}{9})\times 8\frac{7}{16}}{4\frac{4}{12}}} \times 67873{\cdot}367,$$ and show your work.

5. The population of a certain town in 1880 was 7,095 ; it having increased 25 per cent. in ten years, what was it in 1870? Show your work.

6. How many feet, board measure, in the flooring of a room 20 feet by 30 feet and 2½ inches thick?

7. Find value of x and y in the following equations :—

$$2x+3y=33$$
$$4x-y=17.$$

8. Find value of x in equation $x^2-x-40=170$?

9. Find value of x in equation $\frac{a}{b}+\sqrt{\frac{a^2-x^2}{x^2}}=\frac{x}{b}$.

10. Explain the meaning of the expression $a\frac{1}{2}\times b\frac{3}{4}$.

11. What is a logarithm?

12. What is the base of the common system?

13. In making what calculations are logarithms useful?

14. How do you find the logarithm of a number in a table of logarithms?

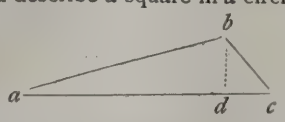
15. What are similar triangles?

16. How are similar triangles proportioned to each other?

17. The sides of a polygon being prolonged, what is the sum of all the exterior angles equal to?

18. How do you pass the circumference of a circle through three given points not in the same straight line?

19. How do you describe a square in a circle?



20. In the triangle b being a right angle, what proportion does $d\,b$ bear to $a\,d$ and $d\,c$?

21. How do you inscribe a regular hexagon in a circle?

22. What proportion do circumference and areas of circles bear to their radii?

23. How do you find the area of a regular polygon? 24. Of an irregular polygon? 25. Of a circle? 26. How do you find the solid contents of a cylinder? 27. Of a wedge? 28. Of a pyramid?

29. Find the contents of the wedge, base 20 feet by 30 feet, height 10 feet, edge 15 feet.

30. State the prismoidal formula; would you use it in calculating earthwork?

31. Is a simple question in calculating areas.—Ed. *Eng. News.*

32. How many and what parts of a plane triangle must be given to find the rest?

33. Define the terms sine, co-sine, tangent and co-tangent.

34. What are natural sines, co-sines, &c.?

35. What is a table of logarithmic sines, co-sines, &c.?

36. Two sides and two angles of a plane triangle being given, how do you find the other parts?

37. When two sides of a plane triangle and their included angles are given, how do you find the other parts?

38. In the right-angled triangle $A\,B\,H$ express algebraically the value of the sine, co-sine, tangent, and co-tangent of angle A in terms of a, b and h, they being the altitude, base and hypothenuse of the triangle?

39. What is the law of gravitation?

40. Do you understand that there is any difference in the meaning of the terms gravitation and gravity?

41. What is the law of falling bodies?

42. Express algebraically this law, taking v = velocity of falling body ; g = acceleration of gravity ; and h = height.

43. What is the centre of gravity of a body?

44. How is it found?

45. Where is the centre of gravity of a homogeneous body whose sides are all rectangles?

46. What is the specific gravity of a body?

47. What is the standard for solids and liquids?

48. What for gases?

49. What laws govern the pressure of liquids at rest?

50. How do you find the number of gallons of water to the cubic foot?

51. What is the weight of a gallon of water?

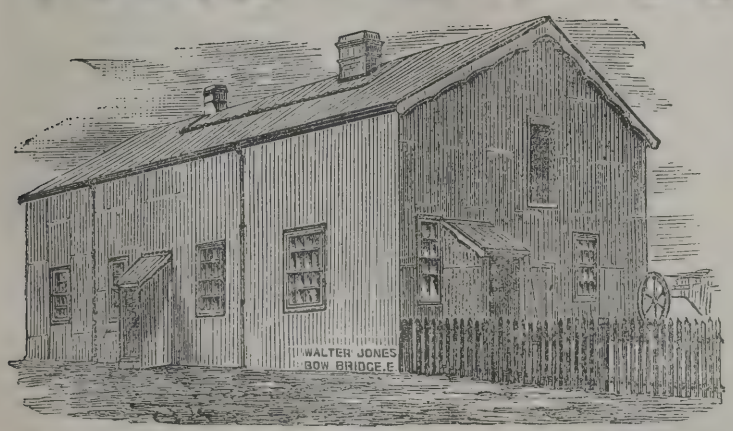
52. What is the pressure per square inch on the side of a vessel at the depth of 10 feet below the surface of the water?

53. What will be the theoretical volume of discharge per second from a reservoir through a pipe 1 foot in diameter discharging at a depth of 100 feet below the surface of the water?

54. How many gallons of water will be discharged through a pipe 1 foot in diameter, 328 feet long, head 13½ feet, coefficient of flow = ·007?

55. State how many men are needed to make up a full party for a survey of a preliminary line or location of a public work, such as a railroad or aqueduct.

WALTER JONES, MAGNET WHARF, BOW BRIDGE,



MANUFACTURER OF

GALVANIZED IRON HOUSES,

OFFICES, | CHURCHES,
WAREHOUSES, | STABLES,

&c., &c.

IRON OR WOOD FRAMES.

Apply for Designs and Prices.

VOLUME XXXV. OF THE ARCHITECT.

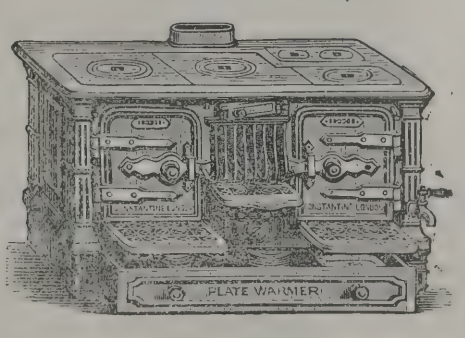
Handsomely bound in Cloth, Gilt Lettered. Price 2s. 6d. Office : 175 Strand, London, W.C.

A HOUSEHOLD TREASURE.

75 per cent. less Fuel burnt by using

CONSTANTINE'S
PATENT TREASURE
COOKING RANGE,

With the Patent Rising Fire Grating for reducing or enlarging the Fire.



THE FIRST PRIZE

Was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS.

Perfection in Cookery.
Economy in Fuel.
Smoky Chimneys effectually Cured.
Unsurpassed for Durability.
May be placed anywhere.

Illustrated Price Books, with Testimonials, Post Free.

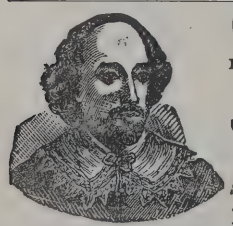
A. R. CONSTANTINE, 61 Fleet Street, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions.

56. State also their several duties.
57. For what purpose is the magnetic needle used in surveying land?
58. What is a traverse table and for what used?
59. How do you set out a circular curved line upon the ground?
60. If an obstacle occurs to alignment, state how you would overcome it upon straight lines; also upon curves.
61. The radius of a curve being given and angle of intersection of the two tangents, how do you find the length of the tangent from their intersection to the beginning of the curve?
62. Describe an engineer's transit, and name its adjustments?
63. Describe a Y level, and name its adjustments.
64. How many kinds of levelling rods do you know of?
65. State how they are graduated, and how they can be read to the $\frac{1}{1000}$ of a foot.
66. Show a form of field-book for transit notes used when "running" curves, and place thereon notes of a 5 deg. curve for 1,000, with two intermediate "set-ups."
67. Show a form of level-book, and place therein sufficient figures to show your method.
68. What are cross-sections?
69. How do you set slope stakes for excavation and embankment?
70. What is a grade line?
71. What proportion of the breaking weight of a beam would you consider a safe load?
72. With the load uniformly distributed, what fractional part of the whole weight may be considered, in all calculations, as being carried at the centre?
73. Suppose a beam supported at both ends, and take w = weight, l = length of beam, b = breadth, d = depth, s = breaking weight. Express algebraically the value of s in terms of the other quantities.
74. Sectional area being 36 square inches, which would be the stronger section, 6 by 6 or 4 by 9?
75. Make a design for a pair of rafters, connected by a tie-beam, for a roof 30 feet span, showing the dimensions of the several parts and the manner of connecting them. State in detail your method of obtaining the several dimensions.
76. How do you apply the principle of the parallelogram of forces in determining the strain on the various members of a structure? Illustrate graphically.
77. What should be the thickness at the top and base of a retaining wall 15 feet high, built to retain ordinary earth? Show your method of obtaining the required dimensions; also a sketch of the wall, showing how it should be founded.
78. A reservoir is to be built, depth of water 10 feet. If the walls are built of masonry, find the thickness of the same, and state how they should be built. Show your work.
79. What is an arch, of how many forms, and of what may it be constructed?
80. Can you state how you would find the thickness of an arch of stone, span and rise being given?
81. Define the intrados and extrados of an arch.
82. Where should the line of resistance to pressure be found in an arch in order to retain its stability?
83. Can you find the thickness of the abutments, the rise and span of the arch being given?
84. In a semicircular arch, where is the horizontal thrust greatest and where least?
85. Name the common kinds of stone used in building.
86. Define the terms "quarry-faced," "rough-pointed," "fine-axed," "bush-hammered," as applied to the dressing of stone.
87. Describe "rubble" masonry, "ashlar" masonry, and "broken ashlar" masonry.
88. What are "headers" and "stretchers"?
89. What should be the proportion of "headers" to "stretchers"?
90. How would you prepare the foundation for a heavy wall, and how deep should it be excavated?
91. How are walls founded on soft or yielding materials?
92. Describe a good quality of bricks, and state how you would know a good brick from a poor one.
93. In how many ways is brickwork "bonded" to make good work in heavy walls?
94. What is hydraulic cement, and how many kinds do you know of?
95. Which do you consider the better quality, Rosendale or Portland, and why?
96. What is mortar composed of, and how mixed?
97. What kind of sand should be used, and how do you test its quality?
98. What is the meaning of the term "setting," as applied to cement?
99. How would you test cement?
100. What is concrete; of what composed, and in what proportion should its ingredients be mixed?

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



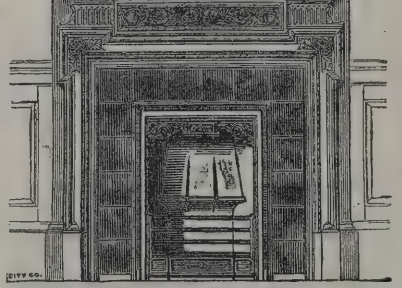
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD SILVER AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.
IN PLAIN COLOURS OR VARIEGATED,



AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

101. Name the common kinds of wood used in building?
102. What kind of timber resists decay longest under ground?
103. How may timber be preserved from decay?
104. What do you understand by limit of elasticity as applied to a beam under strain or pressure; what is meant by the neutral axis of a beam?
105. What is the tensile strength of a good quality of wrought iron per square inch?
106. For what parts of a structure may cast and wrought iron be used in reference to tension and compression?
107. Make a sketch of the form of cast-iron beam best adapted to resist a transverse strain.

MARBLE QUARRIES AT CARRARA.

A CORRESPONDENT of the *Scotsman* gives the following account of a visit to the marble quarries at Carrara:—Arrived at Ravaccione, we found ourselves in the midst of a wild and busy scene. Marble *débris* from the quarries above covered the hill sides, and filled up to a great depth the dip of the valley. Huge glittering blocks of marble lay scattered around, or were being rolled by men, as best they could, on to carts. The oxen standing all about were fortifying themselves with weedy hay against a fresh long pull, and enjoying what repose the flies permitted them to take. The blowing of a horn, followed by a loud report that went echoing amongst the rocks, and the rumbling noise of tons of falling marble, made us start. We turned to see what was happening, when another sharp blast of horn and of powder caused us to wheel round again. A glance was sufficient to show us that the sides of the mountains up to the very top of Crestola, which blocks this valley, and whose white peak look like a lighthouse from the sea, were alive with men, blasting, hammering, sawing, chiselling, or, most dangerous work of all, lowering blocks of marble from great heights and distances to where we stood. This last is accomplished by means of what are called "lizze," and is an exceedingly difficult, as well as perilous, operation. An arduous climb took us to where a "lizza" was being laden, so that we were enabled to examine it closely. It consists of the trunks of two young trees sharpened and curved upwards at one end, and bound together by cross bars, forming thus a kind of sledge, 16 or 18 feet long, and from 4 to 5 feet broad. This is placed on soaped sleepers at the edge of the quarry, ready like a ship on its stocks to be launched. Half a dozen blocks of marble, weighing fifty or sixty tons, are then securely bound upon it with chains. A number of men are now told off for its escort. One goes in front, one behind, one at either side, and two on the top. Other men have charge of long, stout ropes, which are attached one to each side of the lizza. At intervals on alternate sides of the steep, twisting, uneven path down which it has to go, are firmly planted into the rock short stout marble pillars, like mooring posts along a quay. The ropes are hitched round the first of these, and away the lizza glides. Now the escort men find their work in watching its exciting progress, and in making the few sleepers on which it stands do duty all down the hill; for as soon as it has passed over one sleeper it is picked up by the man behind, who hands it to the men on the top, by whom it is re-soaped and passed on to the one in front, and he, again, lays it before the ponderous lizza. In this way the road is fabricated to the progress of the mountain car, much as a path is made for a boat that is being pulled up a shingly beach. For its progress the rope-holders are responsible. They pay out their cables slowly and steadily, and in lengths proportioned to the intervals between the mooring-posts. As each of these is reached the lizza is stopped, so as to allow the men alternately to descend and make it a fresh lowering point. The whole descent is perilous in the extreme. The friction and strain are so great that deep hollows are worn in these marble posts. The ropes fray out, and have to be repaired on the way, although, being made of many scores of cords only loosely twisted together, they seldom cut or snap The marble projecting across the lizza swings at times dangerously from side to side. Turning the curves at a gradient of 1 in 20, we held our breath, as the whole affair seemed about to capsize and spread death and ruin down the valley. With the greatest care accidents do happen, and not a week passes without some disaster. We were told that there were not less than two workmen killed and five or six hurt per month.

We were anxious to pass over the mountain that here separates this valley from the "Canale Grande," so that we might return by it to Carrara. We made the attempt, but our progress was slow, as we had frequently to get out of the way of the gliding "lizze" or seek safety behind blocks of marble during blasting operations. The quarrymen, whom we met at different heights, advised us to turn back, as the further we went the more dangerous we should find it, because it was near

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers. LONDON, E.C.

time to knock off work, when all blastings ready would be fired, and there would be immense quantities of falling marble. At last we took their advice, reserving thus the Canale Grande, with its old Roman roads and quarries, for another day's excursion.

On our return journey to Carrara we had the good company of many of the quarrymen, who gave us details about their work and earnings. The poorest paid are the oxen drivers, who receive 2 frs. (*1s. 7d.*) per day. The men who lay mines get 3 frs. (*2s. 4½d.*). Those who cut marble and work the lizza are paid by the piece, and the former earn generally from 3 to 4 frs., and the latter, whose work is best paid because most dangerous, earn 8 or 9 frs. per day. They start work generally as soon as it is light, and continue during eight of the coolest hours of the day. But as Ravaccione is about five miles from Carrara, and its quarries from one to two thousand feet high, many workmen have two and a half hours' walk and climb before they can start their day's labour.

However, we found all polite, contented, happy, and ready to talk and to give information. They seemed to be proud of their "White Valley," which, though not yielding the largest blocks, yet gives the finest statuary marble in the world; and prouder still they were of their mountains, whose supplies of this precious stone show no sign of diminution, although 6,000 men cut yearly 200,000 tons from their giant breasts, but are as able now as they were long centuries ago to meet the requirements of mankind in the four quarters of the globe.

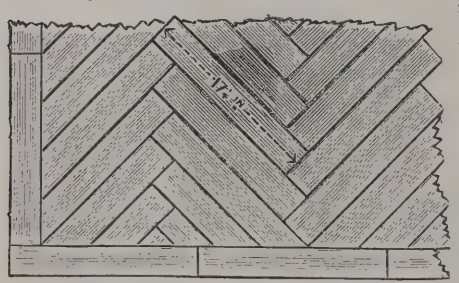
FIRES IN THEATRES.

AT an exhibition of lighting appliances now being held at the Brussels Bourse, M. Léon Lenaerts, of Brussels, shows in action an apparatus for use in cases of fire in theatres. By means of the arrangement, in which electricity aids and supplements gas, anyone is able, on an alarm of fire being raised, to shut off the supply of gas at the meter, thus preventing an explosion, and at the same time lighting up some incandescent electric lamps which direct the way to the exit doors. Thus an audience seized with panic would be reassured on seeing the safety lamps illuminated, which would inform them that the gas was shut off, and, instead of being left in total darkness, would be shown the nearest way out. Moreover, if a fire should break out without attracting notice, electrical contact would be made by the insulating substance being consumed from double wires disposed about the building, thus producing the same results automatically.

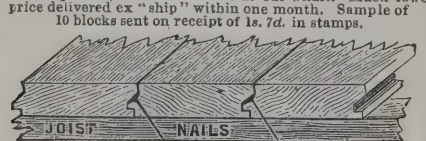
LIVERPOOL EXHIBITION.

IN our previous notices of the Liverpool Exhibition we omitted to mention a very interesting exhibit by Mr. John Wilson, of Erskine Street, Manchester. An entirely new form of portable parallel bars is shown, fitted with patent castors for easily moving about. The uprights rise from the base in pairs, and the whole apparatus can be taken in pieces and put together again in a very few minutes, and can be removed easily from one room to another. The sliding uprights are of a new pattern, being of iron tubes, and the bars are provided with steel cores and are adjustable to any height. One end also of the bars can be raised, making the bars oblique. The next notable exhibit is a new pattern jumping-stand. The pins are fixed in a loose slip of wood a foot long, and it can be raised foot by foot. By this arrangement loose pegs are dispensed with, and also pins the whole length of the stands. There are also various patterns of polished beech clubs, and some of pitch pine for ladies and children's use. Another exhibit is a plain climbing and also a ladder plank with a first-class portable horizontal bar, having steel core and iron uprights and stays. The bar is adjustable in height. A speciality in horizontal bars is one to sell at *2l.*, with a steel core and wooden uprights, with stays complete. A lighter bar is made in a similar way for *30s.* Ropes and rings, with a swivel joint and leather-covered, are shown, provided with sliders, so that the rings can be adjusted in height. A trapeze bar, with similar ropes and sliders, is also shown. The trapeze bar has a steel core and brass ends. A useful gymnasium for private use is an apparatus which can be fixed to any ceiling with a floor above it. It is made in three qualities, the better one with silk webbing and plated mountings. It consists of a pair of large wooden rings, trapeze bar, sitting and standing swings, with pair of stirrups; and a baby's swing can also be attached. A very large number of exercises can be performed on it. The prices range from *1l. 1s.* for a pair of rings with adjustable sliders, to *4l.* with silk webbing and extras as described, with the exception of baby swing, which is *15s.* extra. A good collection of dumb-bells (from very good patterns), at the very low price of *1½d.* per lb., is also

LONDON BOARD SCHOOL FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11*s.* 6*d.* per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1*s.* 7*d.* in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¼ × 4½ Dry Wainscot Oak, 54*s.* 9*d.* per square; 1 × 4½ ditto, 45*s.*; 1¼ × 4 Pitch Pine, 26*s.* 6*d.*; × 4 ditto, 22*s.* 9*d.* IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone, 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

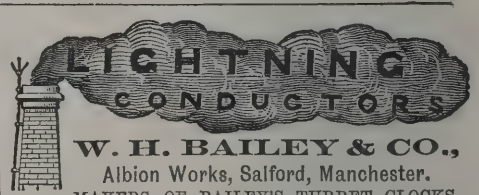
ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES,
STOVES, TILES, ETC.
WILKINS and SONS
88–92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

BY HER MAJESTY'S ROYAL LETTERS PATENT.
ESTABLISHED A.D. 1774.
AUSTIN'S
NEW IMPERIAL PATENT
SUPERFINE FLAX LINE.
The above article is now being manufactured and sold in large quantities for Greenhouse Sashes, Public-house Shutters, and other heavy work. The Manufacturers would recommend it for its strength, and the large amount of wear in it, consequent on its peculiar manufacture.
AUSTIN'S IMPERIAL PATENT FLAX SASH AND BLIND LINES (two Prize Medals awarded). The manufacturers of the above articles particularly wish to draw the attention of the trade to their Imperial Patent Flax Sash Lines, of which they are now making six qualities, all of which they can strongly recommend, as they have given unqualified satisfaction to the trade for now over One Hundred Years; and the Proprietors continue to give their personal attention to the manufacture of these goods.
They also invite the particular attention of the trade to their IMPERIAL PATENT BLIND LINES, which are very superior to anything yet offered.
They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in town and country.
N.B.—Please note that all our goods as advertised above are labelled, either inside or outside, with our Trade Mark—The "Anchor."

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE

VOLUME XXXV. OF THE ARCHITECT.
Handsomely Bound in Cloth, Gilt Lettered, price 12*s.* 6*d.*
Office: 175 Strand, London, W.C.



W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

FIREPROOF FIXING BLOCKS
FOR WALLS AND FLOORS
(Wright's Patent). Wood Joint Pieces, Plugs, Fixing Fillets, Grounds, &c., successfully Superseded without extra cost. Extensively used by Leading Architects and Contractors for several years past; H.M. War Department, &c.
NOTE.—These Fixings take and RETAIN nails equal to wood They never burn, decay, shrink, or become loose, and will carry any weight that can be put upon them in a building.
Colonel W. J. STUART, Commanding Royal Engineers, Chatham, writes:—"The frames are most strongly fixed, and the blocks did not split with the 5½ in. screws that were used."
Write for new catalogue, containing full particulars and references post free.
"Highly Commended" at the Firemen's Exhibition, May 1886.
WRIGHT & CO. { No. 3 Westminster Chambers, Victoria Street, London, S.W.
Manufactories:—Gosport, Hants, and at Carnforth, Lancs.

NASH & HULL,
LETTER
MANUFACTURERS,
WRITERS AND ENGRAVERS.
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.

DRY WAINSCOT OAK, in every thickness, several thousand Logs, from 8*d.* per foot.
Dry Wainscot Floor Boards, ¾-inch, 65*s.*; 1-inch, 75*s.*; 1¼-inch 95*s.* per square.
Dry Mahogany, Teak, and Birch.
Dry Black Walnut, 8*d.* and 9*d.* per foot.
T. FORMAN, Walnut Tree Walk, Kennington Road, S.E.

shown, together with boxing-gloves, wands, wood rings, foils, and other apparatus used in gymnasia and gymnastic exercises. A wand is shown with bells at the ends, which is very pleasing when in use. Mr. Wilson is the gymnastic fitting contractor to the army, and is at present fitting up the riding schools at Regent's Park, Knightsbridge, Hounslow, Leeds, Norwich, Birmingham, and Hulme; also Clonmel, Dundalk, and Newbridge, Ireland.

THE PLUMBERS' COMPANY.

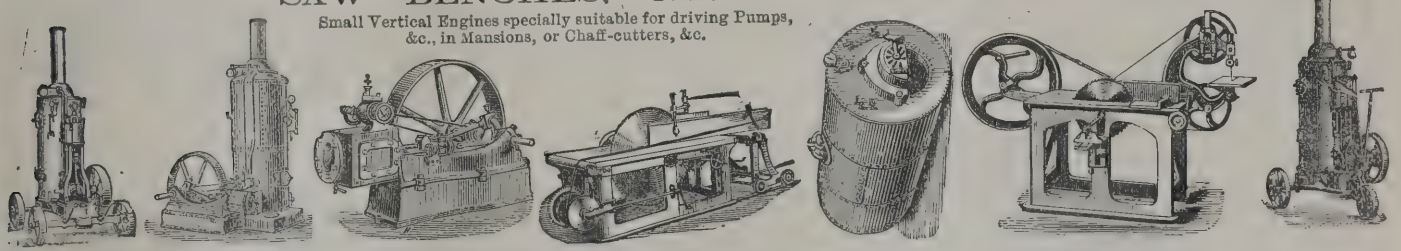
The Court of the Worshipful Company of Plumbers have taken a step which promises not only to benefit the particular craft in which they are interested, but still more largely the public. Of late years, from various causes, the plumbers' trade has risen in importance. The modern system of water supply and drainage, based on the principles of sanitary science, requires both high skill and trustworthy workmanship on the part of the artisans who have to carry it out. Plumbers ought to take rank among the highest class of skilled artisans, and earn wages calculated in proportion to the importance of their work. Yet, as every householder knows, instances of defective workmanship in pipes and cisterns are amongst the most frequent causes of expense and trouble; and, as the doctors tell us, a no less frequent cause of dangerous disease. The Worshipful Company of Plumbers some two years ago determined to exert their influence as a corporation, and to organise in a thoroughly practical fashion the important branch of industry of which they are the natural guardians. Their first move was to hold a conference of metropolitan and provincial plumbers in October 1884; and one of the results of this was the establishment of a general council to give practical effect to the resolutions passed by the representatives of the trade. A glance at the list of the members of this general council will show that it has been established on the most open and liberal basis. Side by side with members of the court of the company, the general council includes men like the chairman of the Metropolitan Board of Works, the chairman of the Sanitary Institute, the Lord Mayors of London and York, Lord Fortescue, Sir Robert Fowler, and a large number of other gentlemen who, though not directly connected with the trade in question, have taken interest in matters of sanitation. Moreover, it contains twelve members nominated in the interest of the workmen by the plumbing trade of London. The object of the movement is to enrol all efficient plumbers in a kind of society, to which they will not be admitted without proof of character and skill in their craft. As a first step towards this a register for plumbers of the City of London has been opened, on which all properly qualified plumbers are invited to enrol themselves. All applications are considered by a special committee of registration, largely composed of practical plumbers, and selected with a view to secure absolute impartiality. This committee by admitting a man to the register bestow on him a credential of skill in his craft, and thereby give the public a reasonable certainty of securing good workmanship. More than two hundred plumbers have already been registered, and a still larger number of candidates are awaiting enrolment. Useful as this scheme of registration will obviously be, it does not represent the whole design of the company. They desire not only to exercise a general and salutary supervision over the trade in all its branches, but intend also to carry out one of the most important functions of their position by providing means of technical education for the younger members of the craft; and a further item in their programme is to press on architects and other authorities the necessity for more closely watching and examining plumbers' work, especially in new houses. Now, to secure these objects, it has been suggested that legislation is necessary in order that the Plumbers' Company may be constituted an examining and certifying body, in a position similar, for instance, to that occupied by the authorities of Apothecaries' Hall. But if such legislation can be avoided—and we believe it can—the good work taken in hand by the company will, in our opinion, make more satisfactory and probably more rapid progress. When it is once understood that certain plumbers hold a certificate of efficiency from the registration committee of the company, there is no doubt whatever that such men will gain an advantage in the competition for employment. This will quickly increase the list of candidates for registration, and will tend to draw a line between the properly qualified and the unqualified plumber, which will make it practically imperative on architects and builders, for their own sake, to secure the services of men who are registered. But whether the desired end be attained by the aid of legislation or without it, the action of the Plumbers' Company deserves all support, both from the public and from the members of the trade. It is a praiseworthy effort to fulfil the duties which the founders of the great London companies intended that they should fulfil. Under the care of the company the working plumbers would find their interests much

E. S. HINDLEY, 11 QUEEN VICTORIA STREET.

VERTICAL STEAM ENGINES, PORTABLE OR FIXED. HORIZONTAL STEAM ENGINES } WITH OR WITHOUT VERTICAL BOILERS.

SAW BENCHES, CIRCULAR AND BAND.

Small Vertical Engines specially suitable for driving Pumps, &c., in Mansions, or Chaff-cutters, &c.



ILLUSTRATED CATALOGUES FREE ON APPLICATION.

ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustrations which have appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing:—

The History of Art.

In Two Plates, reproduced from the Splendid Painting around Cupola, in Place St.-George's, Paris.

BY M. FRANCOIS EHRMANN.

Showing Typical Figures of Ancient and Modern Styles of Art.

Size, Thirty-six Inches by Fourteen Inches.

Price One Shilling each; by post, carefully packed inside patent roller, One Shilling and Threepence each.

May be obtained from all Newsagents or Booksellers, or from the

Publishers, GILBERT WOOD & CO., 175 Strand, London, W.C.

more judiciously safeguarded than under the control—too often both foolish and despotic—of any of the trade associations which artisans have established for themselves, never to the advantage of the best class of workmen, and often to the serious disadvantage of the general body.—*Morning Post.*

COMMERCIAL MUSEUMS IN FRANCE.

THE following scheme for the organisation of commercial museums is put forward by the French Government as a guide to chambers of commerce desirous of creating a commercial museum, or giving support to an institution of the kind. The chambers may alter or enlarge it at their pleasure, according to the means at their disposal or the requirements of the locality.

I. *Object of the Commercial Museums.*

The commercial museum is intended to be an exhibition of foreign materials and foreign manufactured products interesting to the region; should the chamber think fit, it can also be an exhibition of home products of the region. This exhibition will be most interesting as regards technical education and import and export business. The purpose for which it is promoted is to communicate knowledge and information:—(*a*) To mercantile men as to raw materials which may be imported with advantage from abroad. (*b*) To manufacturers and working-men as to foreign modes of manufacture. (*c*) To exporters as to foreign goods in demand on the markets of the world. These museums will facilitate for French manufacturers the imitation of or improvement on products manufactured abroad, and they will enable our nationals to compete with foreigners by making them acquainted with the tastes and wants of the customer.

II. *Site of the Museum.*

An establishment of this kind must be formed in a locality close to business centres, *ex. gr.*, near commercial exchanges, or in the buildings occupied by chambers of commerce. It may with advantage be placed in the neighbourhood of professional schools of commerce and industry.

III. *Administration of the Museum.*

The museums are managed by the chambers of commerce in accordance with their expressed wish. But as several municipalities and industrial societies in towns have taken measures to found similar institutions, the character of a commercial museum will be conceded to any establishment of the kind to which a chamber of commerce shall have given support.

IV. *Supply of the Museum.*

Museums will be supplied as follows:—1. Samples gratuitously furnished to the Ministry of Commerce will be gratuitously distributed from thence to all commercial museums, according to the interests of the regions to which the museums belong.

2. The samples for which the museums may apply to the Minister of Commerce will be got for them at their expense through the consular agents of France abroad. The Ministry of Commerce will communicate to the authorities of the museums such information as it may have received respecting the nature and selection of interesting samples.

3. Museums will also be free to exhibit samples obtained from other sources than those above enumerated, such as foreign commission agents, merchants, or makers.

V. *Internal Arrangements and Classifications.*

The products exhibited in commercial museums shall be divided into four great classes as follows:—

1. Imported articles, comprising raw materials from abroad, likely to be purchased with advantage by French commercial classes; the same if suited in certain cases to lead, when used, to a reduction in the cost price of manufactured articles, or the same again if well fitted to cause the establishment of a new manufacture.

2. Export articles, including those manufactured abroad, which are imported into markets where similar French goods may compete.

3. Packings and preparations connected with the mode in which merchandise should be made up for particular places at particular points of the globe's surface.

4. Local products, comprising those of the soil and those of the manufactures of the region. Samples of these must, as much as possible, be displayed in classes and geographical divisions, the latter depending on the place of origin as regards imports, and on markets as regards exports, packings, and make up. The aim to be attained in such classifications should be the laying out of a synoptical exhibition, which shall enable visitors easily to find the articles which interest them.

A place may be reserved for the display of advertisements, relative to adjudications of great public works abroad.

RUPTURES! RUPTURES!!

HARNESS' GOLD MEDAL ELECTROPATHIC XYLONITE TRUSS.

ADVICE FREE.

Price 21s. POST FREE.

Guaranteed to Last a Lifetime!

SELF-ADJUSTING, Light, Comfortable, Washable, Non-irritating. Can be worn by any person, under all circumstances, in any climate. Manufactured of the best Sheffield Steel, covered with XYLONITE (Flesh-coloured Artificial Ivory). It is absolutely free from Rubber, Leather, and other objectionable material, and is admitted by the most distinguished Surgeons to possess all the advantages and none of the disadvantages of every other Truss in the Market. PATIENTS SUFFERING from any form of Hernia are thus supplied with the *most perfect remedial appliances* at moderate prices. THE SKILLED ADVICE (free of charge) of a gentleman who has had *extensive experience* in the treatment of Hernia is at the disposal of those who can call at 52 Oxford Street, London, W.

ORDERS BY POST should state the nature of the displacement. Measurement required—circumference of the body one inch below the hips.

HARNESS' XYLONITE TRUSS.

Combines COMFORT, SUPPORT, ELEGANCE, AND CLEANLINESS.

RUPTURES! RUPTURES!

A NEW TRUSS—AN IMPORTANT INVENTION.—MR. C. B. HARNESS, the well-known Inventor of Electropathic Belts and other Curative Electrical Appliances, has lately introduced a new ELECTROPATHIC XYLONITE TRUSS, which has already been highly approved of and adopted by the highest Scientific and Medical authorities. It has a beautifully smooth, flesh-coloured surface of a washable and durable material. It is cheap, will last a lifetime, and the healing influences of its mild electric action renders it a boon to the afflicted patient. No sufferer should be without one of these *perfect trusses*. SKILLED ADVICE FREE OF CHARGE. Note address and call without delay on The MEDICAL BATTERY COMPANY (Limited), 52 OXFORD STREET, LONDON, W.

Note the Address:

THE MEDICAL BATTERY COMPANY, LD.

52 OXFORD STREET, LONDON, W.

VI. *Labels, Index, and Publicity.*

Every sample in a museum shall be labelled, the label to be filled up with a description of the nature and origin of the goods which it covers. Each label is to be furnished with a special number, establishing the date of entry of the article in the class to which it belongs, and a general number of reference to an index or alphabetical *repertorium* on checks (*répertoire à fiches mobiles*), which shall be open to the visiting public.

The checks (*fiches*) of this catalogue, when filled up, shall comprise the following information :—Nature and origin of the article catalogued, the market in which it is sold, the method of its manufacture, materials out of which it is made, dimensions, sale price, cost price, and conditions of transport. Eventually the cards shall also include the number of another series of cards, relating to class of packing and make up, so that the visitor shall be informed as to the dressing or fashion (*façon*) required for certain articles of export. Moreover, it will be interesting in certain cases to give a reference to the letters of the Ministry of Commerce, the Consuls, or the correspondents who sent the samples to the museums, a reference also to any number of the *Moniteur Officiel du Commerce*, or other commercial paper containing information in respect of the articles exhibited in the museum.

The index on checks is to be kept regularly up to date. Advertisements published by the *Moniteur Officiel du Commerce*, by the newspapers of the locality, or by posters in exchanges or other public places, or on the doors of the museum, shall keep the public informed as to any newly-exhibited samples, and state to what class they belong.

VII. *Entrance into Museums, Communications to the Public, and Distribution of Samples.*

1. Museums are to be open without charge.

2. Information will be supplied as far as possible by the officer in charge of the preservation and classification of the things exhibited. Neither the managers of museums nor other administrators or persons who shall have procured samples are responsible for the information furnished through commercial museums.

3. When samples are large enough to allow of it, pieces of them may be cut of and disposed of at a charge which shall be determined by the managers of the museums. The samples so distributed to the public shall, if possible, be accompanied by a note describing the place from whence the article came, its sale market, mode of manufacture, the materials of which it is composed, its dimensions, cost price, and conditions of carriage. Samples of articles out of fashion are to be preserved in order to form a retrospective museum. For this purpose the managers must always keep a specimen of the sample which they distribute to the public.

VIII. *Library—Special Archives.*

1. Side by side with collections of samples, there shall be in each museum a library of books and publications. It would be of advantage that the commercial museums should bring together in the localities at their disposal such technical works as refer to commerce and industry. The *Moniteur Officiel du Commerce* will be furnished by the Minister for the use of the museum. The managers of museums will find in this publication reports from French and from foreign consuls, giving details not otherwise easily accessible as to foreign manufactures, by a reference to which they may give orders for samples. Mercantile men, too, will find in these libraries—

1. The rates of customs duties payable in the foreign countries with which the merchants of the region of the museum are in the habit of trading.

2. Rates of dues levied in the chief foreign ports to which the same traders have goods to send.

3. Tariffs of carriage rates on French and foreign railways ; in fact, every species of document of a kind interesting to commerce and industry.

The office for commercial information at the Ministry of Commerce will be the natural correspondent of the museums, and will furnish them with such of the documents as they have not got.

It might be advantageous if chambers of commerce, professional schools, and industrial societies, already in possession of the nucleus of industrial and commercial libraries, should combine their resources of this kind with those which commercial museums are in future to bring together.

The officials of museums are bound to class with the greatest care all letters enclosing or accompanying parcels of samples. The correspondence so entered will form the chief bulk of the special archives of the museums. It will contain information as to the business in, or the manufacture of, the products exhibited in the museums, which it would be difficult to confine entirely or completely in the cards of the *repertorium* or the leaves of a catalogue.

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

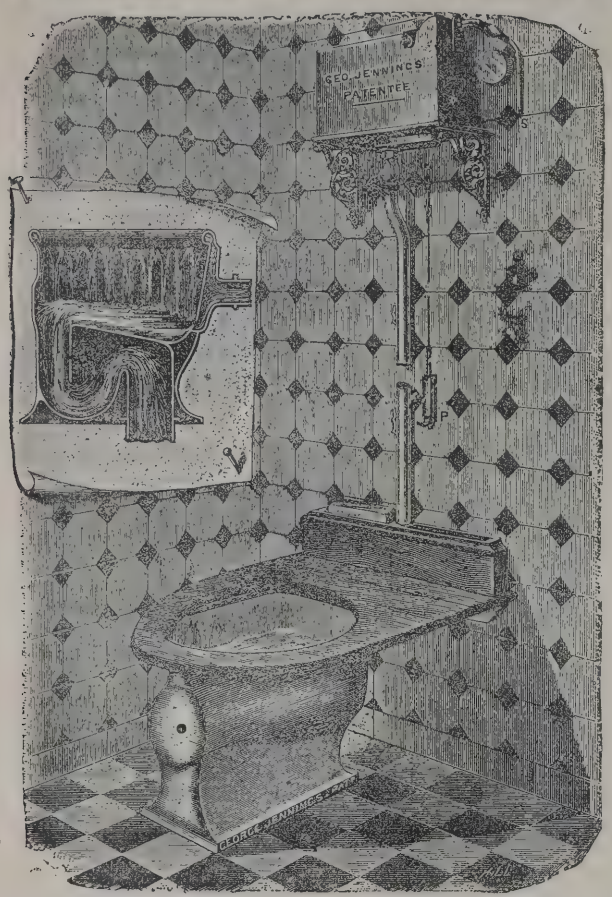
SEE HOBBS & Co^s
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST,
BENTLEY PRIORY, ROYAL, LANGHAM,
GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S,
BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

"THE PEDESTAL VASE,"

JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

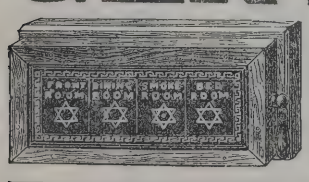
THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,

SANITARY ENGINEER, STANGATE, LONDON.

A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



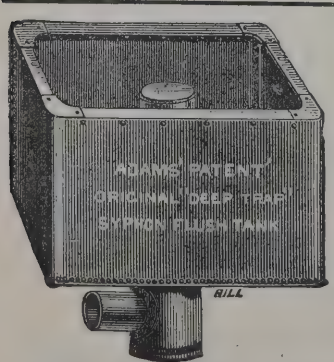
ELECTRIC & PNEUMATIC BELLS.

NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.

MECHANICAL TELEPHONES. Everything for a line complete for £3.

PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

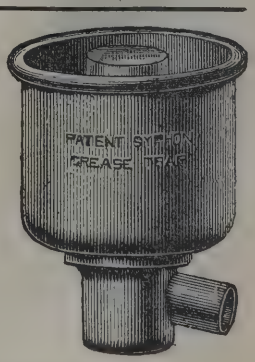


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
„ **FLUSH SYPHONS** for Sewer Flushing.
„ **FLUSH LATRINES** for Barracks, Schools, &c.
„ **FLUSH URINALS** „ „ „
„ **TROUGH CLOSETS** „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, August 27, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, SEPTEMBER 3, 1886.

COMPETITIONS OPEN.

BISHOPWEARMOUTH.—Sept. 25.—Plans, &c., are invited for the Erection of School Buildings for 1,300 Children. Mr. T. W. Bryers, Clerk to the School Board, Sunderland.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

LEEDS.—Sept. 30.—Designs are invited from Architects of Leeds for proposed Art Gallery and Museum. Mr. G. W. Morrison, Town Clerk, Leeds.

LEWES.—Oct. 9.—Designs and Estimates are invited for Public Hall and Offices, by way of addition to present Buildings. Mr. A. Holt, Borough Surveyor, Town Hall, Lewes.

MAIDSTONE.—Sept. 4.—Designs for the Erection of Girls' School are invited by the Governors of the Girls' Grammar School. Mr. H. Monckton, Town Clerk's Office, Maidstone.

CONTRACTS OPEN.

ABRAM.—Sept. 7.—For Additions to Waterman's House, Stubshaw Cross Reservoir. Mr. George Heaton, Wigan.

ALVERSTON.—Sept. 4.—For Building Dwelling-house, Springfield Estate. Messrs. Settle & Farmer, Architects, County Square, Ulverston.

BALAGAVENY, FORGUE.—Sept. 11.—For Building Milk-house. Mr. James Duncan, Architect, Turriff.

BELFAST.—Sept. 22.—For Construction of Waterworks (Contract No. 2). Mr. L. L. Macassey, C.E., Waterworks Office, Belfast.

BRIDGWATER.—Sept. 3.—For Erection of the George Williams Memorial Building for the Young Men's Christian Association. Messrs. W. G. Habershon & Fawckner, Architects, 38 Bloomsbury Square, London, and Park Square, Newport, Mon.

BRISTOL.—Sept. 23.—For some Alterations, Fixtures, and Furniture at the Hot Wells Branch Library, Woodwell Lane. Mr. J. Thomas, City Surveyor, Bristol.

BRIXHAM.—Sept. 10.—For Building Coastguard Station and Battery. The Director of Works Department, Admiralty, 21 Craven Street, W.C.

BURLEY-IN-WHARFEDALE.—For Building Barn and Mistals. Mr. R. Robinson, Burley-in-Wharfedale.

CARDIGAN.—Sept. 4.—For Additions and Alterations to Derry Ormond Mansion. Mr. D. E. Thomas, Architect, Haverfordwest.

CARLISLE.—Sept. 7.—For Building Hotel, Cocoa, and Dining Rooms, Victoria Viaduct. Mr. J. Smithson Moffatt, Architect, Whitehaven.

COLNE.—Sept. 15.—For Building Syphon Chamber and other Works at Waterside for the Colne and Marsden Local Board. Mr. H. Bancroft, C.E., 83 Mosley Street, Manchester.

COMBER.—Sept. 11.—For Restoration of Presbyterian Church. Mr. Robert Henry, M.D., Comber, Ireland.

CORK.—Sept. 2.—For Altering and Refitting Closets in Male Hospital. Mr. D. J. Coakley, Architect, 86 South Mall, Cork.

COVENTRY.—For Erection of Shedding for the Leigh Mills Company. Messrs. George & Isaac Steane, Architects, 22 Little Park Street, Coventry.

DINGLE.—Sept. 8.—For Building Light Keeper's Dwelling. Mr W. B. Soady, Secretary, Office of Public Works, Dublin.

DORRINGTON.—Sept. 9.—For Wrought-iron Lattice Girder Bridge with Buckle Plates and Parapets. Mr. J. W. Hoult, District Surveyor, Ryton Fields, Dorrington.

DUBLIN.—Sept. 10.—For Construction of Girders to Carry Water-pipes across Cookstown River. The City Engineer, City Hall, Dublin.

FORRES.—Sept. 4.—For Building Cottage and Additions to Farm Buildings. Mr. R. Walker, Altyre, Forres.

GORDONSTONE.—Sept. 11.—For Building Steading of Offices, Middle Hangus, and other Works. Mr. James Duncan, Architect, Turriff.

GRAVESEND.—Sept. 3.—For Building Contagious Diseases Hospital. The Borough Surveyor, Town Hall, Gravesend.

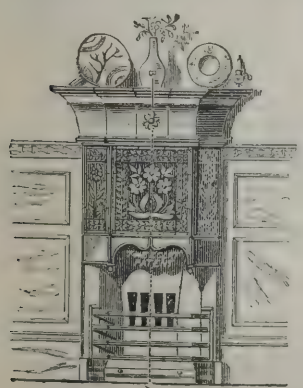
GRAYS.—Sept. 11.—For Erection of Coal Shed on the Saltings for the Metropolitan Asylums Board. Messrs. H. Jarvis & Son, Architects, 29 Trinity Square, Southwark, S.E.

HALIFAX.—Sept. 3.—For Building Two Shops, Nine-stall Stable and Coach-house. Messrs. G. Buckley & Son, Architects, Waterhouse Street, Halifax.

HEBBURN.—Sept. 6.—For Widening Bridge, Building Boundary Walls, &c., Waggonway Road. The Surveyor, Local Board Office, Hebburn.

HEREFORD.—Sept. 6.—For Completion of Sewage Outfall Works. Messrs. E. Cousins & Son, C.E., Palace Chambers, Westminster.

ILKESTON.—For Building Factory. Mr. G. S. Doughty, Architect, 14 Fletcher Gate, Nottingham.



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

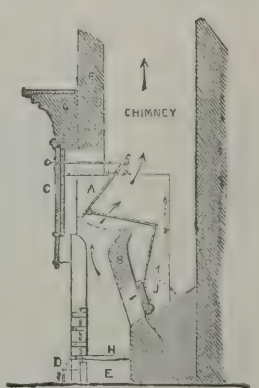
WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.



IPSWICH.—Sept. 13.—For Sinking an Artesian Well at the Borough Lunatic Asylum. Mr. E. Buckham, Borough Surveyor, Town Hall, Ipswich.

KENSINGTON.—Sept. 13.—For Cast-iron Tank, Stanchions, Lump Wrought-iron Girders, Steam Engines and Boilers, Washing Machines, Wringers and Mangles, Shafting and Gearing, Tools, Apparatus, &c., complete Drying-houses and Closets, Steam Coils, &c. Mr. T. Verity, Architect, 27 Regent Street, S.W.

KILBIRNIE RAILWAY.—Sept. 7.—For Supply of Steel Girders, &c. (386 tons). Mr. John Strain, C.E., 154 George Street West, Glasgow.

LANCASTER.—Sept. 15.—For Building Recreation Hall at the Royal Albert Asylum. Mr. W. Wright, Surveyor, Lancaster.

LARNE.—Sept. 4.—For Masonry, Girder Work, Embanking for Railway Bridge, Approaches, &c. The County Surveyor, County Court House, Belfast.

LEYTON.—Sept. 6.—For Enlargement of Newport Road Board Schools. Mr. J. T. Newman, Architect, 2 Fen Court, Fenchurch Street, E.C.

LOWER CLAPTON.—Sept. 13.—For External and Internal Painting and Repairs. Mr. F. W. Crane, 61 Bartholomew Close, E.C.

LYMINGTON.—For Gas Cooking Apparatus for Workhouse. Mr. E. Jackman, Clerk to the Guardians, Lymington.

MANCHESTER.—Sept. 11.—For Construction of a Wrought-iron Bridge across the River Medlock, at Boardman Street. Drawings and Specifications at the City Surveyor's Office, Manchester.

MILLOM.—Sept. 9.—For Additions to Oxenbows. Messrs. Settle & Farmer, Architects, County Square, Ulverston.

MILTONDUFF.—Sept. 7.—For Building Two Cottages. Messrs. A. & H. Reid, Architects, Elgin.

NEWCASTLE-ON-TYNE.—For Additions to the Haymarket Stables. Messrs. Shewbrook & Simpson, Architects, 2 Market Street, Newcastle-on-Tyne.

NEWCASTLE-ON-TYNE.—Sept. 3.—For Erection of Exhibition Buildings, North Road. Mr. William Glover, Architect, Market Street, Newcastle-on-Tyne.

NEWCASTLE-ON-TYNE.—For Building Villas at Forest Hall. Messrs. Howell & Hill, 6 Clayton Street West, Newcastle-on-Tyne.

OLDHAM.—Sept. 8.—For Building Cellar, Ripponden Road. Mr. T. Boyter, Architect, 103 Union Street, Oldham.

PAISLEY.—Sept. 22.—For Enlargement and Reconstruction of Passenger Stations on Glasgow and Paisley Joint Line, Messrs. Blyth & Cunningham, Engineers, Edinburgh. Mr. J. Hay, Secretary, Bridge Street Station, Glasgow.

PETERHEAD.—Sept. 20.—For Building Prison. Mr. William Donaldson, Secretary to the Prison Commissioners for Scotland, 130 George Street, Edinburgh.

PELTON FELL.—Sept. 8.—For Building Co-operative Stores. Mr. P. P. Short, Architect, Pelton Colliery.

RHOSDDU.—Sept. 9.—For Additions to Stansty Board Schools. Mr. J. E. Lash, Architect, 1 High Street, Wrexham.

SHOREDITCH.—Sept. 6.—For Rebuilding Public Mortuary. The Surveyor to the Vestry, Town Hall, Old Street, E.C.

SKENE.—Sept. 6.—For Additions and Alterations on Steading, South Auchrownie. Messrs. Walker & Beattie, 3 Golden Square, Aberdeen.

STANWIX.—Sept. 4.—For Construction of Brick and Pipe Sewers, Gosling Beck, Supply of Bricks, Ironwork, Fencing, &c. Mr. David Russell, C.E., 18 Norfolk Street, Carlisle.

ST. MARYLEBONE.—Sept. 7.—For Laying Down Six-horse Power Engine, Providing Washing Machine, Hydro-Extractors, Drying Closets, &c. Mr. J. Waldram, C.E., 16 Craven Street, Charing Cross, W.C.

ST. MARYLEBONE.—Sept. 7.—For Fireproof Floor, Iron and Glass Roof, Foundations for Engine, Laundry Appliances, &c., at Public Laundry. Mr. J. Waldram, C.E., Surveyor, 16 Craven Street, Charing Cross.

THIRSK.—Sept. 4.—For Restoration of South Porch of Church. Mr. C. H. Fowler, Architect, The College, Durham.

TIPTON.—Sept. 16.—For Building Board School for Infants, Great Bridge. Mr. Edward Pincher, Architect, High Street, West Bromwich.

ULVERSTON.—Sept. 2.—For Building Fire-engine House, Steam-roller House, Cart Sheds, &c. Mr. H. Whitlow, Surveyor, Theatre Street, Ulverston.

WANDSWORTH.—Sept. 23.—For Building Lying-in Wards at the Workhouse, Garratt Lane. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

WEEDON.—Sept. 11.—For Repairs and Alterations to Garden Gate Public-house, for Messrs. P. Phipps & Co., Northampton and Towcester Breweries. Messrs. John Ingram & Son, Architects, Hazelwood Road, Northampton.

HOLDEN & CO.'S PATENT ZINC ROOFING

WITH THEIR

PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,

Whereby the use of **Solder and all Outside Fastenings** are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.

Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.

ZINC AND IRON WORKERS AND COPPERSMITHS.

Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.

HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

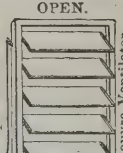
H. W. COOPER & COMPANY, LIMITED,

HEALTH EXHIBITION,



MEDAL AWARDED, 1884.

OPEN.



Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.

H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.

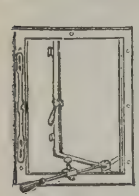
SHUT.



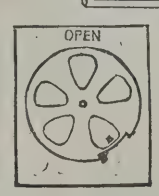
GLASS SELLERS' COMPANY EXHIBITION,



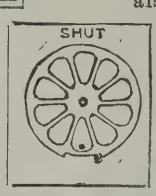
MEDAL AWARDED, 1876.

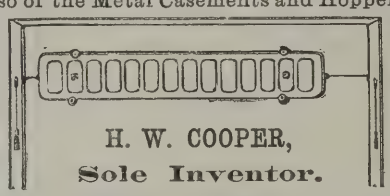


Improved Casement.

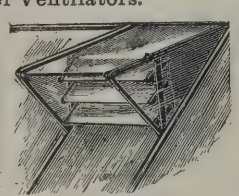


Circular Glass Revolving Ventilator.





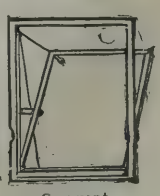
Glass Sliding Ventilator.



Improved Hopper for Skylights.



Hopper Ventilator.



Casement.

Steam Works: Little Queen St., Upper George Street, Edgware Road, W.

Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.



SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.

LONDON DEPOT:
Kinson Wharf,
Albert Embankment,
LAMBETH, S.E.

CARTER, JOHNSON & CO.,
ENCAUSTIC TILE MANUFACTORY,
St. George's Works,
WORCESTER.

20 Victoria Buildings,
Victoria Street, MANCHESTER.

Agents:—STURGEON & SMITH,
Cross Lane, Eastcheap, E.C.

WEDNESBURY.—Sept. 20.—For Building Board Schools, Caretaker's House, &c, King's Hill. Mr. Edward Pincher, Architect, West Bromwich.

WINDERMERE.—Sept. 4.—For Building Business Premises. Mr. Robert Walker, Architect, Windermere.

TENDERS.

CAPEL.

For Erection of Infectious Hospital, Caretaker's Cottage, and other Buildings, Capel, Kent. Messrs. H. H. & E. CRONK, Architects, Tunbridge Wells.

W. H. Canty, Tunbridge Wells	£3,239 10 0
Dore & Son, Eastbourne	2,545 5 0
G. J. Jones, Tonbridge	2,500 0 0
Wallis & Clements, Maidstone	2,393 0 0
Denne & Son, Deal	2,387 0 0
J. Jarvis, Tunbridge Wells	2,380 0 0
Thomas Reeves, Staplehurst	2,297 0 0
Kirk Bros., Battersea	2,280 0 0
G. & F. Penn, Pembury	2,265 0 0
Davis & Leaney, Goudhurst	2,090 0 0
Miles Tully, Paddock Wood	2,007 0 0

CARDIFF.

For Street Improvement Works, Cardiff.

J. Allen, Cardiff	£1,904 16 6
C. J. Pearson, Cardiff	1,883 19 3
T. Harries, Roath	1,780 12 10
J. RICH, Cardiff (*accepted*)	1,617 15 8

CLACTON-ON-SEA.

For Building Christ Church. Mr. T. H. BAKER, Architect and Surveyor, Walbrook House, Clacton-on-Sea.

Capon	£2,932 15 0
Wood	2,745 11 0
Hook (too late)	2,743 0 0
Mason & Sons	2,725 11 0
Allen	2,633 4 10
Lee	2,618 18 6
Saunders	2,514 5 0
Demaid	2,446 7 7
Grimwood & Son	2,356 4 0
Everett & Son	2,340 0 0

CASTLEBAR.

For Supply of Cornish Boiler, 12 feet by 5 feet, flue 2 feet 6 inches, with two Galloway Cross-tubes, all Fittings and Mountings complete, for the Castlebar District Lunatic Asylum. Mr. E. GLOVER, C.E., 5 Stephen's Green, Dublin.

Boiler.

STEPHENS & Co., Dublin (*accepted*)	£125 0 0

Boiler-house.

S. M'CORMACK, Castlebar (*accepted*)	191 7 6

CHURCH COPPENHALL.

For Enlargement of Board Schools, Church Coppenhall. Mr. E. FURBER, Architect, Crewe.

Lea	£359 7 0
Williams	287 15 0
Cotterill	286 0 0
Smith	268 0 0
Micklewright & Wright	260 0 0
Twemlow	250 10 0
MARTIN, Haslington, near Crewe (*accepted*)	228 0 0

COODEN.

For Building Cottage Home at Cooden, Bexhill, for Lady Clinton. Mr. J. B. WALL, A.R.I.B.A., Architect, 32 Walbrook, London, E.C. Quantities supplied.

W. Hickinbotham, Teddington	£1,645 0 0
H. & F. Rodda, St. Leonards	1,629 0 0
Cruttenden, St. Leonards	1,584 0 0
Alfred Dore & Sons, Eastbourne	1,578 0 0
M. Martin, Eastbourne	1,573 0 0
P. Jenkins, St. Leonards	1,570 0 0
Cornwell & Sons, Eastbourne	1,566 0 0
D. H. Snow, Hastings	1,498 10 0
J. Cole, Bexhill	1,496 10 0
T. S. Todd, Bexhill	1,397 0 0
T. H. Hutchings, Bexhill	1,296 10 0

CURRIDGE.

For additional Classroom, &c., Curridge School, Berks. Mr. J. H. MONEY, Architect, Broadway, Newbury.

W. Harrison, Newbury	£114 0 0
S. Elliott, Newbury	102 10 0
E. James, Newbury	98 10 0
G. ELMS, Newbury (*accepted*)	89 0 0

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,

Is admitted to be the best ever put before the Public.

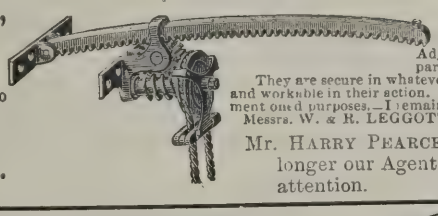
From 5s. each.

Write for REDUCED PRICE LIST and Testimonials to

W. & R. LEGGOTT,

70 Park Road, Bradford, Yorkshire.

N.B.—Size and height of window no object.



TESTIMONIAL.

BANGOR, N. Wales: September 14, 1885.

Sirs,—I have pleasure in testifying that I have used Leggott's Silen Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction.

They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-ment oned purposes.—I remain, yours obediently, R. DAVIES, Architect.

Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

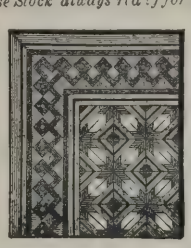
TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD., 22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.

150,000 ft. super. in Stock, ready for Laying.

RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.

Immense Stock always ready for Laying.



THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction



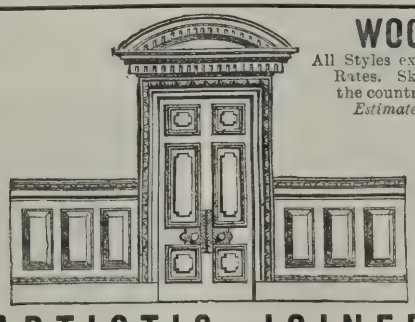
ORNAMENTAL PARQUET.

DEAL BACKING.

WOOD CARVINGS.

All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.

Estimates and Designs on Application.





ARTISTIC JOINERY.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.

Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

EALING.

For Alterations and Additions to Business Premises in Broadway, Ealing, W., for Mr. J. Moon. Mr. GEO. ASHBY LEAN, Architect and Surveyor, Helena Chambers, Ealing, W.

Bailey	£298 0 0
Waters	280 0 0
Nye	279 0 0
H. & A. Jones	245 0 0

EASTHAMPSTEAD.

For Receiving Ward, Porter's Room, &c., at the Workhouse, Easthampstead.

F. Kearwell, Warfield	£105 0 0
J. Kipperson, Easthampstead	102 0 0
G. East, Binfield	98 10 0

GARTH.

For Interior Renovation of Troedrhiwdalar Chapel, Garth.

Walters & Johns, Swansea	£545 0 0
Watkins & Jenkins, Swansea	540 0 0
B. JENKINS, Brecon (*accepted*)	430 0 0

HEREFORD.

For Erection of Villa on the St. Ethelbert Estate, Hereford. Mr. W. W. ROBINSON, Architect, 21 King Street, Hereford.

H. Welsh	£1,059 0 0
Beavan & Hodges	825 0 0
W. B. Partington	824 0 0
J. Hiles	767 0 0
T. Lewis	760 0 0
WM. BOWERS & CO., Hereford (*accepted*)	745 0 0

For Alterations, Construction of Shops, &c., High Street, Hereford. Mr. W. W. ROBINSON, Architect, King Street, Hereford.

H. Welsh	£930 0 0
Beavan & Hodges	795 0 0
Wm. Bowers & Co.	695 0 0
T. Lewis	660 0 0
J. Vale	625 0 0
W. B. PARTINGTON, Hereford (*accepted*)	615 0 0

HELLESDON.

For Constructing Exits in case of Fire, at the Norwich City Asylum, Hellesdon. Mr. JOHN BROCKBANK, City Architect, Norwich.

William Read, Norwich	£590 0 0
William North, Norwich	452 10 0
Downing & Sons, Norwich	446 0 0
George Hammond, Norwich	440 0 0
W. R. BENNETT, Norwich *	424 0 0

* Accepted, subject to a modification.

KIRTON.

For Building Cemetery Chapel, Kirton, near Boston. Mr. JOHN LANGLEY, Architect. Quantities by the Architect.

JOHN LUCAS, Boston (*accepted*)	£746 0 0
Bradley & Thorp, Hull	375 0 0
Clark, Boston	348 0 0
Langley, Kirton	300 0 0
Harrison, Lincoln	299 0 0
J. Richardson, Leake, Boston	292 10 0
Leafe, Boston	280 0 0
Parker & Hill, Wormgate, Boston	280 0 0
Rossington, Boston	280 0 0
Greenfield, Boston	278 0 0

LIMERICK.

For Supply and Erection of a Pair of Steel Dock Gates, for 70 feet Entrance to Floating Dock, Limerick, and Hydraulic Machinery. Mr. W. J. HALL, Harbour Engineer.

Harland & Wolff, Belfast	£5,096 0 0
M. Russell & Sons, Limerick	5,000 0 0
E. Finch & Co., Chepstow	4,492 0 0
J. Reid & Co., Port Glasgow	4,225 0 0
Workman, Clerk & Co., Belfast	3,950 0 0
Hanna, Donald & Wilson, Paisley	3,825 0 0
D. & W. Grant, Belfast	3,340 0 0
Widnes Foundry Company, Widnes	3,120 0 0
KINCAID & Co., Greenock (*accepted*)	2,592 10 6
Engineer's estimate	3,360 0 0

Two tenders informal, and not considered.

Ham Hill Stone! Ham Hill Stone!!! For Ham Hill Stone of best quality and workmanship, apply to JOHN HANN & SON, Quarry Owners, Montacute, Ilminster. Established 1837. Agents, MATTHEWS & GEARD, Albany Wharf, Regent's Park Basin, N.W. [ADVT.

PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.

GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

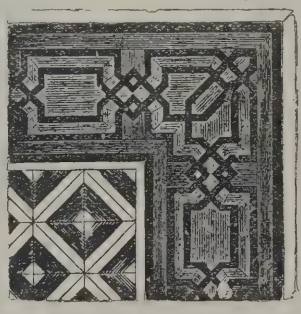
THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

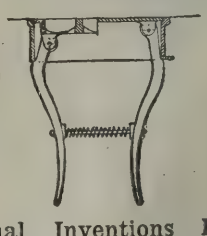
CONTRACTS.
THE LONDON GUARANTEE & ACCIDENT COMPANY issue Bonds, security on behalf of a Contractor or Builder for the due performance of Government, Municipal, or other Contracts of every description, at moderate rates. On application, leave will be given to send in the Company's name as surety with any Tender, no charge being made unless the bond is ultimately required. For terms, &c., apply to the Office, 10 Moorgate Street, London, E.C.
The Bonds of this Company are accepted by the several Government Departments.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered.
PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Work executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

VOLUME XXXV. OF THE ARCHITECT, handsomely bound in cloth, gilt lettered. Price 12s. 6d.
Office: 175 Strand London, W.C.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT.

NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

LEEK.

For Construction of 18-inch Pipe Sewer (980 yards). Mr. J. WYATT, Surveyor.

Clarke, Hulme	£525	0	0
Mackay, Stoke	480	0	0
Grace, Leek	475	0	0
J. Emery, Staffs.	473	0	0
W. VAUGHAN, Longsight, Manchester (*accepted*)	465	0	0

MAIDSTONE.

For Works at Tanks.

AVARD & CO. (*accepted*)	£410	0	0

MORLEY.

For Building Eight Houses, Bank's Hill, Morley. Mr. T. A. BUTTERY, Architect, Queen Street, Morley. Quantities by the Architect.

Accepted Tenders.

J. Congill, Morley, mason	£650	0	0
J. Clegg & Son, Morley, joiner	230	0	0
W. Kirk, Morley, plumber	23	0	0
E. Wilson, Morley, plasterer	42	10	0
J. Atkinson, Leeds, slater	46	15	0
Total	£992	5	0

For Alterations and Additions to the Brunswick Arms, Morley. Mr. T. A. BUTTERY, Architect. Quantities by the Architect.

Accepted Tenders.

J. Clegg & Son, Morley, joiner	£132	0	0
J. Wood & Son, Churchwell, mason	122	10	0
W. Naylor, Morley, plumber	47	10	0
W. Broadbent, Morley, plasterer	21	5	0
Sharp & Harper, Leeds, slater	15	0	0
Total	£338	5	0

For Building Villa Residence, West Ardsley, near Morley. Mr. T. A. BUTTERY, Architect, Morley. Quantities by the Architect.

Accepted Tenders.

J. & J. Sugden, Morley, mason	£400	0	0
Toothill & Balmforth, Little Hortin, joiner	237	10	0
H. Snowden, Driffield, plumber	95	0	0
Metcalf & Lockwood, Staincliffe, plasterer	54	10	0
J. Atkinson & Sons, Leeds, slater	40	18	0

LONDON.

For Three Shops, Mintern Street, New North Road. Mr. BRETT A. ELPHICKE, Architect. No Quantities.

Gould & Brand	£987	0	0
Edward Porter	970	0	0
J. Fanthorpe	948	0	0
J. Jarvis, Tunbridge Wells	945	0	0

PONTYPRIDD.

For Building Four Cottages and Schoolroom at Robert Town, near Pontypridd.

R. Davies, Cardiff	£952	10	0
E. Thomas, Ynysybwl	910	0	0
B. Jones, Ynysybwl	850	0	0
J. Howell, Ynysybwl	815	0	0
J. Griffiths, Treorky	809	15	0
J. Griffiths, Trealaw	809	0	0
T. Hughes, Ynysybwl	790	0	0
C. JENKINS & Co., Porth (*accepted*)	785	0	0
D. Rogers, Ynysybwl	750	0	0

PORTSMOUTH.

For Building Town Hall, Portsmouth. Mr. HILL, Architect, Leeds.

ARMITAGE & HODGSON, Leeds (*accepted*)	£100,000	0	0

SHREWSBURY.

For Building New Nave, &c., to Trinity Church, Shrewsbury. Mr. A. E. LLOYD OSWELL, A.R.I.B.A., and Mr. S. POUNTNEY SMITH, Architects, Shrewsbury. Quantities by Messrs. Brunsden & Henderson, 3 Barbican.

R. Yates	£5,486	0	0
Charles Claridge	5,113	0	0
J. Inwood	5,040	0	0
Foster & Dicksee	4,800	0	0
R. Everal	4,700	0	0
J. Jones & Son	4,490	0	0
Thomas Morris	4,398	9	0
A. Kimberley	4,388	0	0
Wm. Morgan	4,355	15	0
J. & G. Groves	4,280	0	0
Thomas France	4,200	0	0
J. Gethin	4,255	0	0
W. Bowdler & Co.	4,120	0	0
O. Jones	3,980	0	0
E. Ahley	3,945	0	0
R. PRICE (*accepted*)	3,775	0	0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

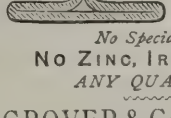
CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET SOHO, LONDON, W.
ESTABLISHED 0 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), **Engineers, &c.**
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

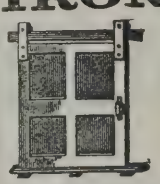
A. J. SHAW,
58 & 60 Gower Street, Sheffield,
MANUFACTURER OF
Coloured Varnishes & Wood Stains,
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK.
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*


TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

RICHMOND.

For Alterations at Cambridge House for Mr. Edward J. D. Paul. Mr. WILLIAM CLISSOLD, Architect, Stroud.

Sweet & Loder, Richmond	£2,069 o o
George Drew, Chalford	2,000 o o
T. J. Messom, Twickenham	1,995 o o
Maple & Co., Tottenham Court Road, W.	1,886 o o
Goddard & Sons, Dorking	1,730 o o
W. O. & E. READING, Paddington, W. (*accepted*)	1,675 o o

SUNDERLAND.

For Building Primitive Methodist Mission Church, Sunderland. Mr. T. C. HALLAM, Architect, Chester Road, Sunderland.

Parker & Bramaw, Sunderland	£1,390 o o
J. Elrick, Sunderland	1,190 o o
J. Bainbridge, Sunderland	1,155 o o
T. P. Shaftoe, Sunderland	1,121 o o
J. Hirst & Sons, Sunderland	1,083 o o
G. & F. Hildrey, Sunderland	1,050 o o
George Douglas, Sunderland	999 o o
J. J. Shields, Sunderland	946 o o
E. H. & G. Allison, Sunderland	939 o o
J. A. Nichol, South Shields	930 o o
A. Murray, Newcastle-on-Tyne	900 o o

WARLINGHAM.

For Building House at Warlingham, on the Duke's Hill Estate. Mr. GEORGE BAINES, Architect, 4 Great Winchester Street, E.C.

Hunter & Bryant, Whiteleafe	£2,885 o o
Masters & Sons, Anerley	2,867 o o
Sykes, Catford Bridge	2,860 o o
Sargeant, Hackney	2,749 o o
Roberts, South Norwood	2,679 o o
J. & J. Ward, Warlingham	2,617 o o
J. & C. Bowyer, Upper Norwood	2,530 o o
Wm. Marriage, Pancras Lane, E.C.	2,388 o o
Wm. Johnson, Wandsworth Common	2,360 o o
Smith & Bulled, Croydon	2,193 o o
BATTLEY, 21 Old Kent Road, S.E. (*accepted*)	2,097 o o

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

LONDON.

For New Sanitary Arrangements, and other Improvements, at 39 Wimpole Street, W. Mr. MARK H. JUDGE, A.R.I.B.A., Architect and Sanitary Surveyor.

H. TOTEN & SONS (*accepted*)	£491 o o

TRADE NOTES.

THE Government have ordered four of Atkinson's patent "Differential" gas-engines, with patent air-compressors combined, to work in connection with Shone's system of pneumatic drainage, which is being applied to the Houses of Parliament for dealing with the sewage. The engines are to be fixed in the basement under the Chambers. This, we believe, is the only form of gas-engine which has been successfully used in connection with the "Shone" system of drainage.

MESSRS. HENDRA & GOODING, of North Road, Holloway, the patentees of the "Interchangeable Rubber Tread," have written asking us to correct an error which occurred in our last issue on page 8. Kindly read "Hendra & Gooding," not "Hendrad Gooding."

WE are informed Messrs. Woodhouse & Rawson, of 11 Queen Victoria Street, E.C., have made arrangements with the Edison & Swan United Electric Light Company to pay a royalty upon lamps sold by them pending the appeal, the royalty to be returned in case the appeal is successful. The result of this will be that, should Messrs. Rawson be unsuccessful in the appeal, the Edison & Swan Company will have no claim on the purchasers of these lamps.

THE new number of *L'Art* contains an etching by M. Mordant after the painting by Gerard Ter Borch, for which permission to publish was given by the owner, the Princess Demidoff. There is also a reproduction of a drawing by Millet. Among the articles is one of a series on the works of Rubens in Austria by Herr Berggruen, the director of the Society of Engravers in Vienna, and an elaborate article on Verrochio by M. Eugene Muntz, both being amply illustrated. M. Paul Leroi has the first part of a criticism on a work by Signor Venturi, describing the Gallery at Modena.

MESSRS. H. & C. DAVIS & CO., of the Metropolitan Gas Stove Works, Camberwell Road, S.E., have obtained the contract for a range of three large gas roasters, with enamelled interiors, to cook for 800 people, for the Guardians of St.

FLAT BRICK FIRE-PROOF FLOORS.


LONDON, 1874.


LONGITUDINAL SECTION.


BRUSSELS, 1876.

THE BEST as well as the CHEAPEST Fire-proof Floors yet introduced. Their small cost makes them specially suitable for artisans dwellings, residential flats, offices, chambers, and private houses.

They are constructed with hard-burnt bricks, laid flat, and bonded on the upper face with tough concrete 3 inches thick; and by the method of laying all iron is protected from the action of fire.

Experiments show a resistance to load and impact greater than furnished by the ordinary concrete floors. No thrust is transmitted to the walls, as in all arched construction, the walls being tied in and strengthened.

The floors are practically noiseless, the different densities of the concrete, brick and plaster, with the air space above, intercepting the sound vibrations.

The brick soffit forms a capital key for the plaster, and no laths or counterceiling are necessary, but for high-class work wood blocks are introduced in the soffit, to which the ordinary lath and plastering or fibrous plaster is fixed. This also provides a second air space, and furnishes the most perfect sound-resisting floors known.

They are not affected by water, acids, or alkalies, and they may be fixed during the progress of the building, thus dispensing with the use of internal scaffolding.

The concrete being tough instead of friable, the boarded finish may be nailed down without the use of sleeper joists. It is recommended to use an inch strip as a sleeper fillet. This will provide ventilation, and space for gas and water-pipes.

The depth of the finished floor is 6 to 9 inches only, and when the saving on this head is taken into account, the cost does not exceed that of the ordinary combustible timber floor of corresponding strength.

HOMAN & RODGERS,

Engineers and Patentees,

17 GRACECHURCH ST., LONDON, E.C., & 13 DAWSON ST., MANCHESTER.

WORKS: RATCLIFF, LONDON, E., & HULME IRONWORKS, MANCHESTER.

Homan's Patent Girders, Rolled Joists, Cast-iron Columns, Roofs, Bridges, and every kind of Constructional Ironwork.

London Telephone, No. 1,026. Registered Telegraphic Address—"HOMAN RODGERS, London"; "NAMOH, Manchester."

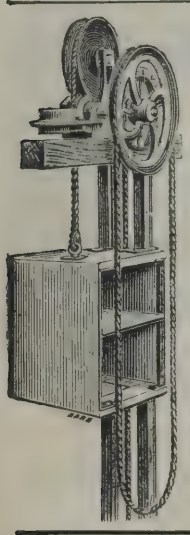
Olave's, Bermondsey. They are also constructing a large gas roaster and hot-plate for the Guardians of St. George's, Hanover Square, for the union in Fulham Road. In addition to the above they have an order in hand for a large gas roaster, hot-plate, gas steam boiler, &c., for King's College Hospital, similar to the arrangement supplied by them about two years since for King's College, Strand.

THE REAFFORESTING OF IRELAND.

THE proposal to plant forests on a grand scale in Ireland originated with Dr. Lyons, a physician in Dublin. In a recent communication, he gives the following information on the subject :—

The industrial and other operations referred to by the Chancellor of the Exchequer, raise again the question of reafforesting Ireland. Since I had the honour to address you last on the subject the recognition of forestry as an agent in industries has assumed very large proportions in Europe and America, including Canada. In Ireland, to which I wish to confine my observations chiefly on this occasion, a considerable advance has been made in our knowledge of the subject, and its adaptability to the wants and conditions of this country. Last autumn I had the good fortune to induce Dr. William Schliel, the head of the Indian Forest Department, now in Europe with a view to a final arrangement of the question of the Foresting School at Cooper's Hill College, to visit Ireland. He followed in a general way the route already traversed at my suggestion by Mr. D. Howitz, of Copenhagen, whose able report was published on my motion as a Parliamentary Paper, No. 30 Session of 1884. Dr. Schliel was introduced to the then Lord Lieutenant, the Earl of Carnarvon, who invited him to put his views in form of a report, which was subsequently printed by Thom & Co., 1886, but not published in the ordinary sense. As I believe that Dr. Schliel's able paper contains matter of the highest moment to the best interests of Ireland, and as I am the person mainly responsible for his visit to this country, I take it on myself to give to the Irish public the following important extracts. Ireland is thus indebted to two volunteers, Mr. Howitz and Dr. Schliel, for most able and valuable services in the initiation of her future forests.

After some preliminary observations, Dr. Schliel, from the most recent and reliable data furnished by myself and others, Foreign Office reports, Canadian ditto, per Colonial officers, states 18 millions sterling per annum to be the value of the wood imported into Great Britain and Ireland, while the minor forest products, as barks, dye-woods, wood-pulp, galls, turpentine, pitch and tar, resin, lac, gum, caoutchouc, gutta-percha, fibres, &c., equal 14 millions sterling per annum—total, 32 millions sterling a year, or about one pound per head of the population. Stated otherwise, the annual imports of timber amount to 6,447,211 loads, of which Sweden sent 1,600,000 loads; Russia, 1,350,000; Norway, 750,000; Germany, 430,000; United States of America, 400,000; and Canada, 1,540,000 loads. So far as the available information goes, says Dr. Schliel, it seems almost certain that the supply from the United States will die away rapidly at an early date. Of the foregoing European countries a sustained yield is only secured from Germany, where the bulk of the forests is under systematic management and control; indeed, it is believed the imports can easily be increased, especially from the forests of East Prussia. In Sweden, Norway, and Russia the forest conservancy measures so far introduced do not, if I am correctly informed, insure a sustained yield of the quantities removed of late years, though the falling off in the supplies may not be so rapid as has been assumed. These sources, then, cannot be relied on to furnish for any length of time 3,700,000 loads annually, or more than one-half of the total imports, even if the supplies from Germany should somewhat increase. None of the larger European countries will materially help to cover the deficiency, any surplus material in Austria-Hungary being required by France and other countries. Canada has sent about one and a half million loads annually, but the reports obtained through the Governor-General by Dr. Lyons show conclusively what inroads have been made on the Canadian source of supply. On the whole, says Dr. Schliel, although I am far from joining those who would create a panic on the timber supply question, there is every prospect that any woods now planted in Great Britain and Ireland will yield a fine return by the time they are ripe for the axe. At present prices are very low, but that should not induce the present generation to disregard the future. Wood is an article that requires a long time to mature and forethought as regards to future supplies of it more than in respect of any other article. He then deals with the question of the waste lands of Great Britain and Ireland probably available, and of 41,809 square miles of waste assumes that probably one-half, or 20,000 square miles, are available for reafforestation. He next discusses forests as an object of industry, and shows that a

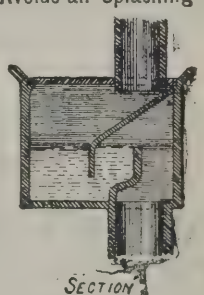


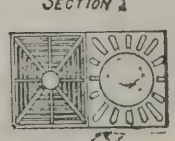
LIFTS! LIFTS!! LIFTS!!!
PATENT A.B.C. SELF SUSTAINING LIFTS, FOR HAND OR POWER.
CANNOT RUN DOWN, AND FREE FROM JERKY MOTION.
DIRECT ACTING AND MULTIPLYING CYLINDER HYDRAULIC LIFTS,
CONTINUOUS, AND WATER BALANCE INCLINE LIFTS.
LIFTS OF ALL KINDS FOR GOODS OR PASSENGERS,
WORKED BY STEAM, GAS, HYDRAULIC, OR HAND POWER.
SHUTTERS & DIVISIONS,
FOR SHOP FRONTS, GATE OPENINGS, SCHOOL PARTITIONS, ETC.
A. ATTWOOD & CO., LATE Salmon, Barnes, & Co.
LONDON OFFICE:
20 BUCKLERSBURY, E.C.
ULVERSTON, LANCASHIRE.



PROVISIONALLY PROTECTED.
FIRTH'S
Improved Disconnecting Trap,
FOR FALL PIPES, &c.
COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.
FOR PARTICULARS APPLY TO
GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing.


SECTION


PLAN

great variety of occupations depend on the products of forests as their prime materials, not only as regards construction, manufacture, furniture-making, &c., and the industries using minor forest products, but also as regards special industries which cannot spring into existence except in and around large forests with a sustained and regular yield. The articles produced by the latter are now mostly imported, but they could be to a considerable extent made by local labour if Great Britain and Ireland had extensive forests.

For Great Britain and Ireland, Dr. Schliel assumes that about one adult labourer will be required for every 100 acres after the forests have been created; while its initial work is going on, about 15 to 20 acres would supply work for one labourer throughout the year in preparation of the soil, draining, nursery work, planting, sowing, fencing, &c., &c. Assuming that the forest area of Great Britain and Ireland were during the next twenty years increased from 4,000 to 20,000 square miles, it would be necessary to plant annually some 500,000 acres, which would fully occupy at least 25,000 labourers, corresponding to a population of 125,000 people. After the forests had been created, they would give employment to about 100,000 labourers, corresponding to a population of half a million.

Before leaving this branch of the subject, Dr. Schliel cites the following important facts:—Prussia, Bavaria, Saxony, Wurtemburg, Baden, and Alsace-Lorraine have a combined population of 40,644,763 people. The labour connected with the forests of these countries has been estimated to be worth—Labour in the forests, 4,550,000*l.*; carriage of wood, &c., 3,900,000*l.*; collection of minor products, 1,000,000*l.* These earnings, 9,450,000*l.* in all, suffice for the maintenance of about 300,000 families, or 1,500,000 people. It has been further estimated that the prime material yielded by a forest occupies about four millions of people, so that the forests and industries dependent on them provide work for some seven millions of people, or one-sixth of the total population of the above-mentioned countries. A corps of nearly 10,000 men was furnished to the army by the forest guards of France in 1870.

It is needless to point the application of the data set forth in these examples to the case of a country like Ireland, where labour abounds, and where the area for reafforesting operations is estimated by so cautious and careful an observer as Dr. Schliel at a minimum of two million acres. My own estimate is five million acres, the old rule of 1 in 4 of forested to unforested land.

Dr. Schliel discusses the subject of forest revenue, but not in such detail as would be requisite. He has a special edition on the afforestation of Ireland, which will be read with great interest by all who earnestly address themselves to the subject. He discusses the general topography and drainage of the country, and after considering the mountain groups which enclose the central plains of Ireland, and the means which perform the drainage of the whole, he somewhat hastily, as I conceive, enters on a subject which the great French Forest Conservators have studied more profoundly and successfully than any other authorities in Europe, of which witnesses the great works are Surell and Cezanne on the torrents of Les Hautes Alpes, and the triumphs of forestry over the destructive torrents of the Duranee, on which ordinary engineering skill had laboured in vain for years. In conclusion, Dr. Schliel is kind enough to speak in terms of commendation of the organisation for dealing with the reafforesting of Ireland proposed in my bill of 1884.

CANALS v. RAILWAYS.

THE following letter by Mr. George Lester, of Llangollen, explains the way in which canal navigation is sacrificed to the interests of railways, and in consequence the interests of producers and consumers are likewise sacrificed:—

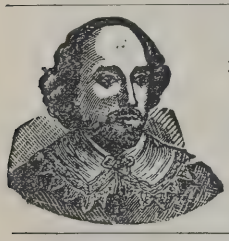
A few years ago it was customary when poor dividends were declared by the North Staffordshire Railway Company to lay the fault to the "said to be" non-paying canal, and it was not until Mr. Wedgwood made representations to the late chairman (Mr. Campbell) that careless and untrue statements ceased to be made in the half-yearly reports.

It has been stated since the North Stafford line has been constructed, the dividend has varied from ½ to 4½ per cent., and had it not been for the canal contributing some thousands per year over and above the 5 per cent. guaranteed (or 45 per cent. on the original capital), the railway dividends would have been still less, and had the canal been in other hands the railway would have collapsed.

Mr. Moore, as chairman of the London and North-Western Company, has thought well to make a scapegoat of the Birmingham canal; but it should be borne in mind forty-three times the original value has been given by the London and North-Western Company—4 per cent. on this amount guaranteed, equalising 172 per cent. Is not Mr. Moore's state-

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
TRADE W MARK
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

PARKINSON'S
BEST QUALITY LOWEST PRICES
WET & DRY
COTTAGE LANE CITY RD LONDON
GAS METERS

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

SHOP SHUTTER SHOES.
NO SHUTTER BARS REQUIRED.
HARRISON'S PATENT SELF-FASTENING BEST MALLEABLE IRON SOLID BEAD SHOES
Extensively specified, and used by Architects, Surveyors, and Builders. The Solid Bead greatly protects the Corners of Shutter from wear in removal. Terms Cash. Illustrated List on application.
JAMES HARRISON, 35 Union Street, {BOROUGH, LONDON.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

ment misleading and untrue—"that the earnings of the canal were absorbed in its maintenance," whereas it is to maintain the dividend on the enormous price paid (to obtain a monopoly), which is the real cause of bad trade in Birmingham, and materially injures the coal, iron, and potting interests of North Staffordshire? What railway in the kingdom could stand even twice its original value being given? It is a fact, railway maintenance absorbs 50 per cent., while maintenance of canals only absorbs 5 per cent.

This question of monopoly in transit affects not only the trade, the well-being and doing of England, but of the whole world. A speculative ring of 900,000,000*l.* has boycotted the trade of this country. This ring has nearly two hundred of its representatives in our Parliament. The Chairmen of Committees in both Houses are railway men. It can be proved that members of Parliament have received considerations not to oppose railway bills. But some members fly to perpetual pensions, tithes, oppressive rents; but the real plague spot is the railway monopoly, both in and out of our legislature. Two recently returned manufacturers state that English china clay, stone, flints, &c., are delivered at American potteries cheaper than in Staffordshire. With 40 per cent. to 50 per cent. duty, can it be wondered at that the state of our trade is so unsatisfactory? In railway monopoly we have before us what united capitalists can do. There are only two courses open. Either for chambers of commerce to be universally supported by the trading community (each district to have a large reserve fund); or, for the people of this country to unite as one man to break up a monopoly which is ruining us socially, commercially, and politically.

THE SETTLED LAND ACT IN RELATION TO LIGHT AND AIR.

ON Wednesday an important case was brought before Mr. Justice Stirling, as vacation judge, in which the application of the Settled Land Act, 1882, was involved. It was a motion on behalf of Adolph Fass, lessee of No. 23 Courtfield Gardens, South Kensington, to restrain the defendants Colonel Gunter, the lessor, and James Whitaker, builder, from obstructing the light at the back of the plaintiff's house. On July 20, 1880, Colonel Gunter, the owner in fee, leased the premises to Mr. Radford, together with all ways, rights, and appurtenances for 99 years from March 25, 1875. On March 27, 1883, Mr. Radford leased the house and premises to the plaintiff for twenty-one years from December 25, 1882. Colonel Gunter was also tenant for life under the will of Robert Gunter of the land at the back of Courtfield Gardens. On January 21, 1886, a building agreement was entered into between Colonel Gunter as tenant for life under the Settled Land Act, 1882, and James Whitaker with respect to the land at the back of Courtfield Gardens. Mr. Whitaker then began to build houses 53 feet high in place of a wall 7 feet 10 inches high at a distance of from 10 feet 8 inches to 13 feet 8 inches from plaintiff's house. The plaintiff now moved for an injunction.

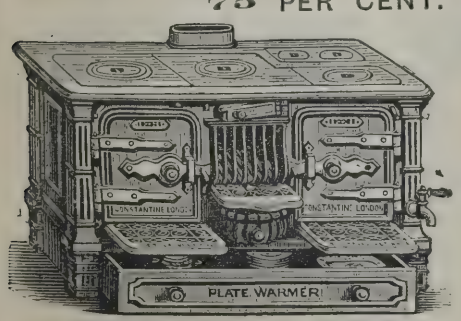
Counsel for the plaintiff said that under the old law Colonel Gunter, as owner in fee of the plaintiff's house, had granted the light to the plaintiff, and as tenant for life of the adjoining premises he could not derogate from his own grant, and take the light away. Before the passing of the Settled Land Act, 1882, Colonel Gunter could not block out the light, and that Act had not taken away the plaintiff's right.

Counsel for defendants said that Colonel Gunter was, under the Settled Land Act, a trustee for the whole estate, and had power to grant a lease free from the plaintiff's easement.

Mr. Justice Stirling said that the question was one of legal right. The title of the plaintiff rested on a grant alleged to be made by Gunter to Radford, and passed from Radford to the plaintiff, and also on the principle that a grantor cannot derogate from his own grant. It was contended on behalf of the defendant that, as tenant for life under the Settled Land Act, 1882, he was trustee for all parties, and could grant the lease to Whitaker discharged from the interests of the plaintiff. The intention of the legislature was not so clear as he would have wished, but he had come to the conclusion that under section 20 of the Act a lease might be made to override all the estates and interests subsisting or to arise under the settlement, except easements otherwise binding on the tenant for life or his successors. Now this easement was not binding on the successors of Colonel Gunter. Then under section 50 of the Act the consent of the plaintiff as assignee for value was not required, unless he was in possession of the settled land or part thereof. In his lordship's opinion the Act clearly distinguished between settled land and easements, and the plaintiff could not be considered in possession of settled land. The defendant, Colonel Gunter, therefore, was not bound to obtain the consent of the plaintiff in granting a lease, and the motion failed and must be dismissed.

THE ÆOLUS WATERSPRAY
SYSTEM OF
HEATING, COOLING, & VENTILATING
IS THE
CHEAPEST AND BEST.
For Particulars apply to
MANAGER, 235 HIGH HOLBORN, LONDON, W.C.
Applications for Agencies invited.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth Gilt Lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.

A HOUSEHOLD TREASURE.
75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S
PATENT "TREASURE"
COOKING RANGE,


ESTABLISHED A QUARTER OF A CENTURY.
With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.
DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*
Illustrated Price Books, with Testimonials, Post Free.
A. R. CONSTANTINE, 61 FLEET STREET, E.C.
N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions.

BUILDING ORGANISATION IN FRANCE.

THE greatest difference between the building organisation of England and that of France is in respect of the sub-contractor. In England he is sometimes the employé of the builder: sometimes he is thrust on the job—as happens with specialists—to the annoyance of the general contractor, who always believes he could find a better substitute. One of the builders' societies would hardly care to recognise him, and, however able he might be in construction or in art, the Institute of Architects keeps him at as a remote a distance as if he were a hodman and wore dusty clothes. No matter what kind of trade or calling he may follow, he is sure to be isolated.

The French sub-contractor, on the contrary, is not afraid that the general contractor can hamper him, for he and men like him divide the work between them. The general contractor may be said to be unknown in France, and the architect has to deal not with one man or with one firm, but with several, even when his building is not of much importance. Here in England, any one who wants to have a house or a factory or a palace erected can easily find a builder who will supply him with plans and carry them into execution. That Frenchman must have an exceptional power of government who dispenses with an architect, and trusts himself to the representatives of the various trades.

A body of English sub-contractors would be created with difficulty. Where is the society which represents glass-painters, tile-makers, ventilating engineers, carvers, concrete-workers, or one of the makers of the numerous specialities which are specified by the architects? In France, and more especially in Paris, there are almost as many *chambres syndicales*, or associations of employers, as there are trades to be undertaken. Let us glance at a few of them. There is the chamber for contractors of masonry, which has a mutual assurance against the risks of accidents in works that are executed in the departments of Seine and Seine-et-Oise. The office is open daily from ten to five, and the council hold their meetings once a month. Many of the masons are men of position and belong to the Legion of Honour. The contractors for carpentry have also their assurance society in connection with their chamber. The council meets once in two months. The contractors for joinery and parquetry do not need an assurance society. The council have monthly meetings, and there is a committee who are always ready to examine all communications relating to the price-lists which are issued. For it must be remembered that in Paris there are official prices, which are issued from time to time, for every kind of work. It is to the interest of contractors that a constant watch should be exercised over the fluctuations. The roof-coverers and plumbers form one chamber. In addition to the assurance society against accidents, they have another, which makes provision against losses by fire caused by the men, and for which contractors might be held responsible. The marble-workers have two groups in their chamber, one relating to buildings and the other to monuments. There are also societies for heating, gas-lighting, electric bells, &c.; painters, paviors, glaziers, locksmiths, tapestry-workers, and so on. Trellis is largely used in Paris to conceal dead walls, and the *treillageurs* have their chamber and bureau. The house-breakers or contractors for demolitions, the carters who convey building materials, have each a representative body, as well as the sculptors, glass-painters, and paper-stainers.

In addition there is a general administrative council that is constituted of officers from the different societies. By means of it much is done towards keeping the trades within their legitimate provinces, and towards insuring the recognition of rights. When so many independent contractors are occupied with a building there is a risk that one set of men may impede the work of another set. It is, therefore, an advantage to have a central authority that is always ready to define rights.

It is not to be assumed that every contractor is a member of the *chambre syndicale* of his trade. There is nothing compulsory about joining, and the majority do not belong to the societies. But every chamber has sufficient members to exercise influence, and in most cases with benefit to the entire trade.

Another and no less effective aid towards conciliation exists in the Conseils de Prud'hommes, of which the origin is so remote that it cannot be traced. In cases where the damages do not exceed 200 frs. their judgment is final; in cases where a larger amount is sought there is an appeal to the Tribunal de Commerce. In a list before us we find that building is represented among the Paris Prud'hommes by two master joiners, two master carpenters, one master mason, a quarry-owner, a manufacturer of plaster, two locksmiths or iron-workers, two makers of paints, two makers of room papers, and a brick-maker, besides workmen belonging to several of the trades. In building cases a tribunal of this kind has more knowledge than a tribunal of lawyers can have, and is sure to give more attention to the details. Moreover, the cost is infinitesimal if compared with what would have to be paid if the litigation occurred in England.

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY
ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
☞ *Legal and Commercial Stationery.*

HILL & HEY,
Inventors, Patentees, and Sole Makers of their Patent
"EXCELSIOR" Syphon and Outlet VENTILATORS,
For the Ventilation of Schools, Churches, Mission Rooms, Staircases of Residences, Stables, Billiard Rooms, &c.
WORKS, HALIFAX
SUCCESSORS TO THE
ORIGINAL "WATSON'S" VENTILATOR WORKS. ESTAB. 1852
Prices, Descriptive Pamphlets, Testimonials, &c., on application.

VOLUME XXXV. OF THE ARCHITECT. handsomely bound in cloth, gilt lettered.
Price 12s. 6d.—Office: 175 Strand, London, W.C.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

BY HER MAJESTY'S ROYAL LETTERS PATENT.
ESTABLISHED A.D. 1774.
AUSTIN'S
NEW IMPERIAL PATENT
SUPERFINE FLAX LINE.
The above article is now being manufactured and sold in large quantities for Greenhouse Sashes, Public-house Shutters, and other heavy work. The Manufacturers would recommend it for its strength, and the large amount of wear in it, consequent on its peculiar manufacture.
AUSTIN'S IMPERIAL PATENT FLAX SASH AND BLIND LINES (two Prize Medals awarded). The manufacturers of the above articles particularly wish to draw the attention of the trade to their Imperial Patent Flax Sash Lines, of which they are now making six qualities, all of which they can strongly recommend, as they have given unqualified satisfaction to the trade for now over One Hundred Years; and the Proprietors continue to give their personal attention to the manufacture of these goods.
They also invite the particular attention of the trade to their IMPERIAL PATENT BLIND LINES, which are very superior to anything yet offered.
They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in town and country.
N.B.—Please note that all our goods as advertised above are labelled either inside or outside, with our Trade Mark—The "Anchor."

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

KNOWLES & ESSEX
(Late W. CUNNINGTON & Co.),
Manufacturers of
ARTISTIC WALL-PAPERS,
Park Walk, Chelsea, London, S.W.
Specialities—Patent Frosted Gold, Crystal Damask and Raised Flock Decorations.

DRY WAINSCOT OAK, in every thickness, several thousand Logs, from 8d. per foot.
Dry Wainscot Floor Boards, ¾-inch, 6s.; 1-inch, 7½s.; 1¼-inch, 9½s. per square.
Dry Mahogany, Teak, and Birch.
Dry Black Walnut, 8d. and 9d. per foot.
T. FORMAN, Walnut Tree Walk, Kennington Road, S.E.



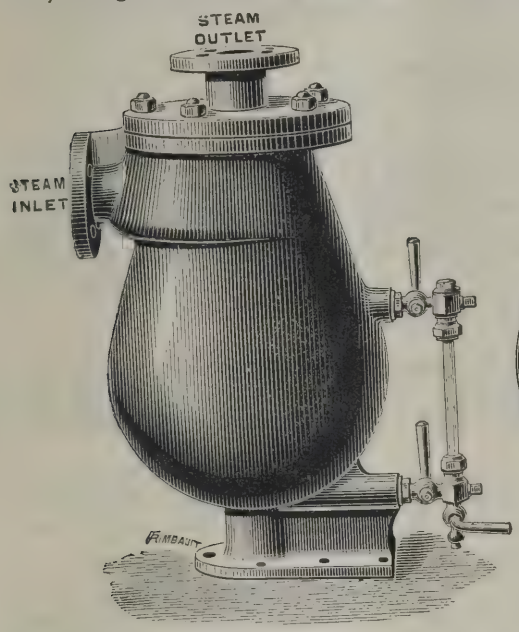
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

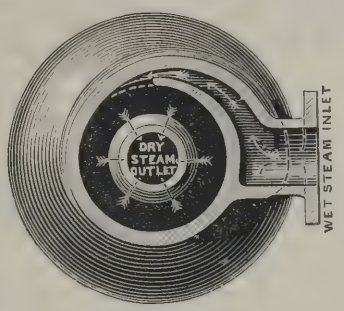
NASH & HULL,
LETTER
MANUFACTURERS,
WRITERS AND ENGRAVERS.
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.

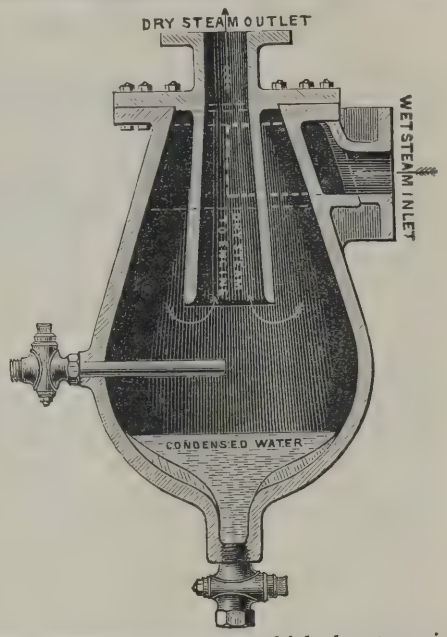
RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

DRYING STEAM.

FEW things have created such a revolution in the world as the introduction of steam for a public servant, and its utility as a motive power gave a stimulus to mechanical ingenuity which has not ceased to invent new mechanical apparatus nor to improve on old types. Little thought in comparison has, however, been given to the steam which is the life of the vast array of mechanism employed all over the world. Possibly there is something yet to be done in this direction. Indeed, a most valuable result has already been arrived at by means of a process devised by Messrs. Boys & Cunynghame, which gives dry steam instead of the normal water-charged steam. On the importance of this there is no necessity to dwell, though the simplicity of the process should be noted. A reference to the illustrations will explain the principle of the apparatus, or "steam-separator," as it is named, of Messrs. Boys & Cunynghame, and which is so valuable a departure and so decidedly in advance of steam-traps, &c.—though these, without drying the steam, are of use in carrying off such water as has condensed in natural order and fallen to the bottom. The process of extracting the water is similar to that of the Swiss cream-separator that divides the milk from the cream; for, in the same manner, this separator absolutely wrings the particles of water from the steam. The apparatus consists of a circular chamber, placed near the steam-engine, into which the steam is led tangentially, so as to produce a whirling motion. Thus the contents of the chamber are spun round at a high velocity, the effect being that the water contained in the steam, being much heavier than the dry vapour, is flung to the sides and is conducted downwards and allowed to escape from the bottom, whilst the dry steam is taken off to the engine by means of a pipe from the centre. The orifice in the chamber is made proportionate to the amount of steam required, and this, of course,







ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

bears a certain proportion to the ports of the engine. With so simple and efficient a contrivance there should be no more broken cylinder covers or leaking glands. The invention is being brought out by Mr. J. C. R. Okes, of 39 Queen Victoria Street, London, and Messrs. Mather & Platt have taken up the invention for Manchester.

BUILDERS' SHEDS IN GLASGOW.

A CORRESPONDENT of the *Glasgow Herald* says:—When a building is to be erected here, by what right does the builder put up a shed occupying usually the whole breadth of the pavement, and sometimes even more, or who gives him authority to do so? This practice is a great nuisance, and is not tolerated in some cities, and should certainly not be allowed here, as it puts the citizens to very great inconvenience, interrupting the traffic, and compelling people to walk on the causeway, endangering their lives from cabs and carriages passing. A very flagrant instance of this stupid and dangerous practice is the shed erected to-day in the Great Western Road, where M'Lerie the cab proprietor's shed stood, which was recently burned. Although the pavement here is extra wide—indeed, twice as wide as in many streets—the builder has had the impudence to appropriate the whole breadth of it, to the great inconvenience of passers-by. This practice is also very hard upon the shopkeepers who may be at either end of the barricade, as it must injure their business by forcing passengers off the pavement when they are coming near their shops. Builders ought not to be allowed to occupy more than a foot or two of the pavement. In London I have often noticed they were not allowed to encroach even so much as a single foot on it, and the London practice should be imitated here, and builders not allowed to encroach at all on the footway. There is another matter the authorities ought to look into at once, that is the state of the footpaths. In many quarters—indeed, all over the city—they are in very bad condition, a heavy shower of rain forming large and sometimes pretty deep pools. In several places, too, the flags are very unevenly laid, and often rounded edges cause them to be very dangerous to the unwary wayfarer; and they often slope far too much to the kerbstone, and should be properly levelled. Whoever should look after this matter does not seem to do his duty as he ought to do it, and should be stirred up at once.

THE FORTH BRIDGE.

THE third annual excursion of the Edinburgh Association of Science and Art to the Forth Bridge took place on Saturday. The members, to the number of 300, proceeded by special train to North Queensferry, where the party examined the structure on the north side, and were allowed upon a portion which is still to be raised 60 feet higher. After inspecting the other important section they crossed by steamer to the south side. The visitors had the pleasure of thoroughly examining the engineering works in which are to be seen the principal parts of the permanent structure under construction, and where the different sections are being fitted up before being placed in position. The members were much struck with the very complete character of the works and immense size and weight of the machinery employed. The drawing offices were inspected, and much interest was taken in a large model of a portion of the bridge, which impressed on the visitors the sense of the gigantic undertaking. The thanks of the Association were conveyed by Mr. John Melrose, president, to the contractors, Messrs. Tancred, Arrol & Co., and a vote of thanks to the gentlemen who conducted the members over the works closed a very pleasant afternoon.

THE SCIENCE AND ART DEPARTMENT AND BUILDING CONSTRUCTION.

THE following description of the examinations on "Building Construction," which will henceforth take place, is given in the new directory just issued.

As the object of this course of instruction is to lay the foundation of a sound knowledge of the principles, as well as of the practice, of building construction, and so lead the workman to labour with his head at the same time as with his hands, the teacher should not, necessarily, attempt to push the student through the whole of the subjects enumerated in this syllabus, but should limit the range of his tuition according to the time at his command and the intelligence of the pupils.

A larger number of questions will be set in the examination papers for the elementary and advanced stages than the candidate will be allowed to attempt, so that he will, to a certain extent, be able to show his knowledge in such branches as he

BRYANT, POWIS & BRYANT LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT LIMITED,

ESTABLISHED 1838.

MARVIN'S

AMERICAN

FIRE & BURGLAR PROOF SAFES,

PATENT WELDED STEEL AND IRON,

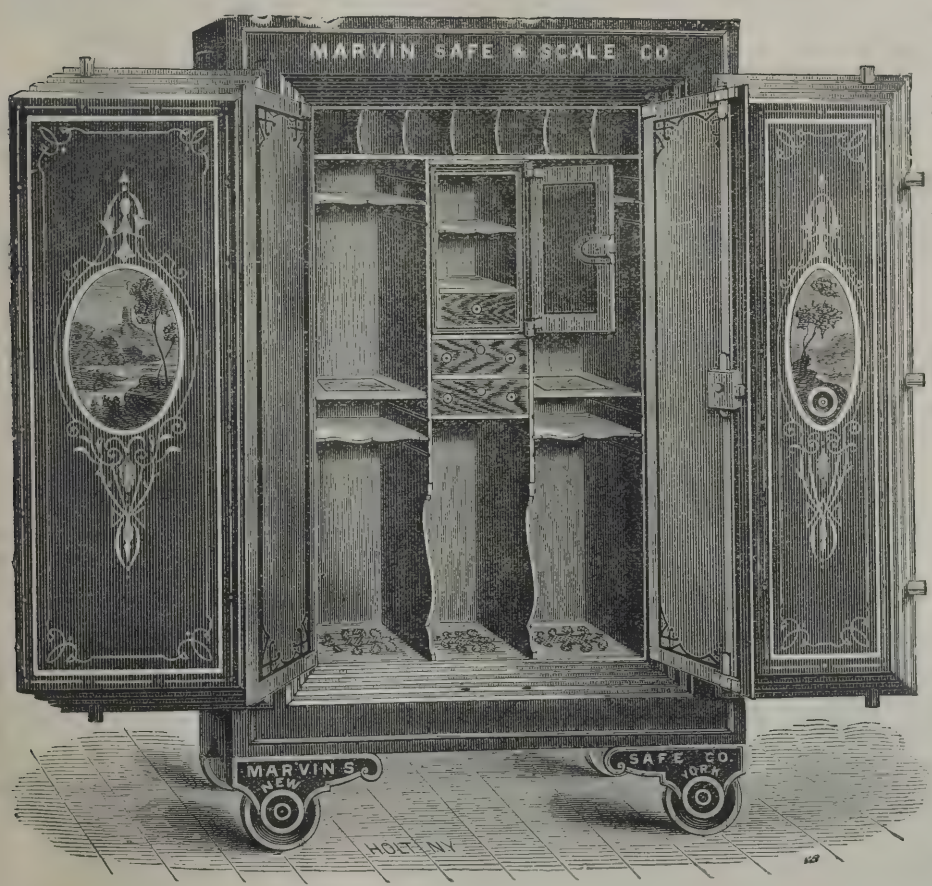
STRONG-ROOM DOORS & BANKERS' VAULTS,

NEW YORK, U.S.A., and LONDON, E.C.

BY SPECIAL APPOINTMENT

CONTRACTORS TO THE UNITED STATES GOVERNMENT TREASURY AND POST OFFICE.

FIRE AND BURGLAR PROOF SAFES.



Manufactured with the newly patented "Tongue and Groove" Improvement, "Forged Angle Frame with Sliding Back-plate," "Annealed Hinges," &c. &c. Body of heavy plate iron, secured by angle iron corners and welded refined iron frame and an entire inside iron lining.

Our new patterns give a greater thickness of Fire-proofing than in any other makes. Doors are fitted with round bolts and "Yale" Combination Lock of 1,000,000 changes. Inside doors are of plate-iron secured by suitable bolt work and key lock.

ABSOLUTELY PROOF

Against Blasting, Drilling, and Pick Lock.

Estimates and Designs furnished on application for all sizes and thickness of burglar proof vault doors; also for all styles of vault work.

Every description and style of Fire and burglar proof Safes for Merchants, Bankers, Jewellers, &c. Illustrated Catalogue, with full description, on application.

EUROPEAN BRANCH:

66 QUEEN STREET CANNON STREET, LONDON, E.C.

may, from circumstances, have paid special attention to. For instance, a student better acquainted with iron than wooden structures will be able to select a question on ironwork in preference to one on woodwork. In order, however, to insure that special attention shall not be given to work of one description only, a certain number of the questions given will be compulsory, *i.e.*, the candidate must attempt these, and unless he shows a sound knowledge of work of more than one kind, by answering a fair proportion of them, the rest of his paper will not be considered.

Moderately good drawing, showing an intelligent knowledge of the subject, will always be awarded higher credits at the examination than more highly finished drawings exhibiting an ignorance of constructive details.

First Stage, or Elementary Course.

It is assumed that the student has already mastered the use of the following drawing instruments :—rulers, ordinary and parallel; ruling pen; compasses, with pen and pencil bow-sweeps, as well as the construction and use of simple scales, such as 1, 2, 3, or more feet to the inch, showing inches; or such as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{3}$, $\frac{3}{5}$, $\frac{5}{8}$, or other fraction of full size, or of any given scale or drawing: also the meaning of such terms as Plan, Elevation (front, back, or side), Section, Sectional Elevation.

He should understand the object of bond in brickwork, *i.e.*, English bond, Flemish bond, or English bond with Flemish facing, and how it is attained in walls up to three bricks thick in the following instances, viz., footings with offsets, angles of buildings, connection of external and internal walls, window and door openings with reveals and square jambs, external gauged arches (camber, segmental, and semicircular), internal discharging arches over lintels, and inverted arches.

He should know where to put wood bricks, or plugging, and their use; the construction and uses of brick corbeling, and the construction of trimmer arches in fireplaces.

He should be able to give sections and elevations to scale of the following kinds of mason's work, viz., uncoursed and coursed rubble, block in course, and ashlar, with their bond, and the proper dimensions of the stones as to height, width of bed, and length; and of the following dressings, viz., window sills, window and door jambs, plain window and door heads, door steps, string courses, quoins, copings, common cornices, blocking courses; and of the following methods of connecting stones, viz., by cramps, dowels, joggles, and lead plugs.

He should be able to show how to join timbers by halving, lapping, notching, cogging, scarfing, fishing, and mortice and tenon, as applied to wall plates, roof timbers, floors, ceilings, and partitions.

He should be able to draw, from given dimensions, couple, collar, and kingpost roofs, showing the details of the framing and of the ironwork.

He should be able to draw, from given dimensions, single, double, and framed floors, with or without ceilings beneath them; showing modes of supporting, stiffening, and framing the timbers, trimming round hearths and wells of stairs; also floor coverings of boards or battens, rebated and filleted, ploughed and tongued, and laid folding, with straight or broken joints, bevelled or square heading joints.

He should be able to draw in elevation, from given dimensions, a framed partition with door openings.

He should be able to draw in elevation, and give vertical and horizontal sections of solid door frames and window frames.

He should be able to describe, by drawings, beadings of different kinds, dovetailing, cross-grooving, rebating, plough-grooving, chamfering, rounded nosing, and housing.

He should be able to draw in elevation, and give vertical and horizontal sections of the following doors, viz., ledged, ledged and braced, framed and braced, panelled, and the mode of putting them together, position of hinges and furniture; as well as to describe, by drawing, the following terms as applied to panelled doors, viz., square and flat, bead butt, bead flush, moulded, all on one or both sides.

He should be able to draw in elevation, and to give vertical and horizontal sections of the following window-sashes and frames, viz., single or double-hung sashes with square, bevelled, or moulded bars, and cased frames; casement sashes hung to solid frames, with method of hanging and securing in each case.

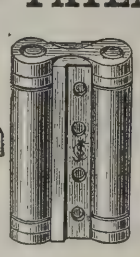
He should be able to show, in elevation and section, the lead-work connected with chimneys, ridges, hips, valleys, gutters, and lead-flats.

He should be able to give an elevation and section of the slating of a roof laid with duchess or countess slates on boards or battens.

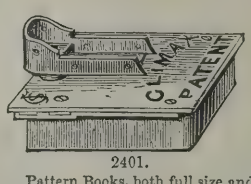
He should be acquainted with the proper cross section for cast-iron beams for use in floor girders or bressummers, or as cantilevers, and be able to draw such a section in its right proportions from given dimensions of flanges.

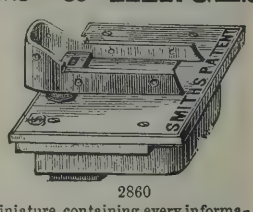
MELBOURNE INTERNATIONAL EXHIBITION, 1880, THE GOLD MEDAL
In addition to FIRST-CLASS HONOURS, was awarded to
JAMES CARTLAND & SONS,
Cabinet Builders and Naval Brass Founders,
BIRMINGHAM.
London Show-rooms: 40 Holborn Viaduct, E.C.
The extent, variety, quality, and finish of articles manufactured at this establishment cannot be excelled.
CARTLAND'S PATENT HELICAL, CLIMAX DOOR SPRINGS & HINGES.





CAUTION.
Ironmongers, Builders, and others are requested to see that the Trade Mark is on each Spring, as the Patentees are informed that spurious imitations of the
"CLIMAX SPRING HINGES"
are being sold, which have neither the Power or Durability of Cartland's Patent Climax Door Springs and Hinges.



2401.


2860
Pattern Books, both full size and Miniature, containing every information, may be obtained through any Merchant or Factor on application. All Goods for Export are carefully packed in Cartoon Boxes, and distinctly labelled with orange-coloured labels, bearing our Trade Mark, as above.

ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustrations which have appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing :—

The History of Art.

In Two Plates, reproduced from the Splendid Painting around Cupola, in Place St.-George's, Paris
BY M. FRANCOIS EHRMANN.
Showing Typical Figures of Ancient and Modern Styles of Art.

Size, Thirty-six Inches by Fourteen Inches.
Price One Shilling each; by post, carefully packed inside patent roller, One Shilling and Threepence each.

May be obtained from all Newsagents or Booksellers, or from the
Publishers, GILBERT WOOD & CO., 175 Strand, London, W.C.

He should be able to draw in elevation, from given dimensions and skeleton diagrams, ordinary iron roofs up to 40 feet span, showing the sections of different parts and methods of connecting them.

Second Stage, or Advanced Course.

In addition to the subjects enumerated for the elementary course—in all of which questions of a more complicated nature may be set, combining work done by the different trades—the knowledge of the students will be tested under the following heads, viz. :—

1. Freehand sketches explanatory of any details of construction, such as the joints of iron and wooden structures, and other parts requiring illustration on an enlarged scale. These sketches may be roughly drawn, provided they are clear and capable of being readily understood.

2. The nature of the stresses to which the different parts of simple structures are subjected, as follows :—

In the case of beams either fixed at one or both ends, or supported or continuous, the student should know which parts of the beam are in compression and which in tension.

He should be acquainted with the best forms for struts, ties, and beams, such as floor joists exposed to transverse stress.

He should know the difference in the strength of a girder carrying a given load at its centre or uniformly distributed.

In the ordinary kinds of wooden or iron roof trusses, and framed structures of a similar description, he should be able to distinguish members in compression from those in tension.

He should be able, in the case of a concentrated or uniform load or any part of a beam supported at both ends, to ascertain the proportion of the load transmitted to each point of support.

3. The nature, application, and characteristic peculiarity of the following materials in ordinary use for building purposes, namely :—

Bricks of different kinds in common use, York, Portland, Caen, and Bath stones (or stones of a similar description), granite, pure lime, hydraulic lime, Portland and Roman cement, mortars, concretes, grout, asphalte, timber of different kinds in common use, cast and wrought iron, lead.

4. Constructive details as follows :—

The ordinary methods of timbering excavations, such as for foundations to walls, or for laying down sewers ; the erection of bricklayers' and masons' scaffolding ; the construction of travellers ; the use of piles in foundations, hoop iron bond in brickwork, diagonal and herring-bone courses in ditto, damp-proof courses, bond timber in walls and the objections to it.

He should know how bricks are laid in hollow walls, window or door openings with splayed jambs, flues, chimneys, fireplaces, and arches up to about 20 feet span ; how mortar joints are finished off, and the thickness usually allowed to them ; why bricks and stones ought to be wetted before being laid.

He should be acquainted with the construction of brick ashlar walls, rubble ashlar walls, stone stairs, wooden stairs (both dog-legged and open newel), skylights, fire-proof floors (such as brick arches supported on rolled or cast iron girders, Fox & Barrett's and Dennett's patent concrete floors), circular and egg-shaped drains, roofs of iron or wood, for spans up to 60 feet ; the fixing of architraves, linings, and skirtings to walls, shutters to windows, lath, plaster, and battening to walls, roof coverings of tiles and zinc, slate ridges and hips.

Written answers will be required to some of the questions.

Examination for Honours.

The candidate will have to furnish a design for a building, or part of a building, in accordance with given conditions, which design he will be allowed to draw out at his own home.

He will be called upon to answer in writing—illustrated by sketches, either freehand or to scale, as directed—questions on all the subjects previously enumerated for the elementary and advanced courses.

He must possess a more complete knowledge of building materials, their application, strength, and how to judge of their quality, and in the case of iron, of the processes of manufacture, and the points to be attended to in order to insure sound castings and good rivetting.

He must be able to solve simple problems in the theory of construction, and to determine the safe dimensions of iron or wooden beams subjected to dead loads.

In ordinary roof trusses and framed structures of a similar description, he must be able to trace the stresses brought into action by the loads, from the points of application to the points of support, as well as to determine the nature and amount of the stresses on the different members of the truss, and, consequently, the quantity of material required in each part.

In ordinary walls and retaining walls, he must be able to ascertain the conditions necessary to stability, neglecting the strength of the mortar.

W. BELL & CO.

AMERICAN ORGAN MANUFACTURERS,

AT THEIR NEW PREMISES,

58 HOLBORN VIADUCT,

Keep a full line of the

CELEBRATED

"BELL"

ORGANS

And the FAULTLESS

HARDMAN PIANOS

OF

NEW YORK.



ALWAYS ON HAND FOR INSPECTION.

THESE INSTRUMENTS ARE ACKNOWLEDGED LEADERS OF ALL OTHERS.

CATALOGUES FREE

From above Address.

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

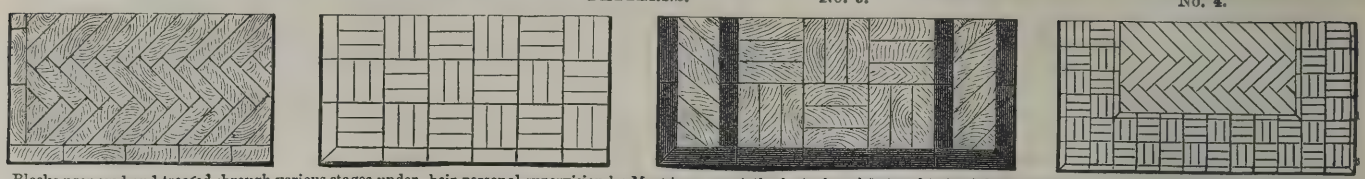
THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

PATTERNS.

No. 1. No. 2. No. 3. No. 4.



Blocks prepared and treated through various stages under heir personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

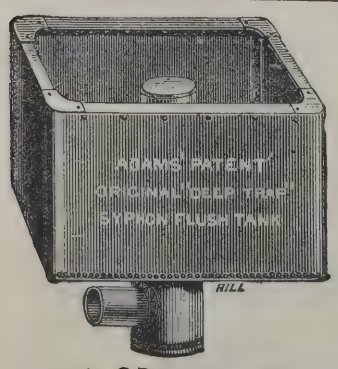
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL	**St. Philip's Marsh.**	**READING**	**Caversham Road.**
EXETER	**Basin Head.**	**DUBLIN**	**14 St. Andrew's Street.**
SOUTHSEA	**Beaufort Road.**	**MANCHESTER**	**20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

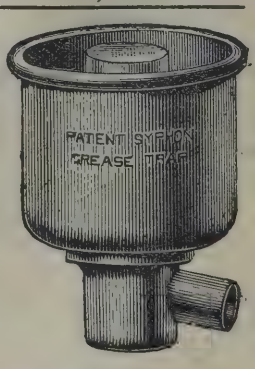


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
" **FLUSH SYPHONS** for Sewer Flushing.
" **FLUSH LATRINES** for Barracks, Schools, &c.
" **FLUSH URINALS** " " "
" **TROUGH CLOSETS** " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, September 3, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, SEPTEMBER 10, 1886.

THE ARCHITECT AND CONTRACT REPORTER.

ADVERTISEMENT SCALE.

For Two Lines and under (eight words to the line)	£0 2 6
For every Additional Line	0 0 6
For Quarter Page	2 10 0
For Half Page	4 10 0
For a Page	8 8 0
For 1 inch deep by 2½ wide	0 7 6

Front page Advertisements, Two Shillings per line.
Paragraph Advertisements, Two Shillings per line.
On pages preceding and following matter, special rates.
Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 *Strand, London, W.C.*

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

COMPETITIONS OPEN.

BISHOPWEARMOUTH.—Sept. 25.—Plans, &c., are invited for the Erection of School Buildings for 1,300 Children. Mr. T. W. Bryers, Clerk to the School Board, Sunderland.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

LEEDS.—Oct. 9.—Designs are invited from Architects of Leeds for proposed Art Gallery and Museum. Mr. G. W. Morrison, Town Clerk, Leeds.

LEWES.—Oct. 9.—Designs and Estimates are invited for Public Hall and Offices, by way of addition to present Buildings. Mr. A. Holt, Borough Surveyor, Town Hall, Lewes.

CONTRACTS OPEN.

ABERDEEN.—Sept. 15.—For Building Warehouse, Shore Lane. Messrs. Matthews & Mackenzie, Architects, 255 Union Street, Aberdeen.

AMBLE.—Sept. 13.—For Building Two Cottages. Mr. J. Stevenson, Harbour, Amble.

BATLEY.—Sept. 22.—For Building Villa Residence, Upper Batley. Mr. Walter Hanstock, Architect, Branch Road, Batley.

BALAGAVENY, FORGUE.—Sept. 11.—For Building Milk-house. Mr. James Duncan, Architect, Turriff.

BALLOCH.—Sept. 27.—For Removing Bridge over the River Leven and Erecting Iron Girder Bridge. Messrs. Crouch & Hogg, C.E., 175 Hope Street, Glasgow.

BARNSLEY.—Sept. 21.—For Building Bakery. Mr. Frederic Smith, Architect, 29 Bridgwater Chambers, 6 Brown Street, Manchester.

BEESTON.—Sept. 10.—For Building Wesleyan School Chapel. Mr. John Wills, Architect, Victoria Buildings, Derby.

BELFAST.—Sept. 22.—For Construction of Waterworks (Contract No. 2). Mr. L. L. Macassey, C.E., Waterworks Office, Belfast.

BELFAST.—Sept. 16.—For Building School, Lecture-hall, and Two Dwelling-houses. The Secretary of the Building Committee, 43 Foreman Street, Belfast.

BINGLEY.—Sept. 11.—For Building Weaving Shed, &c. Mr. S. Jackson, Architect, 33 Kirkgate, Bradford.

BOLTON.—For Iron or Wood Span Roof over area 1,500 to 1,800 yards. Mr. Winder, Solicitor, Bolton.

BRADFORD.—Sept. 16.—For Building Business Premises, Rebecca Street. Mr. W. Rycroft, Architect, Bank Buildings, Manchester Road, Bradford.

BRADFORD.—Sept. 11.—For Building Five Houses, Stabling, Shed, &c. Mr. G. C. Gamble, Architect, 225 Leeds Road, Bradford.

BRISTOL.—Sept. 23.—For some Alterations, Fixtures, and Furniture at the Hot Wells Branch Library, Woodwell Lane. Mr. J. Thomas, City Surveyor, Bristol.

BRIXHAM.—Sept. 10.—For Building Coastguard Station and Battery. The Director of Works Department, Admiralty, 21 Craven Street, W.C.

BROUGHTON-IN-FURNESS.—Sept. 15.—For Building Four Cottages. Mr. W. Coward, Saw Mills, Coniston.

BURNLEY.—For Alterations to Two Shops, St. James's Street. Mr. Thomas Dean, Architect, Burnley.

CANTON.—Sept. 20.—For Building Board Schools for 1,119 Children. Mr. E. M. Bruce Vaughan, Architect, Borough Chambers, St. Mary Street, Cardiff.

CARLISLE.—Sept. 16.—For Erection of Public Slaughter-houses. Mr. H. W. M'Kie, City Surveyor, Town Hall, Carlisle.

COCKERMOUTH.—Sept. 18.—For Building Shop and Warehouse, Station Street. Mr. R. S. Marsh, Surveyor to the Local Board, Cockermouth.

COLNE.—Sept. 15.—For Building Syphon Chamber and other Works at Waterside for the Colne and Marsden Local Board. Mr. H. Bancroft, C.E., 83 Mosley Street, Manchester.

COMBER.—Sept. 11.—For Restoration of Presbyterian Church. Mr. Robert Henry, M.D., Comber, Ireland.

COVENTRY.—Sept. 14.—For Alterations to Cemetery Lodge. Mr. E. J. Purnell, City Surveyor, Coventry.

CUBLINGTON.—For Repair and Part Reseating Church. Mr. J. Biggs, Manor Farm, Cublington.

DUBLIN.—Sept. 10.—For Construction of Girders to Carry Water-pipes across Cookstown River. The City Engineer, City Hall, Dublin.

DUMFRIES.—Sept. 18.—For Building Post Office. Mr.

H. W. Primrose, Secretary, H.M. Office of Works, Parliament Square, Edinburgh.

FORRES.—Sept. 18.—For Rebuilding Farm Steading, Buchtiby. Mr. John Milne, Architect, Elgin and Forres.

GATESHEAD.—For Altering Premises into Dwelling-houses. Mr. George Bolam, 12 West Street, Gateshead.

GORDONSTONE.—Sept. 11.—For Building Steading of Offices, Middle Hangus, and other Works. Mr. James Duncan, Architect, Turriff.

GRANTOWN.—Sept. 10.—For Building Dwelling-house and Hall for Seafield Memorial Church. Mr. Donald Grant, Writer, Grantown.

GRAYS.—Sept. 11.—For Erection of Coal Shed on the Saltings for the Metropolitan Asylums Board. Messrs. H. Jarvis & Son, Architects, 29 Trinity Square, Southwark, S.E.

GREENOCK.—Sept. 21.—For Works in Building Holmscroft Public School. Mr. G. Williamson, 2 Bank Street, Greenock.

HALIFAX.—Sept. 30.—For Building Nine Cottages at Stannary. Messrs. George Buckley & Son, Architects, Waterhouse Street, Halifax.

HORBURY.—Sept. 14.—For Building Two Houses, School Lane. Mr. Fred. Broadbent, Architect, 3 Bradford Road, Dewsbury.

HORSFORTH.—Sept. 20.—For Construction of Reservoir with Embankment, Puddle Wall, &c. Messrs. McLandsborough & Preston, C.E., The Exchange, Bradford.

HORWICH.—Sept. 14.—For Construction of Fork Line. Specifications, &c., at the Engineer's Office, Hunt's Bank, Manchester.

HULL.—Sept. 15.—For Extending Platform Roofs and Erecting Lock-up Sheds, Paragon Station. Mr. William Bell, Architect, North Eastern Railway, York.

IPSWICH.—Sept. 13.—For Sinking an Artesian Well at the Borough Lunatic Asylum. Mr. E. Buckham, Borough Surveyor, Town Hall, Ipswich.

IVYBRIDGE.—Sept. 10.—For Building Residence, Stables, and Cottage. Mr. W. M. Tollit, Architect, Totnes.

JERSEY.—Sept. 14.—For Building Telegraph Cable House at Plemont. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

KEITH.—Sept. 16.—For Repairs and Additions to Manse and Parish Offices. Mr. F. D. Robertson, Architect, Fife-Keith.

KENSINGTON.—Sept. 13.—For Cast-iron Tank, Stanchions, Lump Wrought-iron Girders, Steam Engines and Boilers, Washing Machines, Wringers and Mangles, Shafting and Gearing, Tools, Apparatus, &c., complete Drying-houses and Closets, Steam Coils, &c. Mr. T. Verity, Architect, 27 Regent Street, S.W.

LANCASTER.—Sept. 15.—For Building Recreation Hall at the Royal Albert Asylum. Mr. W. Wright, Surveyor, Lancaster.

LEEDS.—Sept. 11.—For Building Mission Hall, Kirkstall Road. Mr. W. H. Beevers, Architect, 22 Bond Street, Leeds.

LINGFIELD.—Sept. 18.—For Building Dwelling-house and Office, Stable Buildings, and Vineries, at Rowlands. Messrs. John Colson & Son, Architects, 45 Jewry Street, Winchester.

LONDON.—Sept. 15.—For Building Offices. The Rock Freehold Land Society, 38 Finsbury Pavement, E.C.

LOWER CLAPTON.—Sept. 13.—For External and Internal Painting and Repairs. Mr. F. W. Crane, 61 Bartholomew Close, E.C.

MANCHESTER.—Sept. 11.—For Construction of a Wrought-iron Bridge across the River Medlock, at Boardman Street. Drawings and Specifications at the City Surveyor's Office, Manchester.

NOTTINGHAM.—For Pulling Down Two Houses and Building Shop and Residence. Mr. F. M. Palmer, Architect, 2 Lister Gate, Nottingham.

NOTTINGHAM.—For Brickwork (labour) for Twelve Villa Residences, Lenton Boulevard. Mr. W. Graham Lees, Architect, King John's Chambers, Nottingham.

PAISLEY.—Sept. 22.—For Enlargement and Reconstruction of Passenger Stations on Glasgow and Paisley Joint Line, Messrs. Blyth & Cunningham, Engineers, Edinburgh. Mr. J. Hay, Secretary, Bridge Street Station, Glasgow.

PETERBOROUGH.—Sept 16.—For Building Cottage. Mr. J. C. Gill, Waterworks Engineer, Queen Street, Peterborough.

PETERHEAD.—Sept. 20.—For Building Prison. Mr. William Donaldson, Secretary to the Prison Commissioners for Scotland, 130 George Street, Edinburgh.

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

SANDBACH.—Sept. 13.—For Supply and Erection of Heating Apparatus. Mr. J. Vawdrey, Manager, Central Stores, Bold Street, Sandbach.

SHOREHAM.—Sept. 14.—For Building Chimney and other Works at Workhouse. Mr. E. Cripps, Clerk to the Guardians of Steyning Union, Shoreham.

TIPTON.—Sept. 16.—For Building Board School for Infants, Great Bridge. Mr. Edward Pincher, Architect, High Street, West Bromwich.

WAKEFIELD.—Sept. 18.—For Building Cottages, Westgate End. Mr. A. Hart, Architect, Thompson's Yard, Westgate, Wakefield.

WANDSWORTH.—Sept. 23.—For Building Lying-in Wards at the Workhouse, Garratt Lane. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

WARKLEIGH.—Sept. 13.—For Additions, &c., to Farmhouses. Mr. James Crocker, Architect, Exeter.

WEEDON.—Sept. 11.—For Repairs and Alterations to Garden Gate Public-house, for Messrs. P. Phipps & Co., Northampton and Towcester Breweries. Messrs. John Ingram & Son, Architects, Hazelwood Road, Northampton.

WEDNESBURY.—Sept. 20.—For Building Board Schools, Caretaker's House, &c., King's Hill. Mr. Edward Pincher, Architect, West Bromwich.

TENDERS.

AYLESBURY.

For Building Bell Turret, Altering West Front, and Reseating Walton Church, Aylesbury. Mr. BRETT A. ELPHICKE, Architect, 7 Great Queen Street, Westminster.

Honor & Sons	£903 0 0
Priestley & Gurney	893 0 0
Mayne & Son	891 0 0
Cooper & Co.	878 14 0
J. N. Landon	850 10 0
Thos. Green	797 0 0
S. GRIST (*accepted*)	658 0 0
Architect's estimate	705 0 0

BARLESTONE.

For Building Baptist Room, &c., Barlestone, Leicestershire. Messrs. REDFERN & SAWDAY, Architects, 14 New Street, Leicester.

Farmer, Market Bosworth	£399 3 0
Huxtall, Ibstock	376 15 0
Timson, Leicester	338 16 0
Langton, Enderby	327 0 0
A. & S. Main, Loughborough	325 0 0
Needham, Loughborough	310 0 0
Herbert, Barwell	295 0 0
LANE, Earl Shilton (*accepted*)	289 0 0

BRIDGWATER.

For Erection of the George Williams Memorial Building, for the Young Men's Christian Association, Bridgwater. Messrs. W. G. HABERSHON & FAWCKNER, Architects, London, Newport, and Cardiff. Quantities by the Architects (Newport office).

H. A. Forse, Bristol (received too late)	£3,170 0 0
Harris & Tapscott, Bridgwater	3,079 0 0
Ashton & Popham, Bridgwater	2,998 0 0
C. H. Firbank, Newport, Mon.	2,950 0 0
W. Church, Bristol	2,783 0 0
D. C. Jones & Co., Gloucester	2,736 0 0
Stephens, Bastow & Co., Bristol	2,699 0 0
H. J. Spiller, Taunton	2,650 0 0
HENRY POLLARD, Bridgwater (*accepted*)	2,490 0 0

CARLISLE.

For Painting Town Hall, &c., Carlisle.

J. Denard, Carlisle	£114 17 10
H. Harkness, Carlisle	108 0 0
FORSYTH & DUCKWORTH, Carlisle (*accepted*)	105 3 10

CLACTON-ON-SEA.

For Building School for Wesleyan Chapel, Clacton-on-Sea. Mr. CHARLES BELL, F.R.I.B.A., Architect, London.

W. T. Hook, Clacton-on-Sea	£487 0 0
J. C. Allen, Clacton-on-Sea	485 10 0
N. De Maid, Clacton-on-Sea	473 0 0
Everett & Son, Colchester	420 0 0
W. J. Day, Great Clacton (*accepted*)	420 0 0

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

DOOR FURNITURE, LOCKS, &c.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS, MANUFACTURERS, &c.

SHOWROOMS:—14 ELM STREET, GRAY'S INN ROAD, LONDON, W.C.

Designers and Manufacturers of all kinds of Art Work for Ecclesiastic and Domestic purposes in Silver, Copper, Brass, and Iron.

PLEASE WRITE FOR ILLUSTRATED PRICE LIST AND ESTIMATES.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.

Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.

CHESTERFIELD.

For Alterations and Additions to Residence at Hillside, Alton, near Chesterfield, for Mr. James Gothard. Mr. G. ROPER, Architect, Chesterfield.

Accepted per Schedule of Prices.

Thomas Hopkinson, Ashover, excavator, mason, bricklayer, &c.
T. J. Beardow, Ashover, carpenter, joiner, and painter.
L. Gothard, Chesterfield, plumber, glazier, smith, and founder.

COLWYN.

For Building Residence, Stables, &c., Colwyn. Mr. T. B. FARRINGTON, Architect, Conway.

Abel Roberts, Llandudno	£3,394 0 0
John Beith Jones, Llanrwal	3,076 0 0
John Roberts, Colwyn Bay	3,050 0 0
R. & J. Williams, Bangor	2,835 0 0
William Thomas, Bangor	2,800 0 0
A. Lockington, Rhyl	2,611 5 0
THOMAS FOULKES & SON, Rhyl and Colwyn Bay (*accepted*)	2,531 0 0
Edward Roberts, Conway	2,440 0 0

CRAIGELLACHIE.

For Building Dwelling-house at Craigellachie.

Accepted Tenders.

Sheard & Stewart, Abourlour, mason	£165 0 0
Milner & Wiseman, Craigellachie, joiner	143 0 0
Tough, Craigellachie, slater	38 7 6
Munro, Abourlour-on-Spey, painter	31 0 0

Plumbing not yet let.

CROYDON.

For the Erection of new Depôt, Croydon, for the London Parcels Delivery Company, Limited. Mr. W. SECKHAM WITHERINGTON, F.R.I.B.A., Architect, 79 Mark Lane.

Russell & Ball, Sutton	£2,553 0 0
Kearley	2,493 0 0
Elkington	2,430 0 0
Potter, Sutton	2,390 0 0
Barton, Croydon	2,038 0 0
Priestley	1,966 0 0
Patman & Fotheringham	1,945 0 0
Architect's estimate	1,934 0 0

DARTMOUTH.

For Alterations to Seaview House, Dartmouth. Mr. E. H. BACK, Architect, Dartmouth. Quantities supplied.

Maunder, Dartmouth	£138 9 0
Winsor, Dartmouth	135 19 0
WILLIAMS (*accepted*)	119 0 0

For Alterations and Additions to Ford Bank Villa, Dartmouth, for Mr. William Smith. Mr. E. H. BACK, Architect, Dartmouth. Quantities supplied.

Pillar, Dartmouth	£640 18 8
W. H. Oldrieve, Dartmouth	626 0 0
Row & Grant, Dartmouth	564 0 0
Winsor, Dartmouth	503 10 0
Williams, Dartmouth	487 0 0
Henley, Dartmouth (*accepted*)	446 0 0

EALING.

For Erection of East Wing of New Warehouse in Broadway, for Mr. J. Sanders. Mr. GEO. ASHBY LEAN, Architect, Ealing, W. Quantities by the Architect.

Nye, Ealing	£3,498 0 0
Toms, Camden Town	3,474 0 0
Waters, Ealing	3,431 0 0
Bywater, Regent Street	3,395 0 0
J. & S. Bowyer, Dulwich	3,395 0 0
Prestige & Co., Pimlico	3,390 0 0
Adamson & Sons, Ealing	3,291 0 0
Bailey, Ealing	3,245 0 0
Penny & Co., Ealing	3,235 0 0
Johnson, Wandsworth Common	3,230 0 0
Shepherd, Bermondsey	3,195 0 0

GISBURN.

For Heating Gisburn Church by the Hot-water System.

Taylor & Parsons, Bradford	£90 0 0
J. Potter, Padiham	77 10 0
T. Green & Son, Leeds	70 10 0
J. Longbottom & Co., Leeds	69 16 0
J. Watson, Clitheroe	67 0 0
METCALFE & BILWORTH, Preston (*accepted*)	65 11 0
Mercer Bros., Blackburn	57 10 0
J. & H. Baldwin, Stacksteads, Manchester	53 9 0

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING.
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.

Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

KNOWLES & ESSEX
(Late W. CUNNINGTON & Co.),
Manufacturers of
ARTISTIC WALL-PAPERS,
Park Walk, Chelsea, London, S.W.
Specialities—Patent Frosted Gold, Crystal Damask and Raised Flock Decorations.

GRUNDY'S PATENT
WARM-AIR
VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

GLASGOW.

For Works to the Banks of the Clyde, east of Hutchesontown Bridge.

A. & J. FAILL Glasgow (*accepted*)	£881 5 0

GRAVESEND.

For Building Contagious Diseases Hospital, Gravesend. Mr. W. E. RHODES, Architect, Borough Surveyor, Gravesend. Quantities supplied

J. Hill, Gravesend	£1,580 0 0
W. & E. Wallis, Gravesend	1,517 0 0
A. E. Rayner, Gravesend	1,497 0 0
George Waterton, Gravesend	1,485 0 0
W. Tuffee, Gravesend	1,483 0 0
W. H. Archer, Gravesend	1,420 0 0
G. D. Seager, Gravesend	1,400 0 0
Wallis & Multon, Gravesend	1,369 0 0
S. Hopkins, Gravesend	1,337 16 0
W. J. NIGHTINGALE, Gravesend (*accepted*)	1,319 10 0

GREAT YARMOUTH.

For Two Cottages, Middlegate Street, Great Yarmouth, for Mr. R. Westgate. Mr. CHAS. G. BAKER, Architect. Quantities by Architect.

Barnard	£286 0 0
Leggett	283 0 0
Bray	269 0 0
Whall & Son	268 10 0
Eastoe & Son	266 15 0
Rouse Bros.	266 10 0
Skippen	239 15 0
MOORE & SKIPPEN (*accepted*)	235 15 0

HEATON.

For Construction of Road Works, and Main Sewer, in Wilmer Road, Heaton. Messrs. SMITH, GOTTHARDT & Co., Surveyors, Cheapside, Bradford.

J. Speight, Leeds	£389 0 0
B. Lazenby, Manningham	264 0 0
T. Clough & Son, Heaton	239 18 4
Smith & Dyson, Heaton	238 10 9
W. Farnish, Bradford	215 0 0
G. & R. Naylor, Scholes	213 0 0

HOLBECK.

For Painting External Woodwork, Palisading, &c., at Workhouses and Offices, for the Guardians of Holbeck Union.

T. B. Lee, Leeds	£115 0 0
G. Campbell, Leeds	100 0 0
J. Smith, Holbeck	82 0 0
W. Grisdale, Leeds	77 10 0
G. Dickinson, Morley	75 0 0
Deardon Bros., Leeds	75 0 0
H. & W. Tillotson, Leeds	65 0 0
J. Pearson, Leeds	65 0 0
J. Oliver & Sons, Leeds	65 0 0
B. F. Collinson, Leeds	65 0 0
J. Chappell, Leeds	60 0 0
J. Richardson, Leeds	59 10 0
J. Whiteley, Leeds	50 0 0
J. Blackburn, Leeds	50 0 0
H. DEEBANK, Leeds (*accepted*)	50 0 0
J. W. Ianson, Leeds	49 16 0
A. V. Cameron, Leeds	46 0 0
J. Hardaker, Yeadon	42 10 0

KIRTON.

For Building Cemetery Chapel, Kirton, near Boston.

JOHN LUCAS, Boston (*accepted*)	£276 0 0

[In the list of tenders published in last week's issue the amount of Mr. Lucas's tender was erroneously given as £746.]

LEYTON.

For Enlargement of Board Schools, Newport Road, Leyton. Mr. J. T. NEWMAN, F.R.I.B.A., Architect, 2 Fen Court, E.C. Quantities by Messrs. R. L. Curtis & Sons.

G. E. Rose, Pulford Street, S.W.	£346 10 0
C. Thompson, Bow	278 10 0
D. Doubleday, Kingsland Road	220 0 0
W. T. Searles, Leytonstone	193 9 0
J. Slade, Leytonstone	193 0 0
J. Holland, Poplar	186 0 0
J. G. Reeve, Leytonstone	185 10 0
A. Reed, Stratford	177 0 0
D. Sayer, Leyton	175 0 0
B. Walker, Lancaster Gate, W.	163 0 0
F. Ede & Son, Islington	159 10 0
J. & F. Bane	139 10 0
ENGLAND & THOMPSON, Leytonstone (*accepted*)	137 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET SOHO. LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

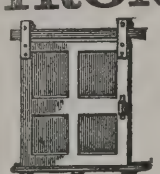
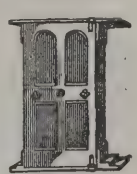
SIMPLEX LEAD GLAZING
For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

HILL & HEY,
Inventors, Patentees, and Sole Makers of their Patent
"EXCELSIOR" Syphon and Outlet VENTILATORS,
For the Ventilation of Schools, Churches, Mission Rooms, Staircases of Residences, Stables, Billiard Rooms, &c.
WORKS, HALIFAX
SUCCESSORS TO THE
ORIGINAL "WATSON'S" VENTILATOR WORKS. ESTAB. 1852
Prices, Descriptive Pamphlets, Testimonials, &c., on application.

VOLUME XXXV. OF THE ARCHITECT.
handsomely bound in Cloth, Gilt Lettered, price 12s. 6d.
Office: 175 Strand, London, W.C.



I. SUMSION, *Quarry Owner,*
MONK'S PARK
TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

SHOP SHUTTER SHOES.
NO SHUTTER BARS REQUIRED.
HARRISON'S PATENT SELF-FASTENING
BEST MALLEABLE IRON SOLID BEAD SHOES
Extensively specified, and used by Architects, Surveyors, and Builders. The Solid Bead greatly protects the Corners of Shutter from wear in removal. Terms Cash. Illustrated List on application.
JAMES HARRISON, 35 Union Street, BOROUGH, LONDON.

LEOMINSTER.

For the Erection of New Shop and Business Premises, Victoria Street, Leominster. Mr. W. W. ROBINSON, Architect, 21 King Street, Hereford.

Page & Son, Leominster	£750 0 0

LIVERPOOL.

For Reconstruction of the Carriageway of Smithdown Road, between Salisbury and Wellington Roads (Contract No. 3), for the Toxteth Park Local Board. Quantities supplied by the Engineer, Mr. JOHN PRICE, Assoc. M.Inst. C.E.

Catterall & Co., Liverpool	£1,567 14 0
Ireland & Hurley, Brae Street, Liverpool	1,147 18 6
J. Garnett, Aspen Grove, Liverpool	1,106 0 3
McCabe & Co., Lambeth Road, Liverpool	1,079 5 0
R. Lomax, Toxteth Park	1,062 17 9
R. B. Ballantine, Everton, Liverpool	1,038 18 7
W. F. Inglis, Castle Street, Liverpool	964 12 0
Walkden & Co., Brasenose Road, Bootle	938 0 0
L. Marr, Aspen Grove, Toxteth Park	917 10 1
JAMES EVANS, Parkgate (*accepted*)	860 16 11
Engineer's estimate	950 0 0

For Curbing and Channelling Smithdown Road, between Wellington and Ullet Roads, for the Toxteth Park Local Board. Quantities supplied by the Engineer, Mr. JOHN PRICE, Assoc. M.Inst. C.E.

J. Garnett, Toxteth Park	£462 5 5
Ireland & Hurley, Liverpool	412 14 6
R. B. Ballantine, Liverpool	388 3 6
W. F. Inglis, Castle Street, Liverpool	379 8 7
McCabe & Co., Lambeth Road, Liverpool	378 0 0
R. Lomax, Bagot Street, Toxteth Park	347 3 4
James Evans, Parkgate	333 11 0
Walkden & Co., Brasenose Road, Bootle	329 0 0
Catterall & Co., Phœbe Ann Street, Liverpool	309 10 6
L. MARR, Aspen Grove, Toxteth Park (*accepted*)	305 3 9
Engineer's estimate	350 0 0

LOGIE.

For Repairs and Additions to Logie Public School.

Smith, Cupar Fife	£43 9 0
W. SCOTT, Gauldry, Fife (*accepted*)	42 0 0
Law & Son, Cupar Fife	39 15 0
J. Inglis, Cupar Fife	38 10 6

LONDON.

For Providing Lunatic Wards at the Workhouse, Parish Street, Horselydown, for the Guardians of the Poor of the St. Olave's Union. Messrs. H. SAXON SNELL & SON, Architects, London.

	With Padded Rooms.	Without Padded Rooms.
J. & J. Greenwood	£486 0 0	£254 0 0
J. Almond	472 10 0	231 0 0
A. White & Co.	471 0 0	227 0 0
C. Batcheldor	453 0 0	243 0 0
G. Gaisford	437 0 0	222 0 0
J. BULLERS	425 0 0	*215 0 0

* Accepted.

For New Floor and Roof, Foundations for Machinery, &c., at the Public Baths and Wash-houses, Marylebone Road, N.W., for the Commissioners. Mr. JOHN WALDRAM, C.E., Surveyor, 16 Craven Street, Charing Cross, W.C.

J. G. B. Marshall, Brighton	£1,850 0 0
John Oliver, Camberwell	1,792 0 0
G. S. S. Williams & Son, Barnsbury	1,784 0 0
John Hicks, Stamford Hill	1,780 0 0
T. W. Smith & Son, Islington	1,769 0 0
L. H. & R. Roberts, Islington	1,765 0 0
GROVER & SON, New North Road (*accepted*)	1,738 0 0
H. S. Stephens, New North Road	1,642 0 0
Surveyor's estimate	1,745 0 0

For Pulling Down and Rebuilding No. 263 Strand, for Mr. C. J. Knowles. Mr. F. HEWING, Architect. Mr. E. Argent and Mr. W. Woodward, Surveyors.

Downs	£4,087 0 0
Scrivener	3,977 0 0
Clarke & Bracey	3,964 0 0
Conder	3,881 0 0
Croaker	3,839 0 0
Manley	3,823 0 0
Macey	3,794 0 0
Kelvie	3,774 0 0
Sheppard	3,652 0 0
Johnson	3,639 0 0
Watkins	3,637 0 0
Green	3,502 0 0

ASCHERBERG PIANOS,

Acknowledged by all **MUSICAL AUTHORITIES** and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, **211** Regent Street, W.



PROVISIONALLY PROTECTED.

FIRTH'S

Improved Disconnecting Trap,

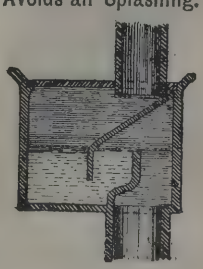
FOR FALL PIPES, &c.

COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.

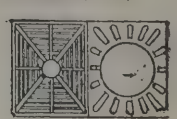
FOR PARTICULARS APPLY TO

GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing.



SECTION.



PLAN.

LONDON—*continued.*

For Engine, Laundry Machinery, &c., at the Public Baths and Wash-houses, Marylebone Road, N.W., for the Commissioners. Mr. JOHN WALDRAM, C.E., 16 Craven Street, Charing Cross, W.C.

Coalbrookdale Company, Limited, Shropshire	£5,980 0 0
Walker, Tewkesbury	2,002 0 0
Gimson & Co., Leicester	1,490 0 0
Goddard & Massey, Nottingham	1,405 0 0
F. Brown & Co., Upper George Street, W.	1,398 0 0
Crowther & Co., Huddersfield	1,375 0 0
T. Murdock & Co., Glasgow	1,300 0 0
W. J. Fraser & Co., Commercial Road, E.	1,258 0 0
Best & Co., Dockhead, S.E.	1,245 0 0
J. & F. May, High Holborn	1,196 0 0
Bradford & Co., High Holborn	1,192 0 0
Fraser & Fraser, Bow, E.	1,183 0 0
Watford Engineering Company, Watford	1,125 0 0
MANLOVE, ALLIOTT & CO., Nottingham (*accepted*)	1,122 0 0
Engineer's estimate	1,250 0 0

For Road-making, &c., Vereker Road, Fulham. Mr. J. MORNINGTON, Surveyor.

Turner & Sons, Chelsea	£660 0 0
J. Mears, Shepherd's Bush	606 0 0
Nowell & Robson, Kensington	585 0 0
Trehearne & Co., Battersea	510 0 0
W. G. COAT, Hammersmith (*accepted*)	505 0 0

For Alterations at Nos. 28 and 30 King Street, Hammersmith, W., for Messrs. Smith & Co. Mr. STANLEY PARKER, Architect, 427 Edgware Road, W.

Neighbour	£486 0 0
White	436 0 0
Petchy	419 0 0

For Gas-fittings for the Shakespeare Tavern, 65 Westbourne Grove, for Mr. A. T. Yardley. Mr. ARTHUR W. SAVILLE and Mr. W. J. MARTIN, Joint Architects, 99 Strand, W.C.

Vaughan & Brown	£43 10 0
Whiteley	38 6 0
PRAGNELL (*accepted*)	31 10 0
Pewterers' Work.	
J. DAVIDSON (*accepted*)	29 0 0

LONDON—*continued.*

For Road-paving Works, Islington. Mr. CHARLES HIGGINS, Surveyor.

	Campdale Road.	Monnery Road.	Pemberton Terrace.
G. Bell	£158 0 0	£312 0 0	£310 0 0
C. Brazier	152 5 0	284 10 0	395 15 0
Wall Bros.	142 0 0	318 0 0	252 0 0
J. Mowlem & Co.	129 0 0	265 0 0	236 0 0
E. Heard	125 0 0	300 0 0	240 0 0
C. Taylor	125 0 0	230 0 0	—
P. Aspinall & Son	124 10 0	205 0 0	230 0 0
J. Pizzey	115 0 0	297 0 0	240 0 0
C. Irons	114 10 0	225 10 0	219 0 0
C. KILLINGBACK (*accepted*)	112 0 0	179 9 0	198 13 8
Jackson & Son	100 0 0	225 0 0	185 0 0
A. Walker	100 0 0	204 19 0	208 0 0
W. NICHOLLS (*accepted*)	80 0 0	232 10 0	189 10 0

For Alterations and Additions to the Montpelier Tavern, Choumert Road, Peckham, for Mr. F. E. Pow. Mr. ARTHUR W. SAVILLE, Architect, 99 Strand, W.C. Quantities supplied.

Wm. Oldrey	£1,185 0 0
Burch & Co.	1,141 0 0
Walker	1,134 0 3
Moreton	1,100 0 0
Cook	1,096 0 0
Ward & Lamble	969 0 0
Spencer & Co.	947 0 0
Trewicke	898 0 0

MAIDSTONE.

For Erection of Buildings at the Sewage Tanks, Allington, for the Maidstone Local Board. Mr. FRANCIS J. C. MAY, Borough Surveyor. Quantities by the Surveyor.

J. Burrows, Maidstone	£880 13 0
B. Sharpe, Maidstone	469 10 0
T. J. Barden, Maidstone	463 0 0
James Clement, Maidstone	462 0 0
Bishop Bros., Birling, Kent	449 0 0
James Gray, Maidstone	435 12 0
R. AVARD, Maidstone (*accepted*)	410 0 0

W. BELL & CO.

AMERICAN ORGAN MANUFACTURERS,

AT THEIR NEW PREMISES,

58 HOLBORN VIADUCT,

Keep a full line of the

CELEBRATED

"BELL"

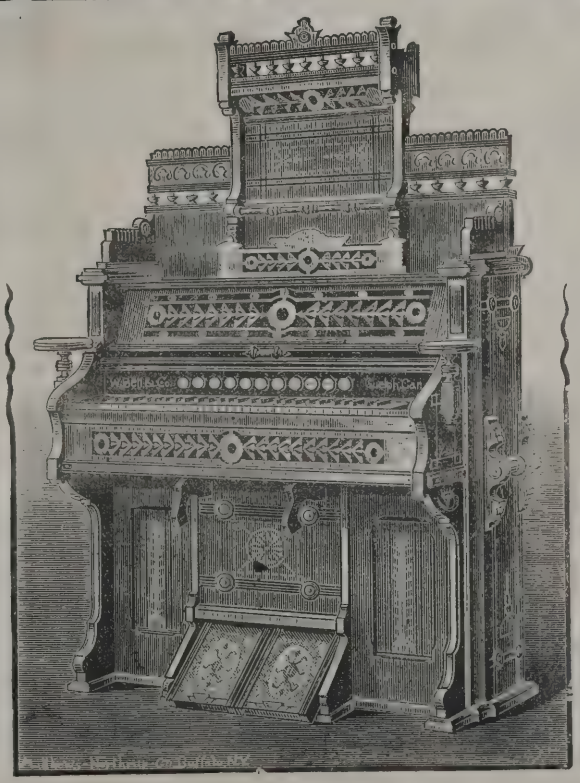
ORGANS

And the FAULTLESS

HARDMAN PIANOS

OF

NEW YORK.



ALWAYS ON HAND FOR INSPECTION.

THESE INSTRUMENTS ARE ACKNOWLEDGED LEADERS OF ALL OTHERS.

CATALOGUES FREE

From above Address.

NORTHALLERTON.

For Erection of a Patent Roller Plant, capacity 2½ sacks per hour, for the Northallerton Provident Corn Mill Society.

Thornwill & Warham, Burton-on-Trent	£2,395 0 0
T. Smith & Sons, Leeds	2,150 0 0
Seck Bros., London	1,814 0 0
W. R. Dell & Son, London	1,750 0 0
J. W. Throop, London	1,686 0 0
W. Gardner, Gloucester	1,640 0 0
T. Robinson & Son, Rochdale	1,550 0 0
Hind & Lund, Preston	1,500 0 0
F. Nell, London	1,450 0 0
J. Barron, Leeds	1,345 0 0
H. Simon, Manchester	1,322 0 0
C. HOPKINSON, Retford (*accepted*)	1,269 0 0
J. Donaldson, Liverpool	1,180 0 0
G. W. Thompson, Stockton-on-Tees	1,143 0 0
J. Bedford, Leeds	1,060 0 0

PORTSMOUTH.

For Building Town Hall, Municipal Offices, Police Court and Cells, Reading-room, and Library for the Corporation of Portsmouth. Mr. HILL, Architect, Leeds.

D. W. Lewis, Portsmouth	£137,526 0 0
W. Smith, Worthing	136,550 0 0
T. P. Hall, Worthing	135,512 0 0
J. Longley, Brighton	135,500 0 0
Light Bros., Portsmouth	133,912 0 0
W. Ward, Portsmouth	131,900 0 0
H. & W. Evans, Portsmouth	129,000 0 0
Peters & Co., Horsham	127,000 0 0
Shephard, Bermondsey	125,937 0 0
Patman & Fotheringham, London	121,479 0 0
Stephens & Bastow, Bristol	120,990 0 0
Howell & Sons, London	118,100 0 0
Perry & Co., London	117,565 0 0
Chappell, Pimlico	116,953 0 0
Bull & Son, Southampton	116,880 0 0
Kirk & Randall, Woolwich	116,450 0 0
Wall Bros, London	115,880 0 0
Mowlem & Co., London	115,750 0 0
Parnell & Son, Rugby	113,997 0 0
Beanland Bros., Bradford	98,970 0 0
ARMITAGE & HODGSON, Leeds (*accepted*)	98,245 0 0

PONTYPRIDD.

For Building Bridge and Making Approaches, at Tonyrefail Llantrissant, for the Pontypridd Highway Board. Mr. J. GRIFFITHS, Surveyor, Porth.

T. Griffiths, Trealaw	£390 6 0
R. Bond, Cefn Coed, Merthyr	379 3 0
D. Evans, Penygraig	377 7 0
T. Goldsworthy, Newport, Mon.	370 19 0
T. Bowen, Pentre	320 3 0
C. H. Firbank, Newport, Mon.	315 1 0
C. Jenkins & Son, Porth	311 6 2
T. Williams, Cymmer	307 11 6
G. Griffiths, Pontypridd	307 11 0
Jenkins & Williams, Clantwit	298 11 2
D. CAVE, Cadoxton-juxta-Barry (*accepted*)	284 17 0

WALLINGTON.

For Erection of Villa at Wallington. Mr. HENRY J. WHITE, Architect, Wallington, Surrey.

Evans	£740 0 0
Clark	725 0 0
Stewart	676 0 0
Burnand	648 0 0
Howe & White, Wallington	550 0 0

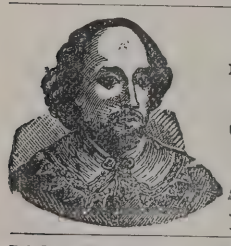
TRADE NOTES.

VENTILATION.—Messrs. Robert Boyle & Son, Limited, Holborn Viaduct, have just applied, and are at present applying their latest improved self-acting air-pump ventilators (1882 patent) and system of ventilation to the following public buildings:—New Agricultural Hall, Kensington; St. George's-in-the-East Infirmary and Workhouse; New Vestry Hall, Chelsea; New Deaf and Dumb Asylum, Old Kent Road; Parish Hall, Acton; New Municipal Buildings and Town Hall, Eastbourne; New Post Office, Windsor; Walker Infectious Hospital, Newcastle-on-Tyne; New Deaf and Dumb Asylum, Margate; Female Orphan Asylum, Beddington; New Drill Hall, Kendal. Messrs. Boyle have also prepared plans for the

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE, NINE ELMS.

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



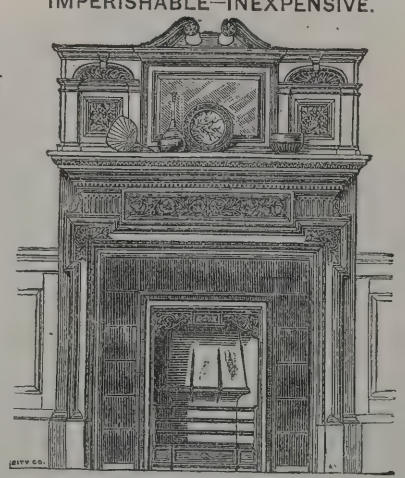
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.



IN PLAIN COLOURS OR VARIEGATED, AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.,
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

ventilation of St. George's Chapel, Windsor Castle, and the Board Room and Offices of the Metropolitan Board of Works. It is also proposed to adopt Messrs. Boyle's system of ventilation for the new fortifications to be built round Copenhagen.

THE PATENT NOISELESS PLAIN AND INLAID TILE CO., 11 King Henry's Walk, Balls Pond Road, N., have received an order to cover with their patent tiles the aisles of Spa Fields New Church, Lloyd Square, Clerkenwell, and have commenced the work.

MR. HENRY HOPE, of 55 Lionel Street, Birmingham, who, we believe, is the oldest horticultural builder in the kingdom, exhibits, at the Birmingham Exhibition, two metallic lights, specimens of the metallic hot-houses erected in the Royal Gardens, Frogmore and Osborne, one of which has been in wear for over fifty years in a conservatory at Hewell Grange, the seat of Lord Windsor, the roof lights of which form the roofs of two large vineries which are now in use; the construction of these houses is iron and copper. A large range of orchid houses, camellia house, strawberry house, and banana house has been erected last year for Mr. Chas. W. Lea, Parkfield, Worcester. Eminent orchid growers have pronounced these houses to be the best of their class in the market. Several patterns of ornamental coil cases are exhibited, two of them being new ones, and showing great elegance of design. Wrought-iron watertight casements, and others of different sections of iron made for churches, mansions, public buildings, villas, schools, &c., show excellent workmanship, and have a particularly neat appearance.

WE have received a copy of a new pattern-book of encaustic and other tiles, just published by Messrs. T. & R. Boote, of the Waterloo Potteries and Encaustic Tile Works, Burslem, of which we shall give a further notice next week.

A CATALOGUE, the title of which is "An Album of Chimney-pieces," has just reached us from the Builders' Supply Stores, 145 Holborn Bars, W.C., which will be referred to again next week.

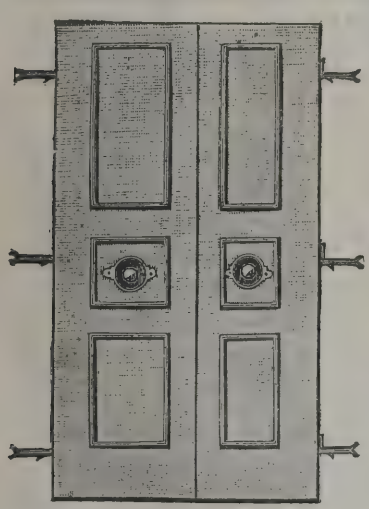
ON Monday tenders were considered for the painting of the City Hall, Dublin, and, in accordance with the recommendation of the committee, it was moved to accept the tender of Mr. William Martin at 300*l.* The tender of Mr. F. O'Neill to do the work for 247*l.* was stated, in the opinion of the mover, to be too low for the work to be done properly. Ultimately, an amendment to accept Mr. O'Neill's tender was carried.

THE committee appointed by the River Cart Navigation Trustees, Paisley, on Tuesday had before them the contracts, numbering nineteen, which have been received for the deepening of the river from Paisley to its junction with the Clyde near Renfrew. The borrowing powers of the trustees extend to 80,000*l.*, and the contract prices range from 68,000*l.* to 132,000*l.* No decision has been come to. Messrs. Bell & Millar, of Glasgow, are the engineers.

NOTES ON NOVELTIES.

The Window Blind Company.—We have received from the Window Blind Company, of 4 Lawrence Lane, E.C., a sample book of their inside blinds, and also samples of their Venetian blinds. On looking over the former we notice the artistic designs, of which there are endless varieties, and are surprised that the usual melancholy examples in most houses should be permitted to remain to act as an eyesore to all beholders when a really elegant article can be obtained at the same price, or even cheaper. For the Window Blind Company, being the actual manufacturers, are enabled to sell at cost price, and this they do. They also make a *spécialité* of wire and cane blinds. The sun-blinds made by this firm are worthy of notice. Being mounted on a self-adjusting spring roller, the blind can be raised or lowered by a single cord attached to the centre and fastened at a desired height by one turn of the cord round a cleat fixed on the window-sill. Its action is even more simple than an ordinary spring-roller blind, and when socket-hooks are fitted the blind is easily projected at the bottom, say 15 to 30 inches, to admit of more air or as a protection to flowers. We would advise our readers to apply for samples, as we have seen nothing better—and certainly not at such a low price—before.

An Artistic Tile Chimneypiece.—Messrs. W. Godwin & Son, of Lugwardine Works, Withington, are exhibiting at their London show-rooms, Bridge House, Blackfriars Bridge, E.C., a very attractive novelty in tile work—a combination chimneypiece, interior, hearth, and curb constructed of tiles, so as to form one harmonious and artistic piece of work. So far as we are aware the complete set has never been produced before in tiles, nor would it probably have been found practicable in the present instance but for the employment of the patent process of fixing tiles together adopted by the manufacturers. This method of fixing is used for forming the top

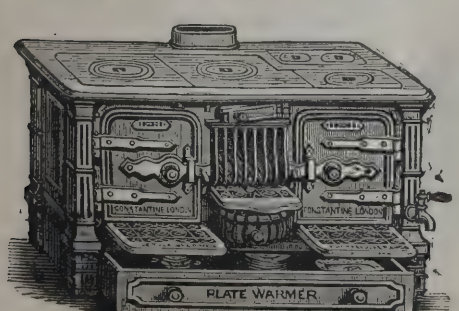


WALTER JONES,
MAGNET WHARF, BOW BRIDGE, E.,
MANUFACTURES EVERY DESCRIPTION OF
WROUGHT-IRON FIRE-PROOF DOORS, FLOORS,
GALVANISED SHEETED DOORS,
WROUGHT-IRON GATES, SASH RAILING AND HEAVY FORGINGS.
APPLY FOR PRICES.



VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth Gilt Lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.

A HOUSEHOLD TREASURE.
75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S
PATENT "TREASURE"
COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.
DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*
Illustrated Price Books, with Testimonials, Post Free.
A. R. CONSTANTINE, 61 FLEET STREET, E.C.
N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

and sides of the chimneypiece and the curb, and consists generally in the use of an iron plate, to which the tiles are secured by means of nuts and bolts, the heads of the bolts dovetailing into a suitable groove running along the centre of the tiles, which are also slabbed in the ordinary manner on cement. The tiles, being highly enamelled, are readily cleaned, and are quite capable of resisting the heat given out by an ordinary fireplace. The tiles also serve admirably to radiate the heat from the fire, and when this is brightly burning in a suitable dog-stove the effect is exceedingly artistic. The interior tiles can of course be removed to make room for an ordinary register stove if preferred, but the *tout ensemble* is then hardly so striking. By this method of construction and combination fireplaces may be composed of any selected tiles. The art tiles forming the chimneypiece are richly enamelled, and of great hardness; do not soil; the enamel does not become dull by dusting, cannot be scratched by ordinary usage, and is warranted by the makers to endure for generations. The hearth and sides have hand-painted 12-inch by 18-inch centres of Christmas roses, which are worked up into panels by highly enamelled tile strips of various colours blending one with the other, and to harmonise with the chimneypiece.

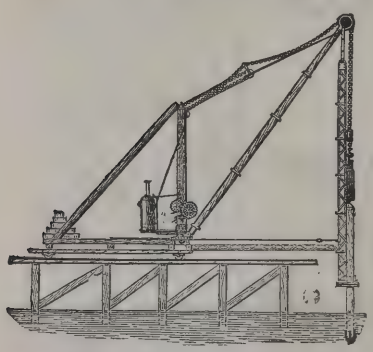
GIRDER BRIDGES.

A PAPER entitled "Some Points for Consideration of English Engineers, with Reference to the Design of Girder Bridges," by Messrs. Shelford and Shield, was read at the meeting of the British Association. The writers affirmed that a general comparison of English, German, and American bridges, with especial reference to the class of work adapted to newly-developed countries, afforded sufficient grounds for the examination of the English practice. This examination was limited in the paper to bridges of moderate span, which, on account of their number, were of greater economic importance. The results of a comparison of typical designs for bridges of 140 feet span were given, and it was stated that the difference between the weight of good designs of the same depth was comparatively small, while the principle that economy was obtained by increasing the depth obtained to an extent which, if recognised in theory by English engineers, had not hitherto found general expression in their practice. This was, however, partly due to external conditions, and it did not appear that there were essential national errors or prejudices in design which were likely to place English engineers at a disadvantage in colonial work. The difference between the position of the designer in America and England was investigated, with the result that, while the advantages of the English system in the interest of security were admitted, it was found to be attended with disadvantages with respect to economy, for which the publication of details of comparative cost of different methods of construction and the adoption of standard sections for rolled iron were suggested as partial remedies. The scientific and commercial interests of engineering called for the abolition of the Board of Trade rules, which determined fixed limits of working stress, unless they could be brought into conformity with modern knowledge of the properties of materials and the laws of construction. The objections to their abolition, although it would open the investigation of the subject to private enterprise, were pointed out, and the construction of new rules was suggested; such rules, while preserving the freedom of the engineer in the choice of design and material, and leaving to him the estimation of all those effects of loading a structure which were capable of determination by known methods, should determine for his guidance by coefficients of safety the provision to be made separately for each of the effects which were usually understood to be covered by an arbitrary factor of safety. It was suggested that the construction of such rules would be more worthy of the professional attainments of English engineers, and would be designed to raise the standard of professional knowledge by avoiding the use of fixed coefficients of which the origin and scope were not known to the user, and to encourage good workmanship and the use of materials of a high class by varying the working stress according to the quality of the materials employed. The revival of the Royal Commission of 1847, to effect for wrought iron and steel what was then done for cast iron, was indicated as the best means of obtaining the necessary data for the construction of rules with these objects.

Mr. W. Anderson opened the discussion by remarking that, in his opinion, English bridge-builders were handicapped by not having any standard form to work to, and he suggested that something of the kind should be provided. It was also important that Her Majesty's inspectors should fix a low limit of stress for girders made of steel.

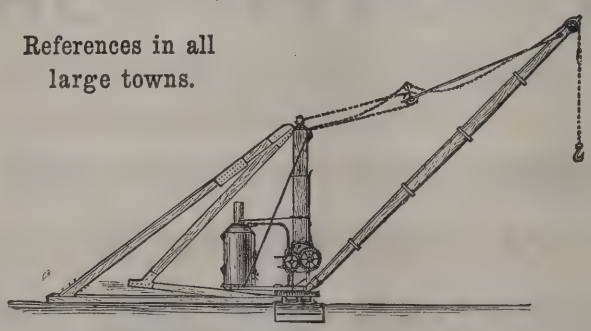
Professor R. H. Smith (Professor of Engineering at Mason

BUTTERS BROTHERS, ENGINEERS, GLASGOW.
PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.



Crane used for Piling.

References in all large towns.



SCOTCH BUILDERS' CRANES.
Large Stocks. Send for List.



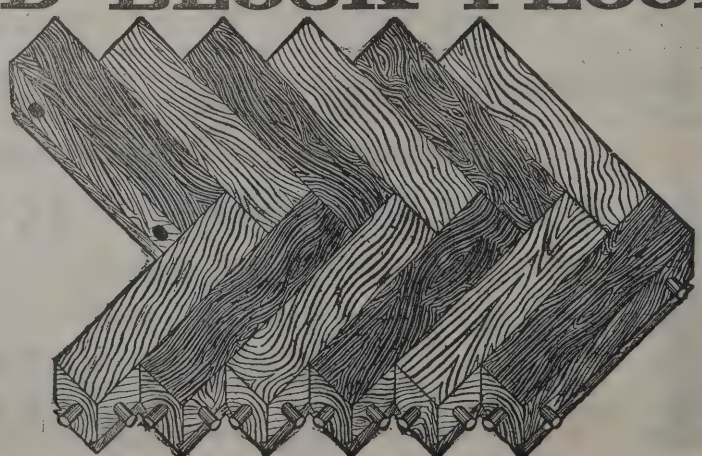
Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8	10 0
„ ¾ „	.	9	10 0
„ 1 „	.	10	10 0

FOR SALE HIRE, OR HIRE-PURCHASE.

M. C. DUFFY & SON'S Improved and Perfectly "Immovable Acme" System of
WOOD BLOCK FLOORING
(W. DUFFY'S PATENT)
OBTAINED THE
HIGHEST AWARDS
AT ALL THE
International Exhibitions, 1885.

SUITABLE FOR
Churches, Schools, Warehouses, Basements, Railway Station Booking Offices and Platforms, Mansions, Hospitals, Banks, AND Public Buildings Generally



PRICES and full PARTICULARS on application to the Manufacturers,
M. C. DUFFY & SON,
At their Chief Office,
66 STORKS ROAD, S.E.
ALSO AT
GLASSHOUSE STREET, Albert Embankment, S.E.
UNION ROAD, Rotherhithe, S.E.;
STATION ROAD, Spa Road, S.E.;
VAUXHALL WALK, S.E.;
AND AT
GREAT YARMOUTH.

College) spoke of the difference between pin-joint and rivetted-joint structures. Every one, he said, must at once concede greater facility of construction for pin-joints. If a bridge had to be erected in Germany, France, or England, facility of construction was not of such great importance as when it was to be erected in more out-of-the-way parts of the world, and this must be taken into account in any comparison between the two systems.

Mr. Jeremiah Head thought that the papers were of a useful character. In days like the present, when they were suffering from the badness of the times, there was matter for serious reflection. He had often thought that a great deal more might be done by engineers in availing themselves of the experience which was to be got from contractors in their own workshops. Their greatest constructive experience and mechanical inventions had to a large extent grown up in the workshops throughout the country far more than in Great George Street or any other street in London. This ought to be recognised, and more ought to be done to encourage contractors and manufacturers and others to give engineers the full benefit of their experience and knowledge. The plan of asking contractors to give designs as well as tenders might be carried to the materials of which the things required were made. He did not see why the makers of materials should not be asked to state what tests they would guarantee.

Sir Frederick Bramwell, D.C.L., F.R.S., did not agree with the last speaker that manufacturers should be asked to state what they would supply rather than be asked to conform to specification. The requirements of the engineer being somewhat in excess of the easy production of the manufacturer was one of the best means of insuring improvements in manufactures. He knew what the tests for steel for guns were at the outset, and he knew how they had been greatly varied. The variations had been largely due to certain conditions which the manufacturers had had forced upon them. The French were able to make a steel projectile which had accomplished in England that which no English projectile had accomplished. He could not help thinking that Mr. Head's suggestion, if carried out, would have the result of leaving them very much in a state of stagnation instead of in a state of progress.

Mr. Bayley Marshall suggested that, instead of placing the factor of safety on the limit stress of any material, they should have a factor of safety which depended on the elastic limit of the material. The means of estimating the elastic limit were ow much easier than formerly. It would also be well for engineers to consider the question of the reduction of area at the point of fracture, which was still a vexed question with many manufacturers.

TECHNICAL EDUCATION.

THE subject of technical education was brought before the meeting of the economic section of the British Association.

Sir Philip Magnus read a paper on "Manual Training," a subject which, he said, had been carefully considered by a committee appointed to continue inquiries relating to the teaching of science in elementary schools. They had reported to the Council of the Association that it was desirable to make representations to the Education Department, and suggested that the encouragement for the teaching of handicraft work might take the form recommended by the Commission on Technical Instruction, so that the use of tools in boys' schools might be placed in the same position as practical cookery in girls' schools. It could not be too often repeated that the object of workshop practice, as a part of general education, was not to teach a boy a trade, but to develop his faculties, and give him manual skill, and to familiarise the pupil with the properties of such common substances as wood and iron, to teach the hand and eye to work in unison, to accustom the pupil to exact measurement, and to enable him by the use of tools to produce actual things from drawings that represented them. Sir Philip pointed out the collateral instruction that could be given in connection with the teaching of handicrafts, and showed that while the faculties of the children were being usefully exercised, and the area of their knowledge was being extended, they were at the same time acquiring manual skill which could not fail to be useful to them in every trade. Experiments of introducing workshops in elementary schools had been tried in this country, with results sufficiently encouraging to justify the extension of the system; and on the Continent and in the United States much was done in technical teaching. An enthusiasm was spread among Americans in favour of workshop instruction, which was likely to have an important influence on the industrial progress of that eminently practical and inventive people. As a general rule, Sir Philip Magnus suggested that children should be required to have passed the fifth standard before being admitted into the workshop. He estimated that not more than 30,000 boys would be ready to receive workshop

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co's SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST, BENTLEY PRIORY, ROYAL, LANGHAM, GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S, BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

instruction in this country, and the additional Government grants might be 5,000*l.* For this comparatively small expenditure about 30,000 boys might be annually sent out into the world from elementary schools with practical skill at their finger ends, and imbued with an aptitude and taste for the real work of their life. The importance of practical teaching, of studying things before words, had been many times urged, but as yet, such had been the inertia of school authorities and teachers, and such the force of tradition, that we were only now beginning to employ the methods of instruction that had been reached for years by the most eminent educational reformers. It was hoped that the committee of the Association would persevere in the representations it had already made on this important subject, and that the labours of the Royal Commission might result in making our elementary school teaching more practical, less verbal, and less mechanical. They asked that in any new code it might be provided—(1) that the subject be duly recognised, so that no part of the attendance grant be lost in consequence of the time devoted to it; (2) that School Boards be empowered to erect and equip workshops in or near elementary schools for the instruction of children who had passed the fifth or qualifying standard; (3) that the grants be paid by the Government on the number of children receiving instruction and making the required number of attendances.

Mr. W. Ripper read a paper on "Technical Instruction in Elementary Schools." Experimental science was almost unknown in our schools, and, as a consequence, the children went out into the workshops and factories crammed with information about moods and tenses, but absolutely ignorant of the elementary principles which would enable them to reason intelligently upon the physical facts and phenomena by which they would be continually surrounded. Systematic science instruction was being given in the Board schools of Birmingham and Liverpool, and with excellent results. The children were interested in their school-work; they acquired information which no amount of mere book-reading would give them, and the advantage of such instruction would be reaped not by the children alone, but by the whole community. The idea in the minds of many people had been that education was going to save their children from hard work, and the present system of instruction was still in danger of encouraging this notion, and of creating habits and tastes which may unfit the mind for the work before it, instead of fitting and aiding it. There could be no greater fallacy than to imagine that any boy was too good for the workshop. The workshop urgently needed these very boys, and if the public elementary school was not helping to enlist its best talent on the side of skilled labour we were not on the right course. A more practical system of instruction was destined to grow and to occupy an important place in our educational methods of the future, the aim of which would be, while sacrificing none of the present advantages, to enable the schools to render more efficient help than in the past to the nation's industrial progress.

The Rev. H. Solly read a paper on "Technical Education," in which he urged that the apprenticeship system, having for the most part broken down, the practical training of the workshop must be supplemented by the combined practical and scientific teaching which can be given only in the classroom. Systematic and scientific instruction in the principles which underlie all manual industries, and the application of those principles to the material of each handicraft, is essential for thorough technical training, and can be given only by class teaching, not in the workshop. At present it is apparently no one's interest, nor legally any one's duty, and certainly no one is in general qualified to give this instruction to apprentices or youths; while it too often appears to be the employer's interest to keep the lads in particular grooves of work from which they learn nothing but very limited routine dexterity. Other nations have long since acted on a wiser system, and we are feeling the consequences. The remedy is to secure systematic and thorough technical training for the rising generation of artificers, by returning to a regular system of "indentured apprenticeships," whereby the employers, if they take lads at all into their workshops, shall be bound to see that they attend technical training classes for a certain number of hours in the week during the first three years of their apprenticeship. The increased value of the services of the apprentice during the remainder of his term, and in some cases money premiums, should recoup the employer.

A paper on the "Economic Value of Art in Manufactures,' by Mr. Edward R. Taylor, was read for him in his absence The author said that the lack of beauty in many English manufactures arose not so much from bad taste on the part of the purchaser as from the producer's want of artistic culture. In that case supply must precede demand. Manufacturers too often ignorantly regarded art as an adjunct, instead of an essential, to their wares. Art, on the contrary, should be studied with as much daily care as the other branches of the manufactory. Facts were adduced to show that it is only when such care had been devoted that the work would live and be

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

most pecuniarily profitable; and the attention which in former times was given in this direction was contrasted with the comparatively small amount of thought now, in several instances, devoted thereto. Artistic manufactures might be advanced—(1) by the encouragement of all hand-manufactures and decoration; (2) by counteracting the apparently natural tendency of machinery and other inventions to vulgarise art by the inordinate use of ornament of a poor character; and (3) by making the training of the eye and (by the use of tools) of the hand an essential part of education from the beginning of school-life.

A discussion followed, in which Mr. Fellows, Mr. G. Hurst, Mr. W. Bobley, Mr. Spratling, and Dr. Gladstone took part, and objection was expressed by some speakers to any increased grant for purposes of technical education.

Sir P. Magnus, in replying, said, having regard to the system of elementary education they had adopted, unless the Government took up the subject of manual training, it was not likely to be dealt with. He had desired to point out in his paper at how small a cost this could be done.

CONVICT PRISON, PETERHEAD.

THE Prison Commissioners of Scotland are about to erect a large prison at Peterhead. The convict prison proper is to consist of four wings, each to contain 170 cells of the regulation accommodation—or, in all, 680 cells, with the necessary accesses, &c.; but connected with the main building are lavatories, bath-rooms, and such other accessories to a large prison as are required. In proximity to the prison extensive "quarters" have to be provided for the large staff of warders and other prison officials, while within a short distance from the same place a house for the governor has to be erected. In addition to these are the infirmary and hospital, board-room, &c., the whole buildings pretty well filling up the vacant space of ground acquired by the commissioners to the north of the harbour of refuge works. The whole of the buildings are to be of stone and lime, and will be lighted with gas. The responsibility of the whole contract is to be undivided, the successful contractor having charge of the mason work, carpenter work, plumber work, &c., and he is bound under heavy penalties (100*l.* per day over-reached) to have the whole ready for occupation by a given date. The time allowed for carrying out and completing the work is thirteen months, and work has to commence immediately on the acceptance of the contract. The prison will be occupied by the beginning of 1888.

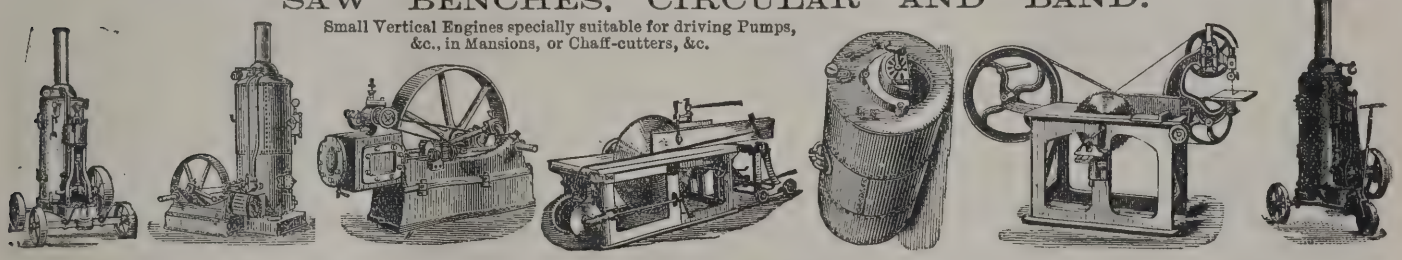
TERRA-COTTA *v.* STONE.

A MEETING of the Birmingham Trades Council was held at the Public Offices on Saturday night, when Mr. J. Riddler (stonemason) introduced a discussion on the use of terra-cotta in preference to stone in such buildings as the assize courts, and contended that stone was more useful in almost every respect when properly chosen. He said that stone was superior to terra-cotta, and would resist the atmosphere of the town. He admitted that some stone had proved a failure, but such stone as Hollington, Darley Dale, Bath, and Portland had been employed, and had given every satisfaction that could be desired. As an instance of the durability of the stones he had mentioned he pointed to the Inland Revenue offices, which, he said, were built of Hollington stone, and were in perfect condition. The Bluecoat School, which was of Attlebury stone, not well laid, had chipped; but the cornice, which was of Hollington, well placed, was still in perfect condition. The Midland Bank was a perfect specimen of Portland, and the former gas offices in the Old Square were without either chip or blemish, excepting where some iron railings had been placed against them. The General Post Office, although not a work of art, was an instance of the durability of Bath stone in the Birmingham atmosphere. The buildings might look dirty, but he (the speaker) suggested that in the case of public buildings the fire brigade might occasionally be employed in cleaning them, a practice which would avert any injurious effect being produced by acids. The Birmingham air was not nearly so bad as the air of Manchester, where the chief public buildings were of stone, and in good condition. He contended that the deleterious effects of the atmosphere would more readily operate on terra-cotta. There had been considerable talk about the Roman terra-cotta; but that had been buried for hundred of years, and had not been in contact with the atmosphere.

Mr. Farr (stonemason) objected to the use of terra-cotta in the erection of public buildings, as it would take money in wages out of the town, which the artisans had a right to expect.

A discussion followed, in the course of which the President

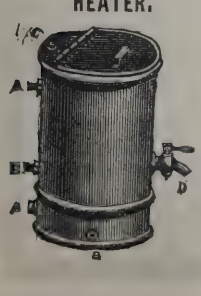
E. S. HINDLEY, 11 QUEEN VICTORIA STREET.
VERTICAL STEAM ENGINES, PORTABLE OR FIXED. HORIZONTAL STEAM ENGINES } WITH OR WITHOUT VERTICAL BOILERS.
SAW BENCHES, CIRCULAR AND BAND.
Small Vertical Engines specially suitable for driving Pumps, &c., in Mansions, or Chaff-cutters, &c.



ILLUSTRATED CATALOGUES FREE ON APPLICATION.

KALLKOLITH. TO ARCHITECTS, CONTRACTORS, & BUILDERS.
SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using KALLKOLITH
IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering. Price per Case of Eight Tins of 14 lbs. each, 40*s.*, packing included. Sample Tins, 6*s.* each.
H. RANSOM & CO., 11 Queen Victoria St., London, E.C. KALLKOLITH.
Agents wanted in every Town in the United Kingdom and Colonies.

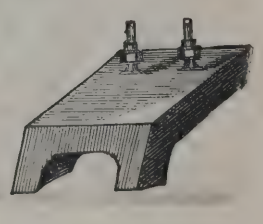
H. S. HOLDSWORTH, Victoria Copper Works, Victoria Street East, Northgate, HALIFAX.
STEAM WATER HEATER.



IMPROVED
STEAM WATER HEATERS
FOR HOTELS, RESTAURANTS, COFFEE TAVERNS, FACTORIES, STEAM LAUNDRIES, HOSPITALS, &c., &c.
Maker of Copper Bath and Circulating Boilers, Cylinders, Tanks, Furnaces, and every description of Copper Work.
These Heaters are made of sheet copper, planished and neatly finished, the inside of each vessel and the copper coil being well-tinned, fitted with hinged cover and lute ring to prevent escape of steam from the boiling water. The standard sizes of vessels Nos. 1, 2, and 3 hold 12 gallons, and are supplied with 1¼-inch brass cock, with lever handle. Price List on application. Estimates given for every description of copper work.



HOLDSWORTH'S IMPROVED BATH BOILER.



regretted that if the stonemasons were so positive about the durability of stone, which he admitted was capable of accepting more beautiful designs than terra-cotta, they had not raised the question before. Terra-cotta had been growing in use for nearly ten years.

Ultimately, on the motion of Mr. Stevens, seconded by Mr. Davis, the following resolution was passed:—"That the Trades Council thank Mr. Riddler for introducing the question of stone *v.* terra-cotta, and seeing that stone could be proved of lasting quality and beauty far greater than terra-cotta, this Council trusts that the public and the authorities will study the question before deciding what material they will use in the erection of buildings, and especially public buildings."

THE CONTRACT FOR JOINERS' WORK AT THE GLASGOW MUNICIPAL BUILDINGS.

AT the meeting of the Glasgow Town Council on the 2nd inst., the New Municipal Buildings Committee reported that they had now made up a list of eleven contractors who should be asked to tender for the joiners' work of the New Municipal Buildings, and that the contractor whose contract was accepted should find security to the extent of 5,000*l.* for the due performance of the contract, and that 10 per cent. would be retained from payments by measurement till such retained sum amounted to 5,000*l.*

Bailie Shaw complained that the names selected were not before the Council.

Bailie Gray asked what amount would be involved in the contract?—Mr. Laing replied that it would be about 80,000*l.*

Bailie Shearer asked whether, in the exercise of their powers, the committee would give the contract to the lowest offerer?—Mr. Laing remarked that in all probability the lowest offerer would get the job, but it was specially reserved that the lowest offer might not be accepted.

Bailie Shearer moved that contractors for the joiners' work should be advertised for in the usual manner.—Mr. D. Macpherson seconded this amendment, as he considered that this course, which was followed in the case of the masons' work, should also be followed in that of the joiners' work.

Dr. Marwick, the town clerk, read the previous minutes, under which the committee had made the selection, and which had been approved of by the Town Council on May 3. He believed that, following out their action, it was absolutely necessary for the committee to take the lowest offer; but while he held that opinion, he thought it was perfectly right and prudent to keep the matter in their hands so far, that in the event of any doubt or anything arising they should not bind themselves to accept the lowest offer.

Mr. Laing said there was no doubt, from all the information that was before them, the lowest offerer for the job would get the contract, unless something transpired of which they at present knew nothing.

Dr. Marwick said that the proper method to prevent the committee carrying out their instructions would be to move that the remit to them be rescinded; but if they did such a thing it would be the first time in all his municipal experience that such a course had been followed, and the committee could look at it as little else than a vote of no confidence.

Mr. D. Macpherson said this was another instance of unwarily giving a committee powers. That must be guarded against in future.

Bailie Shaw moved that this part of the minute be delayed.

Dr. Marwick stated that this could not be done.

As both amendments were ruled incompetent, the minutes were approved.

ROOFING SLATE FOR INDIA.

THE efforts which are being made to wrest trade from English producers may be judged from the following by Mr. A. Studder, the United States consul at Singapore, which we find in the *American Architect*:—

I am informed that the manufacturers of black roofing slate in the United States are desirous to obtain information respecting the uses of that article in India; that the slate area in the State of Pennsylvania was almost inexhaustible, and as rapidly developed as the demand increased; that the manufacturers were desirous of extending their exportations to India; that large quantities had been shipped to Australia and other distant countries.

Last year I answered Messrs. Boyle & Co., slate exporting financiers, of Philadelphia, anxious to extend their trade hereabouts, after recommending to them the appointment of an agency, to send to the same a trial consignment (which holds good to-day) as follows:—

The Medical Battery Company, Limited.

ADVICE FREE, Personally or by Letter.

52 OXFORD STREET, LONDON, W.

The following are a few Extracts from the many

THOUSANDS OF TESTIMONIALS RECEIVED:—

GOUT. "Derived the greatest benefit."—*His Majesty the King of Holland.*
RHEUMATIC FEVER. "I can positively speak of its advantages."—*Dr. C. Lempriere, D.C.L., Senior Fellow, St. John's College, Oxford.*
NERVOUS DEBILITY. "Entirely recovered."—*W. Oliver, Esq., Hylton.*
HYSTERIA. "The Belt has done wonders."—*Mrs. M. Oriel, Dowlais.*
SCIATICA. "Worth fifty pounds."—*Mr. R. J. Watson, Harwich.*
NEURALGIA. "A most complete success."—*M. A. Langdale, Esq., Leacroft.*
LUMBAGO. "It has been an untold comfort to me."—*Miss Hudson, Twyford.*
CONSUMPTION. "Benefited immensely."—*Rev. H. L. Norden, Southampton.*
KIDNEY DISORDERS. "I am like a new man."—*Mr. W. P. Pougher, Plymouth.*
LIVER COMPLAINT. "I have no pain now." *Mr. T. Smith, Hey, Lees.*

PRICE 21s. POST FREE.

HARNESS' ELECTROPATHIC BELT.

PRICE 21s. POST FREE.

A NATURAL AND CERTAIN CURE FOR GOUT, RHEUMATISM, SCIATICA, LUMBAGO, INDIGESTION, CONSTIPATION, EPILEPSY, KIDNEY DISORDERS, NEURALGIA, LIVER COMPLAINTS, NERVOUS DEBILITY, &c.

FOR THE NERVES, STOMACH, LIVER, KIDNEYS, and other organs.

LADIES' AILMENTS.—Dr. Anna Kingsford, M.D, advises every lady to write for a new pamphlet on the Diseases of Women just issued by Mr. C. B. Harness, Consulting Electrician to the Medical Battery Company, Limited. It is simply invaluable, and should be read by every lady in the kingdom. Sent, under cover, free by post, on application to the Medical Battery Company, Limited, 52 Oxford Street, London, W.

NOTE.—When ordering send size of waist (next skin).

MR. C. B. HARNESS, The Eminent Consulting MEDICAL ELECTRICIAN, has been specially retained by the Company, and may be consulted daily (WITHOUT CHARGE) on all matters relating to HEALTH and the application of CURATIVE ELECTRICITY. Residents at a distance, and those unable to avail themselves of a personal consultation, are invited to write for a Private Advice form, which will be forwarded POST FREE on application to

WRITE FOR NEW PAMPHLET. POST FREE.

The Medical Battery Company, Limited,

52 OXFORD STREET, LONDON, W.

"Thus far little slate for roofing has been used, tiles being generally used throughout India; and for cheap, light buildings (bungalows), the leaf of the attap palm (thatch). It would be best to forward and consign a sufficient quantity for trial and introduction. I feel morally certain that without doing this you will not get orders. What slate has been used here for roofing (on Government buildings chiefly), was imported from England, and you are better able to judge as to whether you can compete with that country. The cost of freight on a sailing vessel would be about the same from Philadelphia as from an English port, I think."

Being directed to report upon all India, I must confess that, while I am pretty well informed about that vast country and islands belonging thereto (British and Dutch), I have never yet been in Upper India; but there are many here who have been there, and they tell me that for roofing houses about the same materials are used as in this colony, as follows:—

Manner of Roofing.

1. For all substantial buildings (governmental, mercantile, and residential) the half-round tile, made of brick clay and baked, is used. These are easily laid—joining in and out, under and over, and overlapping each other—and makes an excellent, durable, as well as cool roof in a tropical country, as they furnish air currents throughout. In a cold climate, unless covered with mortar or cement where they lap and join, they would not answer. A tile roof is, of course, very heavy; but, as there is an abundance of very hard wood out of which to make timbers and frames able to bear it, it does not matter. Coolie labour is very cheap (ranging for all India from eight to twenty cents per day), clay and fuel abundant, and as a rule very near each other, and therefore tiles can be had cheap.

2. For plantation and cheap European residences, bungalows, and the dwellings of the native population in suburban and country districts and on farms—all having, as a rule, far-projecting roofs—the leaves of the attap palm, the kadjang (a species of huge grass growing on low, marshy river-bottoms, shallow lakes, and lagoons in vast fields, as I have seen in the swamps of Kassang River, near Malacca),* and sundry other tough broad grasses and fibres suitable for thatching, are used and give general satisfaction, being very abundant, cheap, and answering their purpose well. A well-made attap or kadjang roof will last from three to four years, when it becomes brittle, and, as a consequence, leaky, and must be removed.

3. For the roofs of coal sheds, wharves, warehouses, landings, bazaars and markets, verandas, and other airy, light shed-like structures, having no walls and only posts or brick pillars for support, corrugated sheet-iron or fluted zinc sheets, this, with steadily increasing tendency is used. This kind of roofing was first introduced here about twelve years ago.

No Present Market for Slate.

As to black slate for roofing, it has been used, to my knowledge, on two new Government buildings having mansard roofs within the last two years, *i.e.*, police headquarters and post-office, one mercantile building, and two churches. This slate, as none has ever been kept for sale here, was imported from Wales, where, there being large quarries of it, I am told it is very cheap.

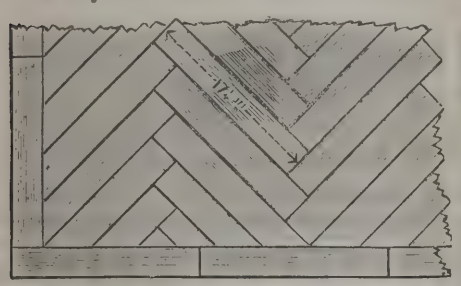
Firms in the United States engaged in the manufacture and export of slate can easily find out whether they can successfully compete with English quarries in Eastern markets, the cost of freight being about the same from our Atlantic as from ports in England (on sailing vessels, I mean).

Summed up, upon careful consideration and reflection (referring more to my consular district than all India), I hardly think that the sale of slate for roofing, from any country, will ever amount to much in the tropical part of Asia. But as some will be used, perhaps more and more as civilisation, with a higher taste for architecture advances, it would, I think, be well for our American slate exporters to create agencies in the principal ports of India, and to forward to them trial consignments (not too small) of their productions. I know of no better way, if they can only compete with English or European exporters. It must be borne in mind at the same time that Calcutta, and perhaps Bombay excepted, we have no American firms in British or Netherlands India, and must rely on foreign merchants for the sale of any kind of American merchandise.

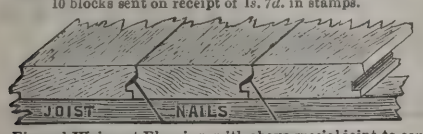
I would recommend the creation of agencies at the following ports:—Calcutta, Rangoon, Madras, Bombay, Colombo (Ceylon), Singapore, and Penang, Bangkok (Siam); Batavia, Sourabaya, and Samarang, in Java, and Manilla (Philippine Islands).

* I have read in some naturalist's books that the kadjang is a palm leaf, which is absolutely not the case. It grows about as tall as an average corn stalk out of water; its leaves resemble, in shape and length and breadth, a corn leaf, but have a sawlike jagged edge. The stem of the kadjang is about as thick as a corn stalk, and as readily cut.

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1½×4½ Dry Wainscot Oak, 54s. 9d. per square; 1×4½ ditto, 45s.; 1½×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s. 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone 3,183.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

BY HER MAJESTY'S ROYAL LETTERS PATENT.
ESTABLISHED A.D. 1774.
AUSTIN'S
NEW IMPERIAL PATENT
SUPERFINE FLAX LINE.
The above article is now being manufactured and sold in large quantities for Greenhouse Sashes, Public-house Shutters, and other heavy work. The Manufacturers would recommend it for its strength, and the large amount of wear in it, consequent on its peculiar manufacture.
AUSTIN'S IMPERIAL PATENT FLAX SASH AND BLIND LINES (two Prize Medals awarded). The manufacturers of the above articles particularly wish to draw the attention of the trade to their Imperial Patent Flax Sash Lines, of which they are now making six qualities, all of which they can strongly recommend, as they have given unqualified satisfaction to the trade for now over One Hundred Years; and the Proprietors continue to give their personal attention to the manufacture of these goods.
They also invite the particular attention of the trade to their IMPERIAL PATENT BLIND LINES, which are very superior to anything yet offered.
They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in town and country.
N.B.—Please note that all our goods as advertised above are labelled either inside or outside, with our Trade Mark—The "Anchor."

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely Bound in Cloth, Gilt Lettered, price 12s. 6d.
Office: 175 Strand, London, S.W.



W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

FIREPROOF FIXING BLOCKS
FOR WALLS AND FLOORS
(Wright's Patent). Wood Joint Pieces, Plugs, Fixing Fillets, Grounds, &c., successfully superseded without extra cost. Extensively used by Leading Architects and Contractors for several years past; H.M. War Department, &c.
NOTE.—These Fixings take and RETAIN nails equal to wood They never burn, decay, shrink, or become loose, and will carry any weight that can be put upon them in a building.
Colonel W. J. STUART, Commanding Royal Engineers, Chatham, writes:—"The frames are most strongly fixed, and the blocks did not split with the 5½ in. screws that were used."
Write for new catalogue, containing full particulars and references post free.
"Highly Commended" at the Firemen's Exhibition, May 1886.
WRIGHT & CO. { No. 3 Westminster Chambers, Victoria Street, London, S.W.
Manufactories:—Gosport, Hants, and at Carnforth, Lancs.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
☞ *Legal and Commercial Stationery.*

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

"THE PEDESTAL VASE,"

JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,

SANITARY ENGINEER, STANGATE, LONDON.

A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



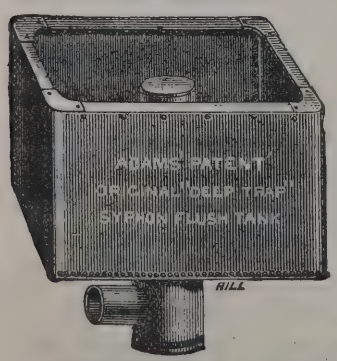
ELECTRIC & PNEUMATIC BELLS.

NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.

MECHANICAL TELEPHONES. Everything for a line complete for £3.

PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

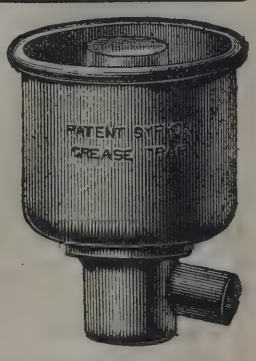


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, September 10, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, SEPTEMBER 17, 1886.

COMPETITIONS OPEN.

BISHOPWEARMOUTH.—Sept. 25.—Plans, &c., are invited for the Erection of School Buildings for 1,300 Children. Mr. T. W. Bryers, Clerk to the School Board, Sunderland.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

ELLAND.—Nov. 9.—Plans are invited for the Erection of a Town Hall. Mr. J. L. Garsed, Hon. Secretary, Town Hall Company's Offices, Southgate, Elland.

LEEDS.—Oct. 9.—Designs are invited from Architects of Leeds for proposed Art Gallery and Museum. Mr. G. W. Morrison, Town Clerk, Leeds.

LEWES.—Oct. 9.—Designs and Estimates are invited for Public Hall and Offices, by way of addition to present Buildings. Mr. A. Holt, Borough Surveyor, Town Hall, Lewes.

CONTRACTS OPEN.

ALNWICK.—Sept. 22.—For Erection of Steaming Shed, Cooperage Loft, &c. at Brewery. Mr. G. Reavell, jun., Architect, Alnwick

BATLEY.—Sept. 22.—For Building Villa Residence, Upper Batley. Mr. Walter Hanstock, Architect, Branch Road, Batley.

BALLOCH.—Sept. 27.—For Removing Bridge over the River Leven and Erecting Iron Girder Bridge. Messrs. Crouch & Hogg, C.E., 175 Hope Street, Glasgow.

BARNSLEY.—Sept. 21.—For Building Bakery. Mr. Frederic Smith, Architect, 29 Bridgwater Chambers, 6 Brown Street, Manchester.

BELFAST.—Sept. 22.—For Construction of Waterworks (Contract No. 2). Mr. L. L. Macassey, C.E., Waterworks Office, Belfast.

BLACKWALL.—Sept. 23.—For Two 9-feet Steel Spherical Gas Buoys. Mr. J. Inglis, Secretary, Trinity House, E.C.

BRADFORD.—Sept. 24.—For Building Four Cottages, Girlington Road. Mr. William Rycroft, Architect, Bank Buildings, Manchester Road, Bradford.

BRAMLEY.—Sept. 18.—For Building Two Villas, Hough End. Mr. F. W. Rhodes, Architect, Upper Wortley, Leeds.

BRIGHTLINGSEA.—Sept. 20.—For Construction of Sewerage. Mr. G. H. Sasse, Engineer, Thorpe-le-Soken, near Colchester.

BRISTOL.—Sept. 23.—For some Alterations, Fixtures, and Furniture at the Hot Wells Branch Library, Woodwell Lane. Mr. J. Thomas, City Surveyor, Bristol.

BURNLEY.—Sept. 22.—For Extension of Receiving Wards at the Workhouse. Mr. T. Bell, Architect, Burnley.

BURY.—Sept. 21.—For Supply of 15-inch Cast-iron Pipes (7,000 yards). Mr. J. Cartwright, Borough Engineer, Bury.

CANTON.—Sept. 20.—For Building Board Schools for 1,119 Children. Mr. E. M. Bruce Vaughan, Architect, Borough Chambers, St. Mary Street, Cardiff.

CLONTARF.—Sept. 27.—For Constructing Series of Main Sewers, Fairview District. Mr. W. Stirling, Surveyor, 107 Stephen's Green, Dublin.

COCKERMOUTH.—Sept. 18.—For Building Shop and Warehouse, Station Street. Mr. R. S. Marsh, Surveyor to the Local Board, Cockermouth.

DEWSBURY.—Sept. 22.—For Building Mortuary, Laundry and Wash-house in Connection with the Infirmary. Messrs. J. Kirk & Sons, Architects, Dewsbury.

DUBLIN.—Sept. 22.—For Iron Railing, Fence, Gates, &c., for Recreation Grounds, Cabra Workhouse, North Dublin Union. Mr. W. H. Byrne, Architect, 20 Suffolk Street, Dublin.

DUMFRIES.—Sept. 18.—For Building Post Office. Mr. H. W. Primrose, Secretary, H.M. Office of Works, Parliament Square, Edinburgh.

EDINBURGH.—Sept. 20.—For Building East and West Wings, Heriot Watt College. Mr. J. Chesser, Heriot Works Office, 21 St. Andrew Square, Edinburgh.

FORRES.—Sept. 18.—For Rebuilding Farm Steading, Buchtiby. Mr. John Milne, Architect, Elgin and Forres.

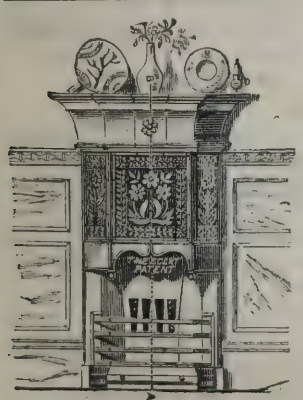
GORTON.—For Constructing Heating and Dipping Chambers, with Brick Seating and Chimney. Mr. T. H. G. Berrey, Waterworks Office, Town Hall, Manchester.

GRANSHAW.—For Enlarging and Repairing Manse, &c., at Granshaw Church. Mr. Chapels, Architect, Newtownards, Belfast.

GREAT YARMOUTH.—Sept. 30.—For Building Three Houses, Bath Hill. Mr. W. B. Cockrill, Architect, Glencoe House, Gorleston.

GUILDFORD.—Sept. 20.—For Constructing Roof Over Reservoir, Pewley Hill, Supply of Cast-iron Pipes (4,900 yards), and Two Tons of Lead. The Water Manager, South Street, Guildford.

HALIFAX.—Sept. 23.—For Works of Reinstatement, &c., at Flour Society's Mill. Messrs. Horsfall & Williams, Architects, 15 George Street, Halifax.



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faience Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

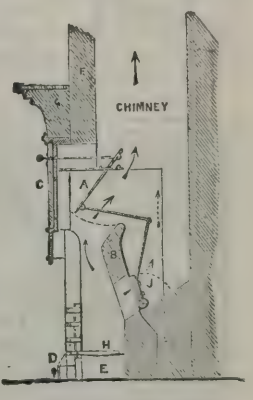
WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the Inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.



HORRABRIDGE.—Sept. 20.—For Building Board School for 171 Children. Messrs. Henderson, Architects, Truro.

HORSFORTH.—Sept. 20.—For Construction of Reservoir with Embankment, Puddle Wall, &c. Messrs. McLandsborough & Preston, C.E., The Exchange, Bradford.

INDIA OFFICE.—Sept. 21.—For Supply of Locomotive Boilers. The Director-General of Stores, India Office, Whitehall, S.W.

INDIA OFFICE.—Sept. 28.—For Supply of Ironwork for Waggons. The Director-General of Stores, India Office, Whitehall, S.W.

IRTHLINGBOROUGH.—Sept. 18.—For Building Four Cottages. Mr. Edward Sharman, Architect, Croyland Abbey, Wellingborough.

ISLEWORTH.—Sept. 22.—For Building Infirmary and Probation Wards at the Brentford District Schools. Mr. Edward Monson, jun., Architect, Grosvenor House, The Vale, Acton, W.

KENNINGTON.—Sept. 18.—For Building Police-station. The Receiver of Police, 4 Whitehall Place, S.W.

LEEDS.—September 24.—For Erection of Dog Kennels at the Highway Depôt. The Borough Engineer, Municipal Buildings, Leeds.

LEYLAND.—Sept. 21.—For Supply of Cast-iron Pipes (1,000 yards 6-inch T. & B.), with Branches, Bends, &c. Mr. C. Elliott, Secretary, Leyland and Farington Gas Company, Leyland, near Preston.

LINGFIELD.—Sept. 18.—For Building Dwelling-house and Office, Stable Buildings, and Vineries, at Rowlands. Messrs. John Colson & Son, Architects, 45 Jewry Street, Winchester.

LLANDRINDOD WELLS.—For Building Four Houses and Shops. Mr. Deakin, Architect, Pride Hill Chambers, Shrewsbury.

LONDON.—Sept. 21.—For Cistern, Water-closet Fittings, Works of Repair, and External Painting at Workhouse, Bethnal Green. Messrs. T. & W. Stone, Architects, 2 Great Winchester Street, E.C.

LONDON.—Sept. 21.—For Building Board School and Enlarging Board Schcol, Forming Covered Playgrounds, Limehouse. School Board Offices, Victoria Embankment.

LONDON.—For Supplying and Erecting High-level Force Pump and Low-level Pumps. Mr. J. Howard, C.E., 24 Basinghall Street, E.C.

LOWER DARWEN.—Sept. 18.—For Building Boundary Walls and Drainage at Graveyard, St. James's Church. Mr. J. Aspinall, Architect, Hart's Chambers, 2 Victoria Street, Blackburn.

MARSDEN.—Sept. 24.—For Building Two Cottages. Mr. A. Shaw, Architect, Knowle, Golcar.

MERTHYR TYDFIL.—Sept. 21.—For Wrought-iron Flooring for Two Bridges. Mr. W. Thompson, Secretary, 132 Palmerston Buildings, Old Broad Street, E.C.

NEWCASTLE-ON-TYNE.—Sept. 22.—For Building Chapel and Schools. Mr. T. Southron, Architect, 70 King Street, South Shields.

NORTHAMPTON.—Sept. 20.—For Alterations to Stables at Sewage Works, Houghton Road. The Borough Surveyor, Guildhall, Northampton.

NORTH SHIELDS.—Sept. 23.—For Alterations and Additions to Baths and Washhouses. The Borough Engineer, Norfolk Street, North Shields.

PAISLEY.—Sept. 22.—For Enlargement and Reconstruction of Passenger Stations on Glasgow and Paisley Joint Line, Messrs. Blyth & Cunningham, Engineers, Edinburgh. Mr. J. Hay, Secretary, Bridge Street Station, Glasgow.

PETERHEAD.—Sept. 20.—For Building Prison. Mr. William Donaldson, Secretary to the Prison Commissioners for Scotland, 130 George Street, Edinburgh.

POOLE.—Sept. 22.—For Constructing Concrete Sea Wall (900 feet long), Sterte Estate. Messrs. C. T. & W. H. Miles, Surveyors, Observer Chambers, Bournemouth.

PORTSMOUTH.—Sept. 28.—For Constructing Ventilating Shafts in connection with Sewers. Mr. A. Hellard, Town Clerk, Portsmouth.

REDDISH.—Oct. 7.—For Construction of Brick Sewers (1,830 yards) and Works in Connection and for Supply of 18-inch Cast-iron Sewage Pipes (1,800 yards). Mr. R. Vawser, Engineer, 17 Cooper Street, Manchester.

ROCHDALE.—Sept. 22.—For Building School Chapel. Rev. J. Slater, 2 Mackinnon Street, Rochdale.

RUGELEY.—For Building School and Classrooms at Wesleyan Chapel. Mr. W. A. Bowney, Architect, Rugeley.

STAPLETON.—Sept. 29.—For Additional Buildings at the Bristol Lunatic Asylum. Mr. H. Crisp, Architect, 31A Clare Street, Bristol.

HOLDEN & CO.'S PATENT ZINC ROOFING

WITH THEIR

PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,

Whereby the use of **Solder and all Outside Fastenings** are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.

Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.

ZINC AND IRON WORKERS AND COPPERSMITHS.

Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.

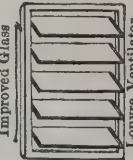
HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

H. W. COOPER & COMPANY, LIMITED,

HEALTH EXHIBITION,



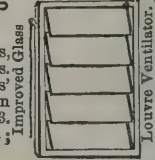
MEDAL AWARDED, 1884.



Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.

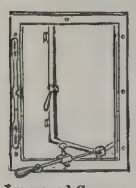
H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.



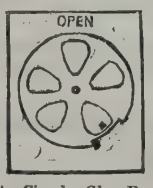
GLASS SELLERS' COMPANY EXHIBITION,



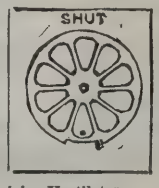
MEDAL AWARDED, 1876.

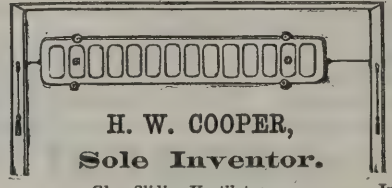


Improved Casement.

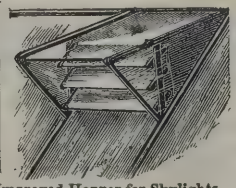


Circular Glass Revolving Ventilator.

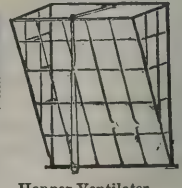




Glass Sliding Ventilator.



Improved Hopper for Skylights.



Hopper Ventilator.



Casement.

Steam Works: Little Queen St., Upper George Street, Edgware Road, W.

Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.



SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.

LONDON DEPOT: Kinson Wharf, Albert Embankment, LAMBETH, S.E.

CARTER, JOHNSON & CO., ENCAUSTIC TILE MANUFACTORY, St. George's Works, WORCESTER.

20 Victoria Buildings, Victoria Street, MANCHESTER.

Agents:—STURGEON & SMITH, Cross Lane, Eastcheap, E.C.

TUBERCURRY.—Sept. 27.—For Building Medical Officer's Residence. Mr. W. H. Byrne, 20 Suffolk Street, Dublin.

WAKEFIELD.—Sept. 18.—For Building Cottages, Westgate End. Mr. A. Hart, Architect, Thompson's Yard, Westgate, Wakefield.

WALTHAMSTOW.—Sept. 23.—For Building Stables, Low Hall Farm. Mr. G. B. Jerram, Surveyor to the Local Board, Town Hall, Walthamstow.

WANDSWORTH.—Sept. 23.—For Building Lying-in Wards at the Workhouse, Garratt Lane. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

WEDNESBURY.—Sept. 20.—For Building Board Schools, Caretaker's House, &c., King's Hill. Mr. Edward Pincher, Architect, West Bromwich.

WEDNESBURY.—Sept. 17.—For Laying Out Public Park. Mr. Joseph Smith, Clerk to the Urban Sanitary Authority Wednesbury.

WHITBY.—Sept. 21.—For Erection of Farmhouse and Outbuildings, Dairy, &c., Egton Estate. Mr. Edward H. Smales, Architect, 1 Brunswick Street, Whitby.

YORK.—Sept. 25.—For Rebuilding House and Shop, Coney Street. Mr. W. G. Penty, Architect, Clifford Chambers, York.

TENDERS.

APPLETHWAITE.

For Cemetery Chapel for St. Mary's Burial Board, Applethwaite. Mr. ROBERT WALKER, Architect, Windermere.
W. Brockelbank, Bowness, mason, walling, &c.
H. Collett, Kendal, carpenter and joiner.
J. A. Pattinson, plumbing, painting and glazing.
H. B. Armstrong, plastering.

BERWICK.

For Sluices, Valves, &c., for Compensation Pond at Garvald, North Berwick.
GLENFIELD COMPANY, Kilmarnock (*accepted*) . £215 5 6

ASTON MANOR.

For Small House, Mansfield Road, Aston Manor, for Mr. A. Smallwood. Mr. W. W. BROWNE, Architect, 14 Lozells Road. Quantities by the Architect.
J. WEBB, Lozells (*accepted*) £275 0 0

For Six Cottages, Potter's Hill, Aston Manor, for Mr. Thomas Allday. Mr. W. W. BROWNE, Architect, 14 Lozells Road. Quantities by the Architect.
C. BAMFIELD, Aston (*accepted*) £870 0 0

For Two Cottages, Gladstone Street, Aston Manor, for Mr. S. Boden. Mr. W. W. BROWNE, Architect, 14 Lozells Road.
C. BAMFIELD, Aston (*accepted*) £365 0 0

BIRMINGHAM.

For Alteration to Shop, Icknield Street, Birmingham, for Mrs. Oliver. Mr. W. W. BROWNE, Architect, 14 Lozells Road.
H. ROBERTS, accepted per schedule of prices.

For Rebuilding Offices for Messrs. Blews & Sons, Bell-founders, 9, 10, and 11 New Bartholomew Street, Birmingham. Mr. W. W. BROWNE, Architect, 14 Lozells Road, Birmingham. Quantities by the Architect.

First Contract.

W. Bennett, Lozells	£939 0 0
C. Bamfield, Aston	935 0 0
T. G. Bennett, Birmingham	924 0 0
J. Webb, Lozells	922 0 0

For Seven Houses, Linwood Road, Handsworth, for Mr. J. Smith. Mr. W. W. BROWNE, Architect, 14 Lozells Road. Quantities by the Architect.

Including Stoves, &c.

GREENWOOD (*accepted*) £1,750 0 0

CINDERFORD.

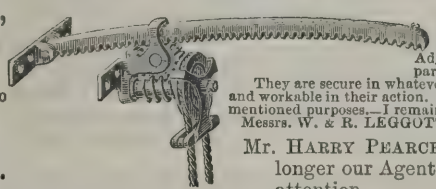
For Building School at St. White's, Cinderford, for the Forest of Dean School Board.
WILLIAM JONES, Gloucester (*accepted*) . . £2,249 0 0

For Additions to Bilson Mixed Schools, Forest of Dean.
FREEMAN & ORGAN, Cinderford (*accepted*) . £1,217 0 0

Ham Hill Stone! Ham Hill Stone!!! For Ham Hill Stone of best quality and workmanship, apply to JOHN HANN & SON, Quarry Owners, Montacute, Ilminster. Established 1837. Agents, MATTHEWS & GEARD, Albany Wharf, Regent's Park Basin, N.W. [ADVT.

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY., RIVERSIDE NINE ELMS.

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for
LEGGOTT'S PATENT ADJUSTMENT,
FOR FANLIGHTS, SKYLIGHTS, &c.,
Is admitted to be the best ever put before the Public.
From 5s. each.
Write for REDUCED PRICE LIST and Testimonials to
W. & R. LEGGOTT,
70 Park Road, Bradford, Yorkshire.
N.B.—Size and height of window no object.

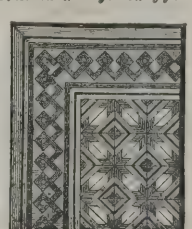


TESTIMONIAL.
BANGOR, N. Wales: September 14, 1885.
Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.
Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD.,
22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.
150,000 ft. super. in Stock, ready for Laying.
RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.
Immense Stock always ready for Laying.



THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction



WOOD CARVINGS.
All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.
Estimates and Designs on Application.



ARTISTIC JOINERY.



ORNAMENTAL PARQUET.
DEAL BACKING.

THE
LONDON & EDINBURGH IRON BUILDINGS CO.,
PATENTEES,
IRON MERCHANTS & FACTORS.
Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.
Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.
Special Plans prepared to meet the requirements of our Customers.
Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

CORNWALL.

For Erecting Three Cottages, at Fowey, for Mr. C. E. Treffry, High Sheriff of Cornwall. Mr. W. NEWBY SPOONER, Architect, Plymouth and Fowey.

MITCHELL, Tywardreath (*accepted*)	£376 0 0

For Additions to Farmhouse, Polglaze, Fowey, for Mr. C. E. Treffry, High Sheriff of Cornwall. Mr. W. NEWBY SPOONER, Architect, Plymouth and Fowey.

MITCHELL, Tywardreath (*accepted*)	£205 0 0

For Erecting Infants' Galleries and School Fittings for the St. Blazey School Board. Mr. W. NEWBY SPOONER, Architect, Plymouth and Fowey.

B. Phillips	£67 5 0
Rowe & Kitts	60 0 0
WARWICK MARTIN, St. Blazey (*accepted*)	54 0 0

For Erecting a House at St. Austell, for Mr. William Box. Mr. W. NEWBY SPOONER, Architect, Plymouth and Fowey.

Giles	£693 11 6
W. Smith	631 15 0
J. T. SMITH & JACOB, St. Austell (*accepted*)	554 11 6

All materials supplied by employer.

ELLAND.

For Building Residence with Boundary Walls and Approach Road, Hullen, Edge Lane, near Elland. Mr. T. L. PATCHETT, Architect, Halifax.

Accepted Tenders.

George Readyhough, Elland, excavator, mason and bricklayer.
Thomas Holroyd, Stainland, carpenter and joiner.
Joseph Aspinall, Elland, plumber and glazier.
B. & A. Sutcliffe, Elland, plasterer and slater.

GARSDON.

For Sunday School Room, Garsdon, Malmesbury. Mr. C. J. PHIPPS, F.S.A., Architect.

G. Besant, Chippenham	£432 10 0
Wilkins & Hughes, Malmesbury	421 10 0
G. JOHNSON, Swindon (*accepted*)	405 10 0

HELENSBURG.

For Completing Battery Wall and Laying Out Promenade, East Bay, Helensburg.

MURRAY, jun., Maryhill (*accepted*)	£950 0 0

IVYBRIDGE.

For Building Residence, Stables, and Cottage, Ivybridge. Mr. W. M. TOLLIT, Architect, Totnes. Quantities by Architect.

Blowey, Plymouth	£1,490 0 0
Stevenson, Plymouth	1,484 0 0
Steel, Acton Gifford	1,435 0 0
Reed, Plymouth	1,402 0 0
Rowse, Plymouth	1,380 0 0
Foaden, Ashburton	1,300 0 0
PEARSE, Modbury (*accepted*)	1,240 0 0

KIMBERLEY.

For Building Two Houses and Shops, Kimberley. Mr. JOHN JACKSON, Architect, Long Row, Nottingham. Quantities by the Architect.

W. Illingworth, Hyson Green	£775 0 0
J. Budd, Beeston	695 0 0
W. Donnelly, Kimberley	680 0 0
T. Darby, Nottingham	661 0 0
J. Price, Carrington	577 0 0
Reeve & Tomlinson, Bulwell	568 0 0
Harper Bros., West Hallam	527 0 0
W. COXON, Radford (*accepted*)	524 0 0

LONDON.

For Repairing and Putting Shop Fronts to Nos. 25, 26, 27, and 28 Playhouse Yard, Whitecross Street. Mr. BRETT A. ELPHICKE, Architect, 7 Great Queen Street, Westminster, and at Tunbridge Wells.

E. Porter	£449 0 0
Wenden & Smith	425 0 0
J. Jarvis	385 0 0
J. Hawkins	367 0 0
J. Fanthorp	297 0 0
S. Burns	269 16 0
J. Trill	239 18 0

For Erection of Printing Warehouse, Clerkenwell Road, for Messrs. Gilbert & Rivington, Limited. Mr. W. SECKHAM WITHERINGTON, F.R.I.B.A., Architect, 79 Mark Lane, E.C.

C. F. Kearley	£3,967 0 0
Stanley Bird	3,908 0 0
Grover & Sons	3,769 0 0
W. Shepherd	3,740 0 0
Priestley	3,585 0 0
Elkington	3,500 0 0
Patman & Fotheringham	3,473 0 0

PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

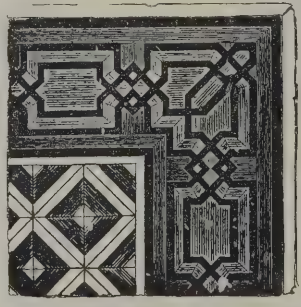
THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

KNOWLES & ESSEX
(Late W. CUNNINGTON & Co.),
Manufacturers of
ARTISTIC WALL-PAPERS,
Park Walk, Chelsea, London, S.W.
Specialities—Patent Frosted Gold, Crystal Damask and Raised Flock Decorations.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

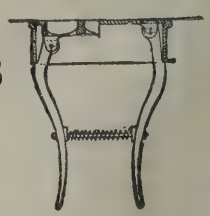
COMPETITION WORK.
High-class Confidential Assistance rendered by the Advertiser. Able and rapid in design. A first-rate and artistic draughtsman, twenty years' constant and exceptionally varied practice upon architectural works generally, including the majority of the largest and most successful Competitions of modern times, and for twelve years employed by many of the leading members of the profession in preparing elaborate PERSPECTIVES for the Royal Academy Exhibitions.
ARCANUM, 20 Theobald's Road, W.C.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered.
PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

ANCASTER STONE QUARRIES.
THE ANCASTER STONE COMPANY continue to work the Old Ancaster Stone Quarries formerly worked by Messrs. KIRK & PARRY, and to supply Stone of the same fine quality as heretofore.
OFFICES:—JERMYN STREET SLEAFORD.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.

Patent Self-Fastening Coal Plates,
M. & T.'S PATENT. NO. 4,125.

International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

LONDON—*continued.*

For Business Premises, 372 Euston Road, for Mr. F. Davison. Mr. F. FRYER, Architect.

W. A. RHODES, Hyde Park (*accepted*)	£1,630 0 0

For Alterations at No. 1 Love Lane and 34 and 35 Wood Street, for Messrs. Virgoe, Middleton & Co.

Neave & Neave	£269 0 0
Taylor	243 0 0
Staines & Son	194 0 0

LYDFORD.

For Erecting a House at Lydford, for Mr. E. C. Spooner. Mr. W. NEWBY SPOONER, Architect, Plymouth and Fowey.

Lethbridge & May	£930 0 0
F. J. Piper	886 0 0
P. Blowey	770 0 0
R. Doidge & Son	638 0 0
J. Bevan	572 0 0
J. ROSE KELLY, Gunnislake (*accepted*)	570 0 0

MANCHESTER.

For Jubilee Exhibition Building, Manchester. Messrs. MAXWELL & TUKE, Architects.

Highest tender	£50,549 0 6
NEILL & SONS, Manchester (*lowest and accepted*)	34,350 0 0

MENAI BRIDGE.

For Building House and Shops at Llangefui, for Dr. E. Williams. Mr. R. G. THOMAS, Architect, Menai Bridge.

LEWIS PARRY, Llangefui (*accepted*)	£1,200 0 0

For Building House at Beaumaris, for Mr. O. J. Pritchard. Mr. R. G. THOMAS, Architect, Menai Bridge.

GABRIEL LLOYD, Beaumaris (*accepted*)	£430 0 0

For Erecting Buildings on the Baron Hill Estate, for Sir Richard Bulkeley, Bart. Mr. R. G. THOMAS, Architect, Menai Bridge.

For New Stables, Beaumaris.

GABRIEL LLOYD, Beaumaris (*accepted*)	£260 0 0

For Repairs to House, Beaumaris.

DAVID OWEN, Llandegfau (*accepted*)	£190 0 0

For new Farm Buildings at Tau Rullt and Tal y Cofu, near Conway.

SAMUEL PARRY, Llanrwst (*accepted*)	£396 11 0

For Repairs to Merchllyn, near Conway.

MOSES PARRY, Gyffin (*accepted*)	£51 0 0

MENAI BRIDGE—*continued.*

For Building English Presbyterian Chapel, Menai Bridge. Mr. R. G. THOMAS, Architect, Menai Bridge.

Humphreys, Bangor	£5,750 0 0
Evan Parry, Menai Bridge	4,600 0 0
William Thomas, Bangor	4,580 0 0
Gabriel Lloyd, Beaumaris	4,490 0 0
EVAN WILLIAMS, Bangor (*accepted*)	4,227 0 0
R. & J. Williams, Bangor	4,051 0 0

NANTWICH.

For Building Villa Residence, School, &c. Mr. J. P. ARLINGTON, Architect, 8 Butchery Street, Lincoln.

Latham, Nantwich	£1,218 0 0
Harding, Nantwich	1,150 0 0
Micklewright & Wright, Crewe	1,130 0 0
Matthews, Nantwich	1,040 0 0
MORGAN, Lincoln (*accepted*)	1,036 0 0

NEW SHOREHAM.

For Entrance Lodge and Lych Gate to Cemetery, New Shoreham, for Burial Board. Mr. ARTHUR LOADER, Architect, Brighton.

C. S. Smale, West Brighton	£742 0 0
E. J. Ockenden, West Brighton	707 0 0
J. Reynolds, jun., West Brighton	679 10 0
J. M. Newnham, Brighton	677 0 0
W. Still, Patcham	650 0 0
Geo. Box, Ardingly	628 0 0
P. Peters, Horsham	614 0 0
W. Taylor, Brighton	609 0 0
R. Lockyer, Brighton	597 0 0
Wm. Hackman, Brighton	595 0 0
J. Longley, Crawley	595 0 0
Watson, Steyning	590 0 0
S. E. Frayne, Worcestershire	573 13 0
Patching & Son, Brighton	566 0 0
S. Norman, Burgess Hill	560 0 0
W. Homewood, Brighton	547 0 0
E. Seaber, Godalming	439 0 0
J. Blaker, Worthing	427 0 0
Stanbridge, Broadwater	425 0 0
Chas. Curd, Shoreham	418 8 0
W. A. GATES, Shoreham (*accepted*)	385 7 0
Geo. Burchell, Shoreham	378 14 6

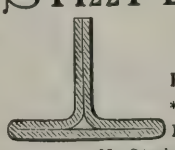
SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET SOHO. LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

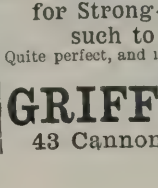
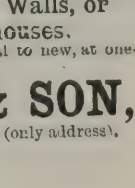
HILL & HEY,
Inventors, Patentees, and Sole Makers of their Patent
"EXCELSIOR" Syphon and Outlet VENTILATORS,
For the Ventilation of Schools, Churches, Mission Rooms, Staircases of Residences, Stables, Billiard Rooms, &c.
WORKS, HALIFAX
SUCCESSORS TO THE
ORIGINAL "WATSON'S" VENTILATOR WORKS. ESTAB. 1852
Prices, Descriptive Pamphlets, Testimonials, &c., on application.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions. — STEVENS & CO., Ceres Ironworks, Kingston-on-Thames.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK.
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*
MONK'S PARK
MP.
TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

NEW SHOREHAM—(*continued*).

For Enclosing Cemetery, New Shoreham, Sussex, with Wrought-iron Fence, for the Burial Board. Mr. ARTHUR LOADER, Architect, Brighton.

Roger & Co., London	£741 0 0
William Homewood, Brighton	414 14 0
James Longley, Crawley	402 0 0
Badham & Co., London	330 13 6
William Still, Patcham	325 3 0
W. Taylor, Brighton	320 8 0
E. J. Ockenden, Brighton	311 0 0
Goddard & Massey, Nottingham	298 10 0
Wayman & Johnson, Guildford	290 0 0
Hitching & Wynn, London	279 12 0
Howell, Dorset	277 16 6
Faulkner & Co., Surrey	277 6 0
Reed & Sons, Brighton	270 12 0
J. Reynolds, jun., Brighton	268 18 0
Peter Peters, Horsham	267 17 0
W. Burtenshaw, Shoreham	267 0 0
J. W. Holloway, Shoreham	265 12 0
Lampen & Co., Brighton	265 10 0
Brookes & Co., Wolverhampton	253 3 6
Smith & Co., Birmingham	228 13 0
Iron Wire and Fence Company, London	222 1 4
S. E. FRAYNE, Worcestershire (*accepted*)	149 11 2

For New Road and Paths to Cemetery, New Shoreham, Sussex, for the Burial Board. Mr. ARTHUR LOADER, Architect, Brighton. Quantities supplied.

J. Reynolds, jun., Brighton	£349 0 0
Badham & Co., London	274 9 0
William Still, Patcham	166 1 0
E. John Ockenden, Brighton	132 0 0
J. Longley, Crawley	126 0 0
S. E. Frayne, Worcestershire	125 5 0
S. Marshall, Barnham	117 0 0
George Burchell, Shoreham	103 10 0
J. Harrison, Brighton	103 0 0
R. Miller, Shoreham	103 0 0
W. Homewood, Brighton	87 0 0
P. Peters, Horsham	80 15 0
CHARLES CURD, Shoreham (*accepted*)	65 0 0

NOTTINGHAM.

For Building North-Western Goods Station, Nottingham.

J. HARTLEY, Birmingham (*accepted*)	£50,000 0 0

NORTHWICH.

For Laying Pipes, &c., from Cote Crook to Heywood Reservoir, for the Northwich Local Board.

O. Norris, Heaton, Bolton-le-Moor	£24,473 12 5
J. Mackay, Stoke-upon-Trent	12,287 8 10
Holmes & Kershaw, Bradford	11,889 11 11
Walmsley & Co., Preston	10,500 0 0
J. Dale, Northwich	9,346 0 0
Walmsley & Co., Crumpsall	8,794 14 0
F. Dawson, Bury	7,604 9 6
G. Law, Kidderminster	7,161 0 0
J. Dyson, Ellesmere	7,004 9 3
J. Jowett, Rainhill	6,010 2 11
Pickthall & Sons, Merthyr Tydvil	5,951 4 6
Small & Sons, Handsworth	5,880 17 2
J. Brigg, Bingley	5,781 13 3
J. Bush, Preston	5,687 1 0
J. Holland, Castle Norwich	5,241 5 2
Innes & Wood, Handsworth	4,994 16 3
C. F. McCullock, Manchester	4,837 7 6
W. Drewitt, Alsager	4,525 1 11
W. Winnard, Wigan	4,458 4 4
J. W. Pickthall, Yeovil and Southampton	4,527 13 6
H. W. GOULD & Co., Southampton (*accepted*)	4,280 16 0
J. B. Mather, Hull (withdrawn)	3,026 11 8

PONTYPRIDD.

For Enlargement of Coedpenmaen Board Schools, Pontypridd, for the Eglwysilan School Board. Mr. THOMAS ROWLAND, Architect.

G. Griffiths, Pontypridd	£818 0 0
Davies, Porth	785 0 0
M. Julian, Pontypridd	777 0 0
F. PIERCE, Pontypridd (*accepted*)	678 0 0

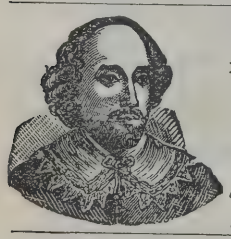
SNARESBROOK.

For Additions and Finishing Work to Two Houses, Hermon Hill, Snaresbrook, for Lieut.-Colonel Kirby, J.P. Mr. J. B. WALL, A.R.I.B.A., Architect, 32 Walbrook, E.C.

W. Hickinbotham, Teddington	£1,364 7 0
S. Salt, Limehouse	1,099 10 0
D. Brown & Co., Camberwell	1,097 0 0
T. D. Lenz, Deptford	997 0 0
East & Co., Plaistow	825 0 0
M. Redman, Brockley	790 0 0

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
FIFTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

PARKINSON'S
BEST QUALITY LOWEST PRICES
WET & DRY
COTTAGE LANE CITY Rd LONDON
GAS METERS

NASH & HULL,
LETTER
MANUFACTURERS,
WRITERS AND ENGRAVERS
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

SPALDING.

For Building Three Houses, Pinchbeck Road, Spalding, for Mr. Elsom. Mr. WILLIAM JEPSON, Architect, Spring Gardens, Spalding.

Thomas Pick	£763 0 0
Stanger & Salter	680 0 0
Harrison	680 0 0
Levesley	666 0 0
Moore	650 0 0
Jepson & Perkins	647 0 0
Brett	614 11 0
Watson	600 0 0

For Painting Exterior of Central Board Schools, Spalding.

Bell, Moulton	£18 10 0
Atton & Son, Spalding	14 10 0
Kime, Boston	12 8 0
Wortley, Spalding	11 19 0
Bamber, Spalding	11 15 6
HAGUE, Donington (*accepted*)	7 15 6

SUTTON-IN-ASHFIELD.

For Building Hosiery Factory, Sutton-in-Ashfield. Mr. J. BINDON CARTER, Architect, 3 Clarendon Street, Nottingham.

Dennett & Ingle	£2,769 0 0
G. Bell & Son	2,768 0 0
Lynam & Kidd	2,748 0 0
Wheatley & Maule	2,730 0 0
Taylor & Knight	2,730 0 0
H. Clipsham, Newark	2,595 0 0
G. Underwood	2,550 0 0
J. Hodson & Son	2,550 0 0
H. Vickers	2,548 0 0
Bains & Bishop, East Kirkby	2,540 13 7
W. Needham, Loughborough	2,540 0 0
H. Bott	2,499 0 0
E. Hind, Edgar Rise	2,467 0 0
J. Redwood, Sutton-in-Ashfield	2,423 10 0
W. H. Taylor, New Basford	2,377 10 0
S. Nyham & Sons, Old Barford	2,351 18 0
F. Shaw, Ilkeston	2,330 0 0
J. F. PRICE, Sherwood Rise (*accepted*)	2,152 10 0

Remainder of Nottingham.

TUNBRIDGE WELLS.

For Foundations of Chancel, St. Barnabas Church, Organ Chamber, Vestries, and two Bays of the Nave and Aisles (average 21 feet deep), and Groined Mortuary Chapel in Basement. Messrs. J. E. K. & J. P. CUTTS, Architects, London.

G. Punnett & Sons, Tunbridge	£2,033 0 0
G. Mansfield & Son, Tunbridge Wells	1,997 0 0
W. Oakley, Tunbridge Wells	1,900 0 0
J. Jarvis, Tunbridge Wells	1,755 0 0
J. Holloway, London	1,690 0 0
E. J. Strange & Sons, Tunbridge Wells	1,686 0 0
Beale & Son, Tunbridge Wells	1,635 0 0
T. WILLIAMS, London (*accepted*)	1,569 0 0

ULVERSTON.

For Building Fire-engine House, Steam Road-roller House, Cart Sheds, &c., Ulverston. Mr. H. WHITLOW, Surveyor, Theatre Street, Ulverston.

R. Tyson, Ulverston	£555 0 0
T. Wearing, Ulverston	481 14 9
T. T. Tyson, Ulverston (*accepted*)	467 0 0

WARWICK.

For Works at Board School, Coten End, Warwick. Mr. F. H. MOORE, A.R.I.B.A., Architect, Warwick.

E. Claridge, Banbury	£300 0 0
W. Robbins, Warwick	292 0 0
E. Tallis, Warwick	247 5 6
J. H. & T. CASHMORE, Warwick (*accepted*)	220 0 0

WHITSTABLE.

For Building Store, Offices, and Hall, for the Whitstable Oyster Company. Mr. JOHN LAWSON, Architect.

M. Gentry	£1,083 0 0
Cephas Foad	1,068 0 0
J. H. Knight	1,038 0 0
J. Hughes	1,038 0 0
T. Goldfinch	944 0 0
T. W. Porter	940 0 0
W. Snow	925 0 0
T. Cornelius	896 0 0
AMOS & FOAD (*accepted*)	821 0 0

THE ÆOLUS WATERSPRAY

SYSTEM OF

HEATING, COOLING, & VENTILATING

IS THE

CHEAPEST AND BEST.

For Particulars apply to

MANAGER, 235 HIGH HOLBORN, LONDON, W.C.

Applications for Agencies invited.

M. C. DUFFY & SON'S Improved and Perfectly "Immovable Acme" System of WOOD BLOCK FLOORING

(W. DUFFY'S PATENT)

OBTAINED THE

HIGHEST AWARDS

AT ALL THE

International Exhibitions, 1885.

SUITABLE FOR

Churches, Schools, Warehouses, Basements, Railway Station Booking Offices and Platforms, Mansions, Hospitals, Banks, AND Public Buildings Generally.



PRICES and full PARTICULARS on application to the Manufacturers,

M. C. DUFFY & SON,

At their Chief Office,

66 STORKS ROAD, S.E.

ALSO AT

GLASSHOUSE STREET, Albert Embankment, S.E.

UNION ROAD, Rotherhithe, S.E.;

STATION ROAD, Spa Road, S.E.;

VAUXHALL WALK, S.E.;

AND AT

GREAT YARMOUTH.

WALTHAMSTOW.

For Fitting-up Shop at High Street, Walthamstow, for Messrs. Scott, Tagg & Co. Messrs. ARUNDELL & TARTE, M.S.A., Architects, London and Cambridge.

J. & C. Sutton	£385 0 0
W. Salter (*too late*)	265 10 0
Thomas R. Cooper	240 0 0
F. BRADFORD (*accepted*)	239 0 0

WINDERMERE.

For Building Business Premises, Windermere, for Mr. J. H. Walton. Mr. ROBERT WALKER, Architect, Windermere. Quantities by the Architect.

G. H. Pattinson, Bowness, walling, &c.
Joseph Clark, Windermere, carpenter and joiner.
John A. Pattinson, Windermere, plumber.
H. B. Armstrong, Windermere, plastering.
F. G. Croft, Bowness, painting and glazing.

WOOLWICH.

For Rebuilding the Princess of Wales Beerhouse, Mount Street, Woolwich, for Mr. J. Bull. Mr. H. H. CHURCH, Architect, Woolwich.

Booth, Hackney	£1,358 0 0
Lonergan Brothers, Plumstead	1,290 0 0
Covil, Woolwich	1,260 0 0
Coombs, Plumstead	1,250 0 0
Johnson, Woolwich	1,239 0 0
Harris, Woolwich	1,228 0 0

For Alterations and Repairs at 44 New Road, Woolwich. Mr. H. H. CHURCH, Architect.

Johnson, Woolwich	£227 10 0
Covil, Woolwich	212 10 0
How, Woolwich	208 0 0

For Renewing Outbuildings in rear of 26 and 27 Thomas Street, Woolwich, for Mr. Geo. Mence Smith. Mr. H. H. CHURCH, Architect.

How, Woolwich	£80 0 0
A. J. Fenn, Woolwich	75 10 0

WORTHING.

For Erection of Dwelling-house and Offices, Cambridge Road, Worthing, for Mr. RESTA W. MOORE, Architect.

A. G. WRIGHT, Broadwater (*accepted*)	£1,118 0 0

TRADE NOTES.

MESSRS. E. & H. LUMLEY, on Wednesday the 8th inst., held their eighth sale by auction of plots of land at the new seaside watering-place, Lee-on-the-Solent, Hampshire, adding another to their list of successful sales. In this case forty-one lots out of forty-five were sold, at prices averaging 50*l.* per plot, or about 500*l.* per acre.

A USEFUL album of chimneypieces has been printed for the Builders' Supply Stores, of 145 Holborn Bars. The bulk of the pages is, as may be supposed, devoted to the illustration of chimneypieces in various designs of much excellence. There are thirty-six designs that show ornamental chimney-pieces in styles suitable to the present times, and they range in elaboration to a high scale of ornamental excellence. Amongst household fittings the chimneypiece affords a special scope for the exercise of architectural design. Such materials as marble, slate, &c., have their own inherent beauty, which is independent of design, and this of itself is an inducement to apply designs only that are worthy of the material. In the album will be found a valuable series of, in the main, entirely independent designs, and designs not merely varying by the substitution of different details. Judging from the designs, the executed work will prove meritorious in a high degree, and the most fastidious will find something to suit them. The designs include Gothic and various types of Renaissance; most of them are severely treated, without any of the meretriciousness found in works of the class.

WHITE WOODWORK OF DOMESTIC INTERIORS.

FROM time to time many must have felt grievously pained on seeing the beautiful variety of grain possessed by the white woods, which enter so largely into the construction of our domestic interiors, ruthlessly covered over by paint. Nature is, and ever will be, superior to art, and we know of no greater act of vandalism than that of covering over a beautiful piece of well-seasoned, richly-grained pine or deal with a non-transparent colouring matter, which is, when so utilised, as great an offence to true artistic taste and feeling as it is expensive and wasteful. So long, however, as house-builders see it to their apparent advantage to build cheaply-constructed houses, so long will the extensive use of paint, putty, and knotting be the covering and concealing agents they now are.

It is no secret that paints, &c., are the cloaks under which

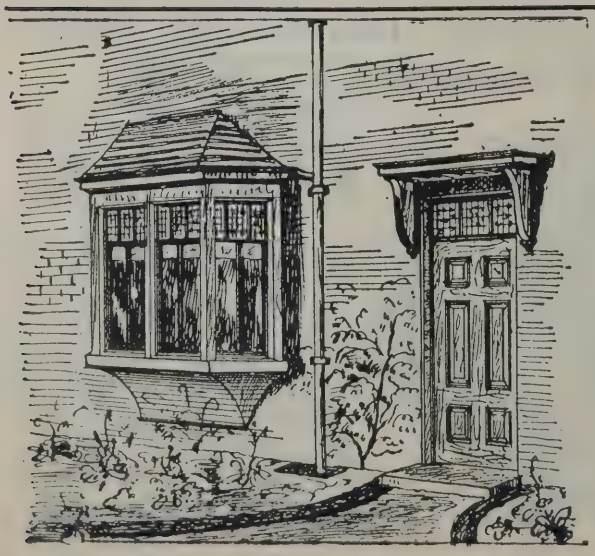
ASCHERBERG PIANOS,

Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.



PROVISIONALLY PROTECTED.

FIRTH'S

Improved Disconnecting Trap,

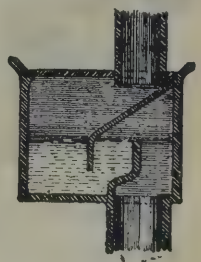
FOR FALL PIPES, &c.

COMPACT, EFFICIENT, AND DURABLE.
EASILY CLEANED OUT.
VENTILATES ALL FALL PIPES.
ORNAMENTAL APPEARANCE ABOVE THE GROUND.

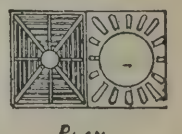
FOR PARTICULARS APPLY TO

GRACE & FIRTH, Wakefield, Yorks.

Avoids all Splashing.



SECTION.



PLAN.

the unscrupulous builder seeks to hide away inferior wood and workmanship, but the Nemesis of time will sooner or later disclose in all its glaring enormity these manifold imperfections, often, alas! too late for the innocent house proprietor who, having paid his bill, finds out, to his great mortification and cost, that, however artistically his house may have been embellished by the aid of paints, &c., yet the underlying green or sappy wood so covered, although for the time being hid away from the eye, sooner or later begins to painfully manifest itself even to the most obtuse of observers. Very great credit is, therefore, due to Sir William Vincent and his architect, Mr. J. T. Walford, for having had the courage to totally abolish the use of paint on the white woods throughout the beautiful mansion he has recently had erected at Comfort Field, Ashted. This elegantly-designed dwelling, situated in the centre of one of the most beautiful home counties, commanding the most extensive and picturesque views, has had its interior woodwork so treated as to be in every way in harmony with its rural surroundings without the aid of paint.

It is well known that the bare pine and deal, notwithstanding the variety of their undeveloped grain, cannot, in their natural state, be made to harmonise with the furniture and other surroundings. It therefore becomes necessary to give to them some tone or colour, which, while it does not conceal the natural grain, yet shall be in harmony with the furniture and other fittings of the rooms, and the best method by which this can be accomplished is to give to these white woods the rich tones and tints of the higher and better class ones usually employed where the question of cost is not a consideration. This desirable result can only be done successfully by the employment of a genuine reliable chemical dye. The decorations of the white wood, throughout the whole of the above-mentioned dwelling, have been artistically executed by a simple process, by means of which various designs of fruit, flowers, and objects of still life, heads, masks, birds, and other animals have been successfully and beautifully rendered in stain.

Stains have for many years been extensively employed as a plain covering for large surfaces of the white woods employed in ecclesiastical and other large buildings, and to a small extent in the domestic interior for the borders of rooms, but have not hitherto been employed for the complete artistic decoration of our domestic dwellings, either internally or externally. The Worshipful Painters and Stainers' Company have done much for the advancement of decoration by means of paint and colours, yet have to all intents and purposes altogether neglected the use of stain as a decorative agent; but as a covering for wood the latter is by far the most natural, and now that it can be used as freely as distemper for stencilling or pencilling, there is no reason why its use should not become more general. It is a well-known fact that staining is in every way far more durable than paint. The effect of age on genuine stain is simply to deepen the tone, and to give a similar richness to that acquired by time by the higher-class woods they seek to imitate. This is true of Stephens's stain, and it is this particular stain which has been used on the decoration of Sir W. Vincent's mansion above referred to, the decorator being Mr. P. Malcolm, 33 Southwick Street, Cambridge Terrace, Hyde Park.

BUILDING AND PAVING IN NOTTINGHAM.

THE General Works and Highways Committee of the Nottingham Town Council report that although there is a decrease in the number of new buildings erected and in the number of new streets now being laid out, the staff of the committee is fully engaged in overtaking the arrears of work which accumulated during the last few years when such enormous strides were made in the building operations and in the general development of the town. The following is a return of plans passed for buildings to be erected in the borough during the last eight years :—

1879	Number of buildings	2,856
1880	Ditto	2,399
1881	Ditto to October 31	2,987
1882	Ditto ,, ...	3,350
1882	Ditto November 1 to March 25, 1883 . .	1,465
1883	Ditto March 26 to March 25, 1884 . .	3,199
1885	Ditto March 26 to March 25, 1885 . .	2,187
1886	Ditto March 26 to March 25, 1886 . .	1,870

The figures below give the total of the various descriptions of materials used either in new works or repairs, on the public footpaths throughout the whole of the borough, which includes Lenton, Radford, Basford, Bulwell, Sneinton, and Nottingham: —Superficial yards of flagging, 2,246; lineal yards of new kerbing, 6,651; superficial yards of asphalte, 25,298; cement concrete in footpaths, 8,081. In the public carriage-ways, 1,937 super. yards of old sorrel stones have been pulled up, the ground excavated, and concrete bottom laid, on which were paved creosoted wood blocks; 15,802 superficial yards of new sorrel paving have been laid, and 13,263 superficial yards of old

W. BELL & CO.

AMERICAN ORGAN MANUFACTURERS,

AT THEIR NEW PREMISES,

58 HOLBORN VIADUCT,

Keep a full line of the

CELEBRATED

"BELL"

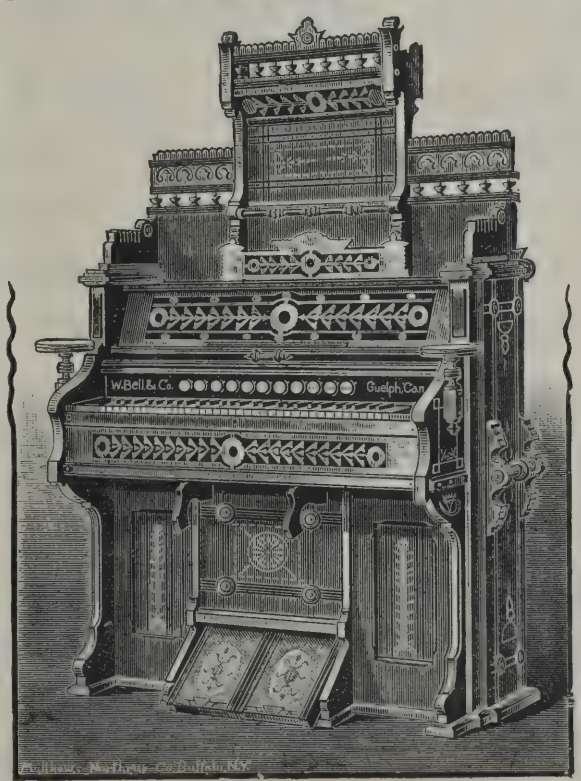
ORGANS

And the FAULTLESS

HARDMAN PIANOS

OF

NEW YORK.



ALWAYS ON HAND FOR

INSPECTION.

THESE INSTRUMENTS ARE

ACKNOWLEDGED

LEADERS OF ALL OTHERS.

CATALOGUES

FREE

From above Address.

paving have been pulled up, the old stone sorted and again repaved partly with old, and the remainder with new granite setts or randoms. No less than 9,100 tons of granite ringsmall and broken cinders have been used for general repairs to macadam roads in the whole of the borough. Of this quantity 4,523 tons were used in Nottingham, the remaining portion being sent to the outlying districts. Independently of new streets, &c., done under notice, various other works of flagging, kerbing, paving, and drain connections, &c., have been carried out at the request of no less than 900 owners and others who have signed undertakings to pay for works when done. The wages paid through the weekly wages sheets to men employed by the Works and Ways Committee on private improvement works, amount to 15,017*l.* The total amount of accounts rendered to owners and others during the twelve months is 53,000*l.*

ORNAMENTAL TILES.

MESSRS. T. & R. BOOTE, of the Waterloo Potteries and Encaustic Tile Works, Burslem, have just issued a new pattern of encaustic and other tiles. The book is admirably got up, and the coloured illustrations so beautifully and faithfully rendered, that the effect on any particular design as it would appear *in situ* is realised at a glance. The book in itself is a good specimen of art workmanship, and, even in the letterpress, the familiar printer's ink has given place to colour, for black is only seen as far as it enters into the illustrated designs. Besides its utility to architects, builders, &c., for purposes of reference, it is a most presentable record of the work of the present day. Nearly 150 patterns are illustrated, and, in the great majority of cases, a large amount of space is given to each. Forty-five plates are devoted to tiles for floors, and these comprise over 180 designs, the first beginning with No. 391, all of great excellence, and drawn to a scale of ¾-inch to the foot. It would be difficult among so much excellent work to pick out any design for special commendation, and the flooring, when laid, would be satisfactory whatever design might be selected. The particular purposes of the building, &c., naturally determine certain broad lines or divisions within which the choice must be made—for instance, plainness and simplicity are required, or again, soberness and dignity, or something very rich and sumptuous, or what is sought for is something light and delicate, bright, tasty, &c.

While the circumstances decide the broad lines within which the choice is to be made, ample room for selection is offered within those lines, and it does not seem possible to adopt a pattern the effect of which would not be most satisfactory. The patterns, both in design and in colour, are wonderfully good. The designs often show a multiplicity of tints, but combined with great judgment—we might refer to plate 10 as an instance of this—and there is an entire absence of anything *outré* or *bizarre*. In fact, Messrs. Boote have compiled one of the best series of designs that we have seen in this class of work. Among the flooring material, we find on plate 46 several designs in Roman mosaic pavement, and they are indicative of what pleasing work can be designed in this style. No. 576 is a case in point. Other plates are devoted to wall enrichments, as dados and wall tiling, and these range upwards to a high scale of elaborate richness; the others are reserved for fireplace decorations, hearths, jambs, &c., in rich glazes, geometric and other patterns; also with floral and pictorial treatment.

It would be hard for any one, even with unlimited space at command, to do more than indicate some out of the almost unlimited combinations of design that tile work can receive, and it is only truth to say that notwithstanding the variety of patterns, it was impossible to represent the whole of the forms in which tile paving may be laid. Special designs, however, can be prepared in any case, and this for practical purposes is all that is necessary. As all the patterns are numbered, it is only necessary for the customer to quote the number. Any single sheet can be had on application, and thus there is every inducement to preserve the pattern-book itself unmutilated.

THE VALUATION OF THE EDINBURGH EXHIBITION.

THE appeal presented by the agents against the valuation of the Edinburgh Exhibition buildings at 17,797*l.* for taxation was heard before the Burgh Valuation Appeal Court on Friday last.

Mr. Young, Advocate, appeared for the appellants. The appellants, he said, believed that the present buildings put up on their present site to remain there for six months, or according to agreement with the Town Council till October 31, ought not to be treated as subjects which could be truly said to have a yearly value. They were further satisfied that the buildings, if they should fall to be valued as permanent buildings, had been greatly overvalued. In regard to the latter point, it must be perfectly evident that the Assessor in assigning such a high

L'ART,

A COSMOPOLITAN ILLUSTRATED JOURNAL,

CONTAINING TWO VERY FINE ENGRAVINGS IN EACH NUMBER,

Will be published simultaneously in LONDON and PARIS on the 1st and 15th of each month, and will contain articles by the best French writers on Architecture, Painting, Sculpture, Art Galleries, Exhibitions, Dramatic Art, Museums, &c., &c. Reviews will also be given of all new books published on these subjects.

MESSRS. GILBERT WOOD & CO.,

OF 175 STRAND,

Being the Sole Publishers for Great Britain, all Communications should be addressed to them concerning Subscriptions, Advertisements, and Copies of Etchings, Engravings, and Medallions in Bronze, &c., &c., of the French Library of Art.

rental to these particular buildings must have entirely left out of sight the very exceptional circumstances in which they had been raised. The main question was whether these buildings ought to find a place in the valuation roll as subjects to which an annual valuation could be said to attach. It was plain that the statute was never intended to apply to mere temporary erections having an adventitious and flitting value, and liable to removal before the half-year of valuation had run its course. The roll was made up annually, and section 1 of the Act expressed that it was intended to show yearly value. Under section 12 it was provided that it should be in force for a year, so that when the Assessor made the entry referring to the exhibition he represented that these buildings were to be regarded as adding to the extent of 18,000*l.* to the assessable value of subjects within the burgh from Whitsunday last to Whitsunday next. They must be fully aware that before that period expired the buildings there must have ceased to exist. Under section 6 of the statute yearly value, actual or potential, must be the test of value under the statute. The committee were not tenants paying rent. They held occupation at the privilege of the Town Council. The only alternative for the Assessor was to ascertain what these buildings would let for from year to year, and if Mr. Paterson was going to address himself to that problem they could predict for him absolute failure. The only conclusion which a right construction of the statute would afford was, that the valuation roll embraced all lands and heritages capable of yielding an annual rent, and the exhibition buildings did not fall within that category.

Mr. Paterson, the Assessor, held that the argument used regarding the temporary nature of the buildings would apply to any in Edinburgh. A man might appeal against a valuation on the ground that his house might be burnt down before the year was out. He was quite willing to base his case on the other argument as to the lettable value of the exhibition buildings. A common labourer took a house at a shilling a week, and therefore it was entered in the roll at the yearly value of 2*l.* 12*s.* The whole question was—Is this a subject capable of being let from year to year, and if so, at what rental? He would state the grounds on which he arrived at the valuation stated. It had been reached on the basis of sums fixed by the appellants themselves. They got for premises in Old Edinburgh 1,824*l.*; they had got for refreshment bars 4,560*l.*, and they had got for allotted space 11,423*l.*, and these three sums made 17,797*l.* It was called an International Exhibition, but they could call anything an International Exhibition. Any four men—a Scotsman, a Frenchman, a German, and an American—might set up premises and call them an International Exhibition. And they might get somebody to take a back saloon in the premises and put in whisky barrels and beer barrels, and this person would have the privilege of selling whisky and beer, and would pay a rent. He could not understand where the difference was. It was only in magnitude. The exhibition was simply a great shop, and, added to it, they had the attractions of the general aggregation. They had a great many visitors, and they required meat and drink, and a sum of 4,000*l.* was paid for selling meat and drink. He could not understand why a man selling meat and drink in the exhibition should do so without the ordinary percentage and cost of any other assessment in the city. The police were at the exhibition, and it had also necessitated other public expenditure. He would only add that, in bringing up this case, he did not go into any great principles. His reason for serving the notice was simply this:—Here was an interference with the general trade of the city. In some cases, perhaps, it was a hardship on certain of the shopkeepers, who had to pay a heavy rent and taxes. He considered, however, that he would not be entitled to constitute himself a judge as to whether the exhibition should go without paying assessment. The matter was far more one for the Court to determine than for him.

In reply to Councillor M'Intosh,

The Assessor said he had previously assessed temporary buildings.

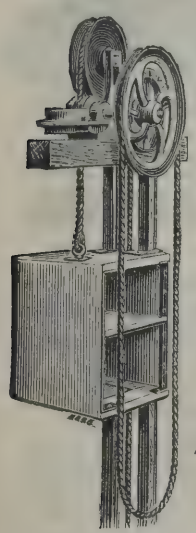
Mr. Young said he ventured to suggest that the malpractices of the Assessor in the past should not be a guide to the Court. Mr. Young added that if the exhibition was to be assessed, 5 per cent. on the actual outlay would be a fair course.

Mr. Brown asked for what reason the Forestry Exhibition was not assessed.

The Assessor: The reason was this:—When the survey was taken there was no building there, and before the supplementary survey it was away.

Mr. Young suggested that was a matter which the Court should consider, that if the exhibition had been held between August and April it would never appear in the valuation roll.

The Court adjourned to consider its decision, and returned after an absence of ten minutes, when Bailie Cranston intimated that the Court had found by a majority that the exhibition buildings were non-assessable.



LIFTS! LIFTS!! LIFTS!!!
PATENT A.B.C. SELF SUSTAINING LIFTS, FOR HAND OR POWER.
CANNOT RUN DOWN, AND FREE FROM JERKY MOTION.
DIRECT ACTING AND MULTIPLYING CYLINDER HYDRAULIC LIFTS,
CONTINUOUS, AND WATER BALANCE INCLINE LIFTS.
LIFTS OF ALL KINDS FOR GOODS OR PASSENGERS,
WORKED BY STEAM, GAS, HYDRAULIC, OR HAND POWER.
SHUTTERS & DIVISIONS,
FOR SHOP FRONTS, GATE OPENINGS, SCHOOL PARTITIONS, ETC.
A. ATTWOOD & CO., LATE Salmon, Barnes, & Co.
LONDON OFFICE:
20 BUCKLERSBURY, E.C.
ULVERSTON, LANCASHIRE.

KALLKOLITH.
TO ARCHITECTS, CONTRACTORS, & BUILDERS.
SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using KALLKOLITH.
IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering. Price per Case of Eight Tins of 14 lbs. each, 40*s.*, packing included. Sample Tins, 6*s.* each.
H. RANSOM & CO., 11 Queen Victoria St., London, E.C.
Agents wanted in every Town in the United Kingdom and Colonies.
KALLKOLITH.



TRADE MARK, REGD.
SPECIAL COARSE SILVER SAND
FOR FILTERING AND GENERAL PURPOSES.
As supplied to the New River and other Water Companies.
Also other descriptions of Sand for Builders, Masons, Plasterers, Tilers, &c., which effects a saving over Washed Thames and other Sand, being Clean and fit for immediate use, not needing any preparation whatever.
Special rates arranged for transit to all parts. *For direct supply and terms address the Sole Proprietor of the Pits,*
JOSEPH ARNOLD, 32 & 18A Polygon, London, N.W.

THE SANITARY CONGRESS.

THE annual congress of the Sanitary Institute of Great Britain, of which the Duke of Northumberland is the president, with Lord Fortescue, Lord Brabazon, Sir Robert Rawlinson, and Mr. Edwin Chadwick, C.B., as vice-presidents, will be held this year at York, and will open on the 21st inst. The Social Science Association will not clash with the practical work which the Institute has set itself to carry out, and the congress will be limited to the consideration of matters affecting the well-being of the community at large. The president of the congress is Sir T. Spencer Wells, and the vice-presidents include the Lord Mayor of the city, the Archbishop of York, the Dean and Sheriff of York, the Duke of Westminster, the Marquis of Ripon, Lord Wenlock, Dr. Richardson, Dr. G. Buchanan, Sir J. Fayrer, the Baroness Burdett-Coutts, Miss Nightingale, Professor Humphry (of Cambridge), the chief aldermen of York, and the mayors of many Yorkshire towns. Sir T. Spencer Wells will give an address, and the sections, which are only three in number, will be, first, under Dr. De Chaumont, "Sanitary Science and Preventive Medicine;" second, under Mr. Baldwin Latham, assisted by Mr. E. C. Robins, "Engineering and Architecture;" and third, under Mr. W. Whitaker, assisted by Mr. G. J. Symons, "Chemistry, Meteorology, and Geology." Lectures to the working classes on Saturday will end the visit of the Institute.

THE SUBURBS OF ST. PETERSBURG.

THE ground on which St. Petersburg is built being at the embouchure of the Neva, on the Gulf of Finland, is subdivided by rivers of various sizes, and thus forms a series of islands. Two of those bounded on the north by the Great Neva are the Kamennoï Island and the Aptekarskoy Island. One of the journals of the city, the *Novosti*, gives the following account of the principal buildings on them:—

Of all the islands of the Neva the most beautiful is Kamennoï-Ostrov (Isle of the Stone). It is only 1,900 yards in length and 700 yards in breadth. Being of but slight elevation it is often submerged, and during the great inundation of November 7, 1824, it was covered by water to a depth of more than 7 feet. It was given in 1703 by Peter the Great to Golovkin, the *protégé* of Nathalie Naryschkine, in reward for a victory gained by him over the Swedes. The only house which then existed there was one constructed by Golovkin, facing the Island of Apothecaries. After his death the island passed into the possession of Count Bestoujew-Rumine, who spent large sums in its adornment. Fisheries were organised, together with a small restaurant, calling itself Vauxhall. The true prosperity of Kamennoï, however, began when Paul I., then Hereditary Grand Duke, became its proprietor. In 1775 he built a palace, which at this day preserves its primitive aspect, and where he loved to pass the summer. Three years after there was opened a hospital, which also exists at present, opposite the Gothic church of the Precursor, dating from the same year and built by the architect Velten, president of the Academy of Fine Arts. This church contains many souvenirs of the Emperor Paul, who was particularly fond of it, and used to visit it even at night for purposes of devotion. When the Order of Malta was introduced into Russia, the cemetery of this church was set apart as the place of sepulture for the knights without distinction of creed, a custom suppressed in 1807. The Emperor Alexander I. had the same affection as his father for Kamennoï as a summer residence, and thither his whole court followed him. In a house adjoining the villa grounds of the present Prince of Oldenburg, Capodistria then lived and afterwards Arakcheiev. At this period the first permanent bridge over the Little Neva was constructed—that of Bethencourt. The Grand Duke Michael, who inherited the island from his sister-in-law, the widow of Alexander I., placed as a trophy in his garden six guns taken from the Turks at Braila in 1828. The Stroganov Bridge and the Theatre Kamennoï-Ostrov, situated on a small square facing the Yelaghinskoï Bridge, were built in 1826. The architect, Schoustov, erected the theatre in one hundred days; it was opened by a concert of Italian artists, and Sonntag sang there in 1830. It was rebuilt in 1844 by Cavos, the architect of the Marie Theatre and of the Grand Theatre of Moscow. A French company of actors opened the new theatre, and to one of them, Allan, an adjoining house and grounds were given as a residence. The entertainments were varied—comedy, ballet, Russian opera, and spectacular pieces. At present years often elapse without any performance, though the building is maintained in its integrity. During the widowhood of the Grand Duchess Helen Paulovna, life at Kamennoï became very subdued. The gardens were closed to the public, and their mistress only showed herself in a carriage when a band played in front of the theatre. She, however, sometimes organised open-air concerts on a magnificent scale, and on one of these occasions ten grand pianos

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

SHOP SHUTTER SHOES.
NO SHUTTER BARS REQUIRED.
HARRISON'S PATENT SELF-FASTENING BEST MALLEABLE IRON SOLID BEAD SHOES
Extensively specified, and used by Architects, Surveyors, and Builders. The Solid Bead greatly protects the Corners of Shutter from wear in removal. Terms Cash. Illustrated List on application.
JAMES HARRISON, 35 Union Street, { BOROUGH, LONDON.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

BY HER MAJESTY'S ROYAL LETTERS PATENT.
ESTABLISHED A.D. 1774.
AUSTIN'S
NEW IMPERIAL PATENT
SUPERFINE FLAX LINE.
The above article is now being manufactured and sold in large quantities for Greenhouse Sashes, Public-house Shutters, and other heavy work. The Manufacturers would recommend it for its strength, and the large amount of wear in it, consequent on its peculiar manufacture.
AUSTIN'S IMPERIAL PATENT FLAX SASH AND BLIND LINES (two Prize Medals awarded). The manufacturers of the above articles particularly wish to draw the attention of the trade to their Imperial Patent Flax Sash Lines, of which they are now making six qualities, all of which they can strongly recommend, as they have given unqualified satisfaction to the trade for now over One Hundred Years; and the Proprietors continue to give their personal attention to the manufacture of these goods.
They also invite the particular attention of the trade to their IMPERIAL PATENT BLIND LINES, which are very superior to anything yet offered.
They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in town and country.
N.B.—Please note that all our goods as advertised above are labelled either inside or outside, with our Trade Mark—The "Anchor."

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely Bound in Cloth, Gilt Lettered, price 12s. 6d.
Office: 175 Strand, London, S.W.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
Legal and Commercial Stationery.

A. J. SHAW,
58 & 60 Gower Street, Sheffield,
MANUFACTURER OF
Coloured Varnishes & Wood Stains,
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

were played on by forty hands. The palace and the island belong at the present day to the Grand Duchess Catherine Michaelovna. Formerly the island was distinguished for its numerous aristocratic villas, but now, with the exception of those of the Prince of Oldenburg, of Count Stroganov, and of Mr. Mordvinov, there are no longer any residents but merchants. In one of the villas facing Novaïa Derevnia the great poet Pouschkine lived fifty years ago.

Apothecaries Island is much larger than Kamennoï, from which it is separated by the Little Neva ; its length is two and a half versts, and its breadth one. In Peter the Great's time it had a powder factory and a small garden of medicinal plants (hence its name), the germ of the noble Botanical Gardens now existing in the same locality. In 1705 Roman Bruce defended Apothecaries Island against the Swedes who held Kamennoï, and forced them to retire. In the last century there were a great many country houses of a modest class, which still continued in fashion forty years ago. The composers Glinka and Dargomyjski, as well as the poet Batuschkov, had their homes there. These suburban pastures have often been resorted to by our novelists. At present people in trade are in almost complete possession of Apothecaries Island, where formerly numerous aristocratic villas were to be found. Thirty years ago one went to see the camellias and the orangeries of Count Nesselrode, and the stags in the park of Prince Lopoukine, whose place was since bought by Gromov. The latter had in his service the famous gardener Odintsov, by whose aid he worked marvels in the grounds of his villa. The wealthy Garfunkel, who had about the same time bought the superb demesne of Count Gouriev, wished to compete with him, but was ruined in the effort. Later on many fruitless attempts were made to make the property pay with *cafés* and casinos, and the attraction of gipsy and Tyrolean musicians. We may mention the fate of another ci-devant villa, that of Voronine, whose proprietor used to regale his guests with sturgeon 150 lbs. in weight, served on silver ; his house is now an asylum for pauper children. A large number of small country houses have lately been demolished to make room for a timber-yard. There were two cemeteries in Apothecaries Island in the days of the founder of the city, one of them for Germans. Contemporary writers relate shocking things about the robbery and desecration of the coffins which took place nightly. An extensive vegetable garden now occupies the site of these horrible scenes. Twenty years ago the villa gardens of Sapojnikov, one of the lights of the Russian sporting world, skirted the cemetery, and at a little distance stood the famous Laval demesne and park which had belonged to Count Borch. Two other properties noted for beautiful flowers and exotic plants were those of Zoubov and Viazemski, situated along the Kamennoï-Ostrov Prospect.

SEA WATER FOR WATERING ROADS AND FLUSHING SEWERS.

A REPORT has been presented to the Bournemouth Commissioners by Mr. G. R. Andrews, C.E., the surveyor, on the extent to which sea water is used for watering roads in various towns. It contains the following replies from town surveyors who were asked for information :—

Portsmouth.—I beg to inform you that about two years ago I introduced salt water for the purpose of watering the streets and the supply of our public baths. I am of opinion that where salt water can be pumped at a cost not greater than that which fresh water would entail, it is better to use salt water than fresh for the purpose of watering streets. The effect lasts much longer, so that less watering is required. From my observation, I think salt water disintegrates granite roads a little ; but with gravel roads my opinion is that the effect is to bind them, and thus improve them. The effect of watering with sea water is no doubt to cause a greater humidation or dampness upon the surface of the roads than when fresh water is employed. In addition to this, a sort of film or skin is formed upon the surface, which keeps down the dust and apparently tends to preserve the road. It has been stated that the action of the brine on the organic matter on a road has a bad effect, but I have not hitherto found this to be the case : on the contrary, I believe that dampness, accompanied with salt, which is a preservative, would cause less nuisance than the same amount of dampness where the salt was not present. I am of opinion that the use of salt water for watering roads is economical, not only because it can be pumped for about threepence per thousand gallons as against sixpence which is paid to the Water Company, but also from the fact that one load of sea water will go as far as three loads of fresh. I have noticed, however, that with granite macadam roads, the effect of watering with salt water is slightly to disintegrate the surface. This is very noticeable when a slight shower falls upon a macadam road after it has been well watered with salt water. This effect is not so noticeable with gravel roads, and I therefore think

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

that watering with salt water is better adapted for gravelled than for macadamised roads. It has also been stated that the effect of watering roads with salt water which are adjacent to shops containing delicate goods such as silks, jewellery, steel, &c., is likely to cause some damage to these goods, owing to the air containing a more than usual quantity of moisture, but of this statement there seems to be no proof.

Weymouth.—The principal streets of this borough are watered with sea water, giving great satisfaction. The salt forms a crust on the surface, which keeps the dust from rising.

Harwich.—We have used sea water for street watering and for flushing our low-level sewers since 1879, with very satisfactory results. My Board have just received the sanction of the Local Government Board, and intend to put down one of Davey's 2 horse-power motors and build a reservoir, so as to have a constant supply of sea water for watering suburban roads and for flushing our high-level sewers. My own experience is that sea water does not tend to disintegrate the roads; that it keeps the dust down at least twice as long as fresh water; that it mixes with disinfectants—Sanitas and Jeyes' perfect purifier; and that the cost of getting and distributing is from 25 to 27 per cent. less than the cost of fresh water at 1*s.* per thousand gallons.

Grimsby.—With respect to the advantages of using salt water on the roads, I think I may safely say that my committee are so pleased with the results that they do not intend to revert to the fresh water, even when the company are in a position to supply it. The salt water, when it has dried on the roads, leaves a thin coating of salt on the surface, which prevents the dust rising, and also when the air becomes humid the salt seems to give, and it keeps the road always moist. I might also state that last year we saved 72*l.* on our street watering account through using salt water.

Great Yarmouth.—The cost of water to supply these flushing tanks and the large movable tank led to discussion as to whether it would not be advisable to provide our own supply for sewer flushing and street watering. Of course opposition was raised to this. Scientific evidence was obtained to prove that sea water would be both injurious to roads and health, and under my advice the opinion of the borough surveyor of Portsmouth was obtained on this subject, and at the inquiry held before the Inspector of the Local Government Board, he completely (or at least to the satisfaction of the Inspector) demonstrated that all the evil charges made against it were untrue, and that much good might be expected both on roads and in sewers by its use. I had had previous experience in road watering with it; found that it was much more efficient in laying dust, and that roads in the summer-time were less liable to break up than where fresh water was used, but advised that one section of the town should be watered for a whole season. This was done. A large expense was saved in quantity of water used, and also gravel, which it had been necessary on previous occasions to use for patching. The Council had, during the year previous to this matter being brought on, used about ten million gallons of the Company's water to flush sewers and water the roads in the district which I proposed should be served with sea water. This ten million gallons had cost 552*l.* 0*s.* 6*d.*, while the average cost of the water for seven years, in which little or no flushing had been done, came to 404*l.* 6*s.* 7*d.*, and I estimated that to supply the flushing necessary to keep our sewers clean would involve an outlay of at least 700*l.* per annum, and for this we should receive about fourteen million gallons only. The scheme I prepared involved fixing an Otto gas engine of eight horse-power (making the third I have now fixed for this Council, the previous ones working admirably), with pump, the erection of a tower and cast-iron tank to hold twenty-two thousand gallons, six miles of distributing pipes of 8-inch, 7-inch, 6-inch, 5-inch, 4-inch, and 3-inch internal diameter, with forty valves for flushing and forty hydrants for street watering; six flushing tanks of two thousand to three thousand gallons capacity are also included (making twelve I have now at work), and much to my surprise my estimate only came out at 4,500*l.*, and Messrs. H. F. Snow & Co., of London, are now at work upon the scheme, and within a month of completion, the contract price being 3,987*l.*, while works not included in this contract may perhaps amount to about 200*l.* These figures give a clear gain to the Corporation, as may be seen below :—

Interest and repayment of loan on 4,500*l.*	£270 0 0
Working expenses, depreciation, and small additions per ann.	140 0 0
Total annual cost	£410 0 0

For this sum the plant I have erected will raise in 120 days of ten hours each thirty million gallons, of which about five million gallons will go to the streets, while the remaining twenty-five millions will go into the sewers; and more can be raised at less than 1½*d.* per thousand gallons, as less water is used for street watering. A considerable save will also be made in horse hire. This I estimate at about 80*l.* per annum.

Equitable Fire & Accident Offices

FINANCIAL POSITION.

	Fire Co.	Accident Co.
Capital Subscribed	£263,335 —	£142,175
Capital Paid Up	52,667 —	28,435
Annual Income	88,943 —	21,264
Funds and Investments	98,969 —	36,528

HEAD OFFICE: 11 & 13, ST. ANN ST., MANCHESTER.

BRANCHES:
LONDON - - - 69, Lombard Street, E.C.
GLASGOW - - - - 101, St. Vincent Street.
BIRMINGHAM - Midland Bdgs., 2, New St.
LIVERPOOL - - - - 11, Tithebarn Street.
NEWCASTLE - 1, St. Nicholas Buildings.
BELFAST - - - - - - 6, Royal Avenue.
DUBLIN - - - - - - - - 18, Dame Street.

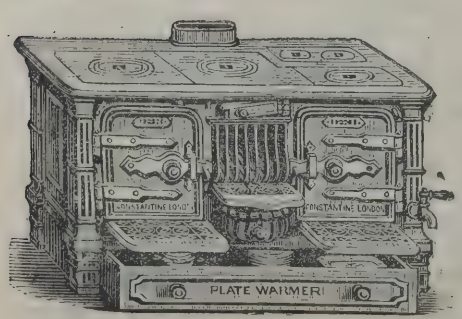
Special Feature.

ONE PREMIUM RETURNED every FIFTH YEAR to those who have made no Claim.

AGENTS APPOINTED.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S



PATENT "TREASURE"

COOKING RANGE,

With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

Birkenhead.—Salt water pumped from the docks has been used in this borough, especially the central portion, for a great number of years for street-watering purposes. Also that a spread of salt water on a macadam road is as effective in laying down the dust as three spreads of fresh water; so that the tradespeople rather prefer the use of salt water for this purpose. There is just the question, in a town where there is much carriage traffic, of the salt water having a tendency to corrode the tires of the wheels. So far, however, we have had only two complaints of this in Birkenhead, although, as stated above, salt water has been in use many years.

*Blackpool.**—We use sea water for watering streets and flushing sewers. I beg to inform you that we use nothing else. Our streets are all watered with sea water, and practically I find no grievance arising therefrom. We also flush our sewers with sea water, and have found no serious consequence.

Ryde.—We use salt water for watering streets and find it very advantageous. I consider one load of salt water is equivalent to two loads of fresh; it also makes a hard crust on the road.

Hastings.—I find it a great advantage; the salt water keeps the roads damp for a much longer period than fresh water, and it is a capital thing for flushing sewers, gulleys, &c. Here salt water mains run over the greater part of the district for street watering, gulleys, &c., and of course the supply is unlimited. I think if you adopt this system you will never regret it.

Worthing.—I beg to say that we have watered a considerable portion of our town with sea water for many years. My experience is that it keeps the roads damp at least twice as long as fresh water, and forms a kind of crust on the surface of the roads, which not only keeps them together, but also prevents the dust from moving for a considerable time after they are dry.

Plymouth.—We use sea water for road watering as much as possible. It answers perfectly for macadam roads, but makes paved roads very slippery.

Liverpool.—Sea water possesses the advantage of remaining moist for a greater length of time, especially when the atmosphere is slightly damp. Its disadvantages are—greater injury caused to the valves and distributing pipes of the water-carts; and, as you may be aware, it is said to be injurious to some textile fabrics, but as a matter of fact we have had no complaint of this from silk mercers or drapers.

New Shoreham.—I beg to inform you that I use salt water for both purposes—watering roads and likewise flushing. Have found where used on the roads they are more lasting and much harder than roads watered with fresh, and take twice the time to dry than if fresh water had been used.

Whitby.—We use sea water for watering in certain parts, chiefly for the larger portion of the town, and find it answers our purpose much better than fresh. The saline matter appears to leave a coat on the road surface which causes it to remain smooth and compact much longer than when fresh water is used. This, however, though an advantage on comparatively level ground, is, as you will readily see, somewhat of a disadvantage on hills, as they become so firm and smooth that horses cannot stand on them, and when all our streets are watered with salt water I soon have complaints. Our general rule, which I find a perfectly safe one, is to use salt water (sea water) for all streets whose gradient does not exceed 1 in 20. This, in our exceptionally hilly town, excepts several streets, though I do not suppose it will affect you much.

Tynemouth.—I beg to inform you that sea water is used in this borough for watering the streets and flushing the sewers. The advantage it has over fresh water for watering the streets is that it hardens and binds the surface of macadamised roads, and one watering with salt water would equally serve as well as two or three times watering with fresh water.

Upon receiving the above replies, I thought it necessary to visit the following towns:—Portsmouth (which includes Southsea), Hastings and St. Leonards, and also Great Yarmouth, and at these places from personal observation, I have great pleasure in stating I am able to bear my testimony in support of the experience of the above coast towns. At Southsea the roads have been watered about two years, and the public baths supplied with sea water. At Hastings and St. Leonards the roads have been watered for about eighteen years. They also supply the hydropathic establishments, baths, hotels, and other places with sea water. At Great Yarmouth the works necessary for pumping sea water with mains, tower, with cast-iron tank, &c., for watering the streets and flushing the sewers have been completed about six weeks, and after inspecting the works I have no hesitation in saying it is the most complete work of its kind.

Mr. Andrews has recommended the use of sea water in Bournemouth, by which a saving of 280*l.* a year is anticipated.

* The sea water works belong to a private company, who have a large tank and pumping engine.

BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.

Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.

Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

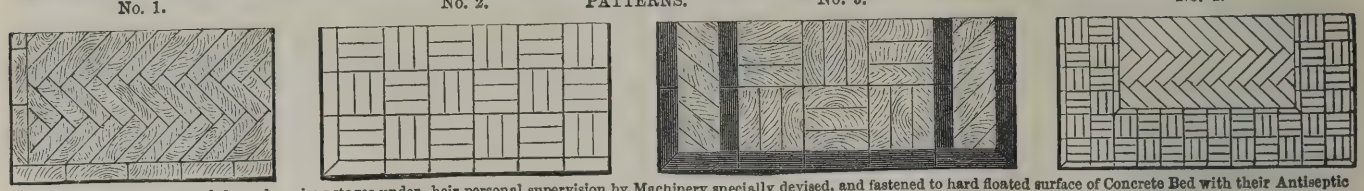
THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

PATTERNS.

No. 1. No. 2. No. 3. No. 4.



Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

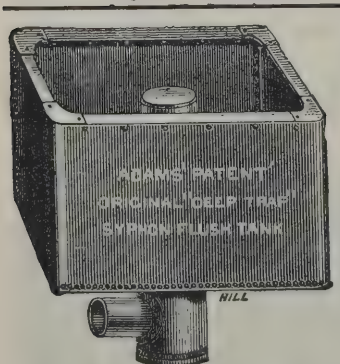
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to :—

BRISTOL..... **St. Philip's Marsh.**
EXETER..... **Basin Head.**
SOUTHSEA..... **Beaufort Road.**
READING..... **Caversham Road.**
DUBLIN..... **14 St. Andrew's Street.**
MANCHESTER ... **20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

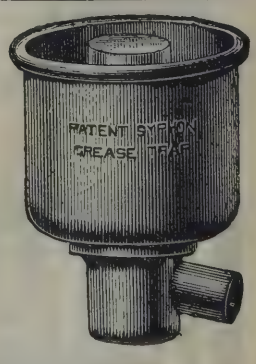


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
„ **FLUSH SYPHONS** for Sewer Flushing.
„ **FLUSH LATRINES** for Barracks, Schools, &c.
„ **FLUSH URINALS** „ „ „
„ **TROUGH CLOSETS** „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, September 17, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, SEPTEMBER 24, 1886.

THE ARCHITECT AND CONTRACT REPORTER.

ADVERTISEMENT SCALE.

For Two Lines and under (eight words to the line)	£0 2 6
For every Additional Line	0 0 6
For Quarter Page	2 10 0
For Half Page	4 10 0
For a Page	8 8 0
For 1 inch deep by 2½ wide	0 7 6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & CO., 175 *Strand, London, W.C.*

EDITORIAL NOTICES.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested as much as possible to make their communications brief. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

COMPETITIONS OPEN.

BISHOPWEARMOUTH.—Sept. 25.—Plans, &c., are invited for the Erection of School Buildings for 1,300 Children. Mr. T. W. Bryers, Clerk to the School Board, Sunderland.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

ELLAND.—Nov. 9.—Plans are invited for the Erection of a Town Hall. Mr. J. L. Garsed, Hon. Secretary, Town Hall Company's Offices, Southgate, Elland.

LEEDS.—Oct. 9.—Designs are invited from Architects of Leeds for proposed Art Gallery and Museum. Mr. G. W. Morrison, Town Clerk, Leeds.

LEWES.—Oct. 9.—Designs and Estimates are invited for Public Hall and Offices, by way of addition to present Buildings. Mr. A. Holt, Borough Surveyor, Town Hall, Lewes.

CONTRACTS OPEN.

BALLOCH.—Sept. 27.—For Removing Bridge over the River Leven and Erecting Iron Girder Bridge. Messrs. Crouch & Hogg, C.E., 175 Hope Street, Glasgow.

BRADFORD.—Sept. 24.—For Building Four Cottages, Girlington Road. Mr. William Rycroft, Architect, Bank Buildings, Manchester Road, Bradford.

CLONTARF.—Sept. 27.—For Constructing Series of Main Sewers, Fairview District. Mr. W. Stirling, Surveyor, 107 Stephen's Green, Dublin.

GREAT YARMOUTH.—Sept. 30.—For Building Three Houses, Bath Hill. Mr. W. B. Cockrill, Architect, Glencoe House, Gorleston.

HALIFAX.—Sept. 30.—For Building Nine Cottages at Stannary. Messrs. George Buckley & Son, Architects, Waterhouse Street, Halifax.

INDIA OFFICE.—Sept. 28.—For Supply of Ironwork for Waggons. The Director-General of Stores, India Office, Whitehall, S.W.

LEEDS.—September 24.—For Erection of Dog Kennels at the Highway Depôt. The Borough Engineer, Municipal Buildings, Leeds.

MARSDEN.—Sept. 24.—For Building Two Cottages. Mr. A. Shaw, Architect, Knowle, Golcar.

MOUNTSORREL.—Oct. 11.—For Erection of Casual Wards at the Workhouse of the Barrow-upon-Soar Union. Mr. Fairfax Scott, Clerk.

PORTSMOUTH.—Sept. 28.—For Constructing Ventilating Shafts in connection with Sewers. Mr. A. Hellard, Town Clerk, Portsmouth.

REDDISH.—Oct. 7.—For Construction of Brick Sewers (1,830 yards) and Works in Connection and for Supply of 18-inch Cast-iron Sewage Pipes (1,800 yards). Mr. R. Vawser, Engineer, 17 Cooper Street, Manchester.

STAPLETON.—Sept. 29.—For Additional Buildings at the Bristol Lunatic Asylum. Mr. H. Crisp, Architect, 31A Clare Street, Bristol.

TUBERCURRY.—Sept. 27.—For Building Medical Officer's Residence. Mr. W. H. Byrne, 20 Suffolk Street, Dublin.

YORK.—Sept. 25.—For Rebuilding House and Shop, Coney Street. Mr. W. G. Penty, Architect, Clifford Chambers, York.

TENDERS.

BRIGHTON.

For Sanitary and other Alterations and Additions to No. 17 Park Crescent, for Mr. R. B. Ross. Mr. E. GRITTON, M.S.A., Surveyor, Brighton, London and Sidcup.

George Rose, Brighton	£85 0 0

BOGNOR.

For Building Post Office, Shop, Buildings, &c., High Street, for Dr. Walter Smith. Mr. ARTHUR SMITH, Architect. Quantities supplied.

Jones, Selsey	£1,858 0 0
Woolgar & Sons, Horsham	1,849 0 0
Snewin, Littlehampton	1,824 0 0
Brown, Braintree	1,810 0 0
Adlington, Bognor	1,778 0 0
Wm. Smith, Worthing	1,698 0 0
Davey, Bognor	1,698 0 0
Sawle, Worthing	1,670 0 0
BOOKER BROS., Bognor (*accepted*)	1,644 0 0

BRISTOL.

For Paving the Carriage-ways of Baldwin Street, Castle Street, and St. Peter's Street with Asphaltic Wood Paving, for the Bristol Sanitary Authority.

BRADSHAW & CO., London and Bristol (*accepted*).

HEXHAM.

For New Premises, Cattle Market, for Mr. John Young. Mr. HENRY GRIEVES, A.R.I.B.A., Architect, South Shields.

WILLIAM BLAND, Hexham (*accepted*)	£1,047 14 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.

BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.

LONDON DEPOT:—S.W. RY, RIVERSIDE NINE ELMS.

CARLISLE.

For Building Hotel, Cocoa and Dining Rooms, Victoria Viaduct, Carlisle. Mr. J. SMITHSON MOFFAT, Architect, Whitehaven.

Full Tenders.

W. H. Davidson, Carlisle	£2,260 0 0
T. Creighton, Carlisle	2,239 0 0
J. REED (*accepted*)	2,044 9 0

Mason Work.

Robert Little, Carlisle	1,408 0 0
J. & W. Baty, Carlisle	1,320 0 0
James Mitcalf, Carlisle	1,260 0 0
T. Creighton, Carlisle	1,217 0 0
James Beaty, Carlisle	1,200 0 0
J. E. Bell, Carlisle	1,159 0 0
J. W. Laing, Carlisle	1,135 0 0

Joiner Work.

W. & R. Court, Carlisle	738 6 0
Walter Armstrong, Carlisle	695 0 0
W. H. Davidson, Carlisle	685 10 0
W. Court, Carlisle	665 0 0
J. Fletcher, Carlisle	520 0 0
J. Reed, Carlisle	519 0 0
Baty & Foster, Carlisle	425 0 0

Plumbing.

David Thompson, Carlisle	149 13 6
W. Anderson, Carlisle	132 0 0

Painter.

J. Armstrong, Carlisle	127 0 0
Thomas Palmer, Carlisle	107 0 0
David Canning, Carlisle	104 0 0
Kirk & Robley, Carlisle	100 0 0
C. R. Hannah, Carlisle	95 11 0
D. Harkness, Carlisle	72 2 0

Slater.

Miles Newton, Carlisle	43 2 6
T. Mandle, Maryport	37 0 0
C. T. Nanson, Carlisle	33 10 6
W. Smith & Son, Carlisle	33 0 0

Plasterer.

Lawson Bros., Carlisle	122 0 0
R. M. Ormerod, Carlisle	109 0 0
S. Ferguson, Carlisle	92 0 0
James Harrington, Carlisle	78 0 0

No Bellhanger Tender accepted.

EXETER.

For Erection of Police Court, Station, and Cells, for the City and County of the City of Exeter. Mr. JOHN MORGAN PINN, Architect, Exeter. Quantities by the Architect.

Woodman	£5,350 0 0
Scadding & Son	5,190 0 0
Gibbard	5,189 0 0
Stephens	5,058 0 0
Gibson	5,040 0 0
Phillips	4,892 0 0
GOODING (*accepted*)	4,750 0 0

FOLESHILL.

For Erection of Three Houses at Great Heath, Foleshill, Warwickshire. Mr. A. RANDLE, Architect, Edgewick, Foleshill.

Haddon, Son & Bunney, Bedworth	£717 0 0
J. Isaac, Foleshill	599 0 0
J. Kelley, Foleshill	580 0 0
T. Wright, Foleshill	535 10 0
A. RANDLE, Edgewick, Foleshill (*accepted*)	499 0 0

HASTINGS.

For Erection of Four Houses in Stonefield Road, for Mr. T. Tassell. Mr. A. A. G. COLPOYS, A.R.I.B.A., Architect, 33 Havelock Road, Hastings. Quantities by Mr. W. Cooper.

P. Jenkins	£1,880 0 0
A. Vidler	1,860 0 0
A. H. White	1,840 0 0
H. E. Cruttenden	1,827 0 0
C. Hughes	1,820 0 0
T. W. Morris	1,819 0 0
H. & F. Rhodda	1,798 0 0
J. Elliott	1,758 0 0
D. H. Snow	1,740 0 0
Moon & Garner	1,634 5 0
W. Cousens	1,620 0 0
W. Duffie	1,596 0 0
A. Ashdown	1,559 16 0
J. Lester	1,490 0 0
W. Elliott	1,480 0 0
W. E. Warman	1,450 0 0
G. AUSTIN (*accepted*)	1,185 0 0
P. Fryer	1,175 0 0

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

HIGH WYCOMBE.

For Laying Limmer Asphalte Footways in Castle Street, for the Corporation. Mr. J. BOWEN, A.M.I.C.E., Borough Surveyor.

BRADSHAW & Co., London and Bristol (*accepted*).

HOLLY HILL.

For Mansion at Holly Hill, Sussex. Mr. J. O. SCOTT, Architect. Quantities by Messrs. J. S. Lee & Sons.

Waters	£10,416 0 0
Dove Bros.	9,010 0 0
Barnes	8,560 0 0
Thompson	8,467 0 0
Berry & Bussey	8,452 0 0
Chapple	8,436 0 0
Lawrence & Son	8,348 0 0
Pledge	8,150 0 0
Cheesman	7,920 0 0
Smith	7,909 0 0
Box	7,774 0 0
Norman	7,643 0 0
Foster & Dixey	7,574 0 0
Dobson	7,534 0 0
LONGLEY (*accepted*)	7,246 0 0

IRTHLINGBOROUGH.

For Erection of Four Cottages, for Mr. W. Woolston. Mr. E. SHARMAN, Architect, Croyland Abbey, Wellingborough.

W. Howe, Oundle	£767 0 0
G. Dawkins, Wellingborough	750 0 0
F. & J. Cooper, Wollaston, Wellingborough	712 0 0
R. Marriott, Wellingborough	698 0 0
W. Stevens, Wellingborough	690 10 0
C. Sharman, Kettering	670 0 0
G. Henson, Wellingborough	669 0 0
S. & A. Lewis, Isham, Kettering	650 12 0
C. Bayes, Rushden, Higham Ferrers	642 14 0
W. H. Henson, Finedon, Wellingborough	640 0 0
G. Hacksley, Wellingborough	639 0 0
T. & C. Berril, Mears Ashby, Northampton	620 0 0
J. Slinn, Wellingborough	595 0 0
Clayson Borough, Cogenhoe, Northampton	587 0 0
A. Thompson, Irthlingborough	559 0 0
J. Ward, Higham Ferrers	540 0 0

KETTERING.

For Road-making in Mill Lane. Mr. J. A. GOTCH, Surveyor.

F. Barlow	£440 0 0
G. V. Henson	396 0 0
C. & F. HENSON (*accepted*)	395 0 0

LEWISHAM.

For Rebuilding the White Hart, High Street, Lewisham, for Messrs. H. & V. Nicholl. Mr. ALBERT L. GREY, A.R.I.B.A., Architect, 78 High Street, Lewisham. Quantities supplied.

Balaam Bros.	£2,420 0 0
W. Bennett	2,275 0 0
H. Bridel	2,200 0 0
Kennard Bros.	2,186 0 0
S. J. Jerrard	2,079 0 0
T. Knight	2,025 0 0
M. Redman	1,975 0 0
H. L. HOLLOWAY *	1,967 0 0
Jackson & Todd	1,949 0 0

* Accepted subject to certain deductions of stonework, &c.

LONDON.

For Proposed Alterations and Repairs at Nos. 90 and 92 New Oxford Street, for Mr. R. E. ARDEN. Messrs. E. W. CLIFTON & SON, Architects. Messrs. Williams & Gritten, Surveyors.

Brass & Son	£1,664 0 0
Ashby & Horner	1,625 0 0
Morter	1,625 0 0
Lawrance	1,504 0 0
Conder	1,347 0 0
Spencer & Co.	1,138 0 0
Puzey & Lumley	1,105 0 0

For New Hall and Auction-rooms, Bayswater Road. Mr. F. DOVEY, Architect.

Stephens & Hayworth	£595 0 0
J. & H. Grant	475 0 0
F. Saunders	455 0 0
J. Bowles	415 0 0
G. White	380 0 0

For Alterations at No. 171 High Street, Stoke Newington, N. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within, E.C.

Batchelder	£177 0 0
Goodall	165 0 0

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

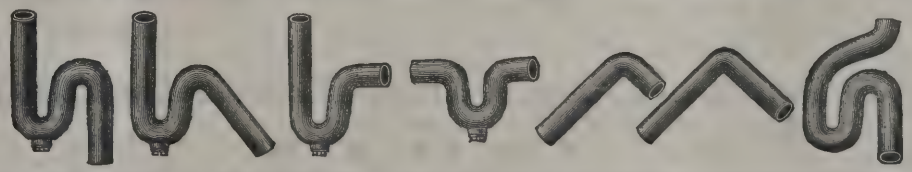
WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works:—15 BRITANNIA STREET, KING'S CROSS, W.C.

LONDON—*continued.*

For Erection of Institute and Governor's House in connection with Dr. Barnardo's Home, Stepney, E. Mr. R. HARRIS HILL, Architect.

Brass	£15,600 0 0
Mowlem & Co.	14,785 0 0
Holliday & Greenwood	14,460 0 0
Chappell	14,343 0 0
Higgs & Hill	14,198 0 0
Holloway	13,950 0 0
PERRY & CO. (*accepted*)	13,308 0 0

For Repairs and Alterations to the West Brompton Branch of London and South-Western Bank, Fulham Road. Messrs. T. & W. STONE, Architects, 2 Great Winchester Street, London Wall, E.C.

R. W. Haslock	£548 0 0
A. E. Braid	520 0 0
Lascelles & Co.	457 0 0
Bright & Co. (*too late*)	455 0 0
H. SMITH & SON (*accepted*)	440 0 0

For Alterations and Addition to No. 231 Upper Street, Islington. Mr. WM. SMITH, Architect, Gresham Buildings.

Sage & Co.	£593 0 0
Lark	434 0 0
Mattock Bros.	433 0 0
Dearing & Son	408 0 0
Langham	399 0 0
Drew & Cadman	385 0 0
Ward	382 0 0
Clark Bros.	370 0 0
Steel Bros.	310 0 0

For Repairs and Alterations to the Holly Bush Assembly Rooms, Hampstead.

Potter	£385 0 0
Grey	362 10 0
Watts	345 0 0
Roff & Son	340 0 0
G. COOK (*accepted*)	263 15 0
Pritchard & Son (*withdrawn*)	252 0 0

For Extending Playgrounds, Middle Class Schools, Kingsland, E. Mr. J. J. THOMSON, Architect.

Laing	£387 0 0
Sargent	312 0 0
Exton & Burton	312 0 0

LONDON—*continued.*

For Repairs at the Homerton Workhouse.

Seabrook & Sons	£1,604 15 0
S. Blow	1,250 0 0
Hewitt & Lamb	1,210 0 0
H. Baldwin	950 0 0
B. Wood	941 0 0
J. Weeks & Son	898 10 0
W. Shurmur	792 0 0
W. Booker & Co.	775 0 0
J. Burton	755 0 0
G. S. Pritchard & Son	738 0 0
C. Willmott	695 0 0
Dicksee & Dicksee	625 0 0
J. Robson	619 0 0
R. Roper & Son	580 0 0
J. Church & Co.	525 0 0
W. Martin	485 0 0
A. W. DERBY, Dock Road (*accepted*)	482 0 0

For Repairs, New Cistern, Water-closet Fittings, and External Painting at the Workhouse, Bishop's Road, Bethnal Green. Messrs. T. & W. STONE, Architects, 2 Great Winchester Street, E.C.

Smeaton	£1,675 0 0
Hammond	1,384 0 0
Wire	1,248 0 0
Jackson & Todd	1,020 0 0
Godfrey & Son	989 0 0
Thomerson	988 0 0
Brown	960 0 0
Dixon	955 0 0
Greatorex	935 0 0
Vigor	930 0 0
Wythe	875 19 0
Marshall	850 0 0
Simpson	849 0 0
Gregar	834 0 0
Salt	820 0 0
Hill	820 0 0
Lily	686 0 0
Willmott	680 14 8
Edwards	662 0 0
J. T. PEPPIATT, Hoxton (*accepted*)	559 0 0
Church	489 0 0

THE
London Drawing Office
AND
ARCHITECTURAL STUDIO.
(LLOYD AND CO.)
ESTABLISHED 1878.
37, Great James Street, Bedford Row, W.C.
Managing Director, EDWD. H. LLOYD, Architect & Surveyor.
WM. YOULTEN, Secretary.
Cheques crossed LLOYDS, BARNETTS & BOSANQUETS.
Office Hours: 9.30 to 5.30. Saturdays to 2.
The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as—Surveys; Designs; General, Working and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c., on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Illumination; Heraldic Work.
Estimates by return of post on receipt of full particulars.
REGISTERED TELEGRAPHIC ADDRESS:—
"ARCHITECTURE, LONDON."

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply BERRY, 6 Great St. Helen's, E.C.

E. SCOTT & CO., 166 City Road.—Estab. 1861.
E. SCOTT & CO.,
Sole Manufacturers of the Improved Patent
MICA LETTERS,
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.,
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
166 CITY ROAD, LONDON.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.
Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions.—STEVENS & CO., Ceres Ironworks, Kingston-on-Thames.

GRUNDY'S PATENT
WARM-AIR
VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
JAMES WEIR, F.R.I.B.A."
"To Mr. Grundy.
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

LONDON—*continued.*

For Decorative Repairs at the Young Prince Tavern, Crisp Street, Poplar, E. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within, E.C.

Vincent & Co.	£133 10 0
G. J. Jefferies	96 0 0
Jackson & Todd	83 0 0
Dainton	80 0 0

For Improvements at the Unicorn Hotel, Norton Folgate, E.C. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within, E.C.

Contractors.

Goodall	£499 0 0
Steel Bros.	430 0 0
Jackson & Todd	410 0 0
Raney	396 10 0
Walker	350 0 0
Dainton	330 0 0

Gasfitters.

Price	247 3 6
Winn	238 10 0
Masterman	232 0 0
Christian	152 12 0
Steadman	125 0 0

Pewterers.

Pringle	46 0 0
Padden	45 0 0
Heath	33 10 0
Phillips	30 0 0

LOUGHBOROUGH.

For Erection of new Board Schools in Shakespeare Street.

James Harding	£4,020 0 0
Wm. Moss	3,999 0 0
Wm. Corah	3,770 0 0
Thos. Barker	3,752 0 0
A. Faulkes	3,724 0 0
WM. NEEDHAM (*accepted*)	3,622 0 0

SOUTH SHIELDS.

For Alterations and Additions to Westoe House, Westoe, for Mr. William Gowans, M.D. Mr. HENRY GRIEVES, A.R.I.B.A., Architect, Albany Chambers, South Shields.

William Scott, South Shields	£1,156 13 11
W. MUNELL HUDSON, South Shields (*accepted*)	1,130 10 0

ST. MARY CRAY.

For Alterations at the Rookery. Mr. ARTHUR VERNON, Architect, 26 Great George Street, Westminster, and High Wycombe.

Downs	£2,586 0 0
Innes	2,272 0 0
ALDIN & PLATER (*accepted*)	1,998 0 0

SUNDERLAND.

For Alterations and Additions to the Miners' Hall, for the Durham Miners' Association. Mr. HENRY GRIEVES, A.R.I.B.A., Architect, South Shields.

JOHN G. SMITH, Sunderland (*accepted*)	£215 0 0

SWINDON.

For Erection of Stabling at the V. W. H. Repository. Mr. W. H. READ, Architect, Corn Exchange, Swindon.

Phillips, Swindon	£421 0 0
Wiltshire, Swindon	382 10 0
BARRETT,* Swindon	370 4 0
*Accepted at	360 0 0

SYDENHAM.

For Rebuilding Stables, &c., at rear of The Woodman, High Street, Sydenham, for Messrs. H. & V. Nicholl. Mr. ALBERT L. GREY, A.R.I.B.A., Architect, 78 High Street, Lewisham.

J. HOARE, Lewisham (*accepted*).

WEST HAM.

For Extension of Grange Road Board Schools. Mr. J. T. NEWMAN, Architect. Quantities by Messrs. Curtis & Sons.

	Buildings.	Foundations.
Wall Bros.	£3,610 0 0	£645 0 0
Hoskings	3,553 0 0	559 0 0
Cattley	3,545 0 0	630 0 0
Wood	3,497 0 0	620 0 0
Morter	3,443 0 0	597 0 0
Nightingale	3,437 0 0	515 0 0
Hearle	3,420 0 0	592 0 0
Boyce	3,337 0 0	540 0 0
Cox	3,297 0 0	525 0 0
Reed	3,274 0 0	518 0 0
Gregar	3,120 0 0	497 0 0
STIMSON (*accepted*)	3,080 0 0	490 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

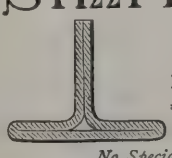
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET SOHO. LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

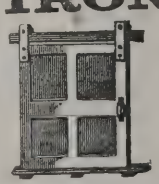
STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, ******** ****** SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL ***** PARTICULARS (SENT POST FREE). *****


Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET, HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

HENRY KING
(Late GREEN & KING),
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN

WALTHAMSTOW.

For Fitting-up Shop, High Street, for Messrs. Scott, Tagg & Co. Messrs. ARUNDELL & TARTE, Architects, London and Cambridge.

J. & E. Sutton	£385	0	0
W. Salter (too late)	265	10	0
T. R. Cooper	240	0	0
T. BRADFORD (*accepted*)	239	0	0

WREXHAM.

For Additions to the Stansty Board Schools, Rhonddu. Mr. J. E. LASH, Architect, 1 High Street, Wrexham.

W. E. Tamme, Wrexham	£525	0	0
E. K. Owen & Co., Wrexham	515	15	0
R. Hughes, Wrexham	478	0	0
Davis & Son, Rhostyths	455	0	0
HUGHES & OWEN, Wrexham (*accepted*)	454	5	0

WIGAN.

For Erection of Six Cottages in Edelsten Lane, for the Park Lane Friendly Co-operative Society.

J. Wilson, Wigan	£1,000	0	0
P. Pennington, Ashton	916	16	4
J. MITCHELL, Ashton, Newton-le-Willows (*accepted*)	884	0	0
Blakoe & Co., Newtown	820	0	0

TRADE NOTES.

MR. J. HARTLEY, of Birmingham, has obtained the contract for building the North-Western goods station at Nottingham, at a cost of about 50,000*l.*

MESSRS. DAVIES BROS., of Wrexham, who have secured the contract under the Liverpool Corporation for constructing a reservoir and filter beds, and for carrying out other works in the neighbourhood of Oswestry, have commenced work. The contract amounts to about 70,000*l.*

A MEMORIAL WINDOW, two light, is to be placed in St. George's Church, St. Kitts, West Indies, in memory of the late Rev. George Arthur Collins, senior master of St. Kitts High School, and senior curate of St. George's Church. Subjects, the *Resurrection* and the *Ascension*. The work has been executed by Messrs. T. Baillie & Co., 187 Wardour Street, W.

MESSRS. LOBNITZ & CO., Renfrew, have secured the contract to build a pontoon or floating dock, 165 feet long, for work in connection with the Panama Canal.

MR. GEORGE REES, of Savoy House, Strand, scores another success with *The Firstborn*, engraved by Mr. S. Arlent Edwards, after Mr. G. Hillyard Swinstead. This is truly a scene of the interior of an English homestead in a country farm. The mother of the child sits against the deal table in the centre, with her firstborn on her knees, while the young husband, whose face has an expression of entire contentedness, is attracting the attention of the child by showing it a puppy collie. The picture is one of the best efforts of this engraver, and should secure it a ready sale to all lovers of art treasures.

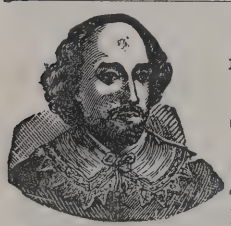
THE Prison Commissioners of Scotland have extended the time for the completion of the proposed convict prison at Peterhead from thirteen to sixteen months.

A COMMERCIAL museum has been established at Liège. It is divided into two sections, the first embracing articles of import, with a statement in each case of their origin, their price at the port of shipment, cost of transport, customs duties, and conditions of sale. The second section is devoted to articles in demand in foreign markets, together with particulars as to the packing of the goods, and conditions under which the same should be delivered to the purchasers.

ST. SAVIOUR'S WORKHOUSE, CHAMPION HILL.—After careful tests of various stoves, Messrs. Yates, Haywood & Co., of Rotherham and Upper Thames Street, E.C., were again successful with their so-called War Office Ventilating Stoves, which have been ordered for warming this large and handsome building, of which Messrs. Jarvis & Son are the architects. It is only a year or two ago since we recorded a similar competition for the Fulham Union, when this same stove was chosen. We have not had the opportunity of examining it, but there must be some special excellence in a stove that has often stood the tests of competition, and which has been adopted for War Office hospital use, and supplied to the Fulham Union (architects, Messrs. Giles & Gough); the Homerton Infirmary (architects, Messrs. Lee & Smith); the Wandsworth New Workhouse (architect, Mr. T. W. Aldwinckle); the Croydon

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



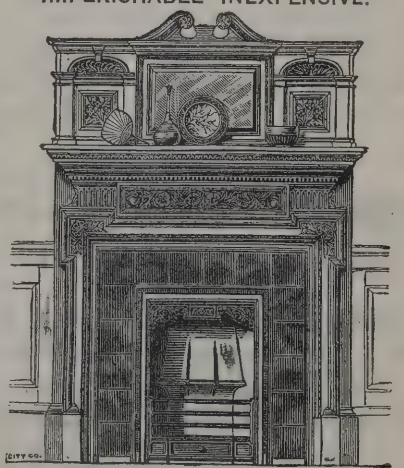
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.
IN PLAIN COLOURS OR VARIEGATED.



AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.,
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

Union (architects, Messrs. Burney & Mundey); the Wellington Barracks, Portsmouth; the St. Saviour's Workhouse, Champion Hill; and other similar institutions. The cooking-ranges, of which there are a large number, were also the make of Messrs. Yates, Haywood & Co., and are of similar kind to those they supplied to the Darenth Small-pox Hospital, of which Messrs. A. & C. Harston were the architects.

AN English syndicate has submitted a proposal to the Municipality of Brussels for placing the city in direct communication with the sea. The conditions of the contract are stated to be as follows :—The canal to the Scheldt is to have a depth of 6½ mètres, or 21 feet 4 inches; the quays are to be sufficiently spacious to admit twenty ships of 2,500 tons each to lie alongside; the docks and quays are to be furnished with every modern appliance for loading and unloading vessels, and with warehouses and sheds, and are to be connected with the great lines of railway. The company is said to demand as remuneration an annual subsidy of 1,800,000 frs., to commence only from the date of the completion of the work.

THE EXHIBITION AND CONGRESS OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT YORK.

THE ninth annual congress and exhibition of the above-named Association was opened at York on Tuesday last, under the most favourable auspices. We have often dilated upon the difficulties experienced by the Institute in being enabled to obtain suitable buildings in the towns they from time to time visit to hold their annual exhibitions. A town may possess certain public buildings that, so far as size goes, may be large enough for the requirements of the Association, but they may not be adapted for the heterogeneous character of the exhibits that the enterprise of the popular curator to the Institute, Mr. E. L. Box, annually manages to draw under his wing. At Leicester last year they were fortunate, but in the ancient cathedral city and episcopate of the north they have secured advantages that they can scarcely expect to achieve in any city in the kingdom, for we do not remember any other that could place at their disposal such a large and well adapted building for the purpose. Nor could York have held out such inducements a few years since, but the building known as the Fine Art and Industrial Exhibition, which was erected in 1879, and which contains a picture gallery of no mean pretensions (also opened to the visitors patronising the Sanitary Institute Exhibition), has placed the authorities of the city in a position that may well be envied by many others, and here it is that the exhibition of the Institute is located, and in one of the adjacent rooms the president of the year, Sir T. Spencer Wells, Bart., delivered his opening address on Tuesday evening. The alteration of the name of the exhibition from sanitary to health exhibition has opened the door to some extent for a more comprehensive assortment of exhibits. In looking through the stands, although we may admit that there is nothing among the exhibits that would have been refused under the old *régime*, there is no doubt that the change of name has had its effect, and the York Exhibition, so far as diversity of exhibits are concerned, may be called a reproduction in miniature of the late Healtheries at South Kensington. There are naturally many displays among the exhibits that are not interesting from a professional or technical standpoint to our readers, but such as are will be described in our next issue.

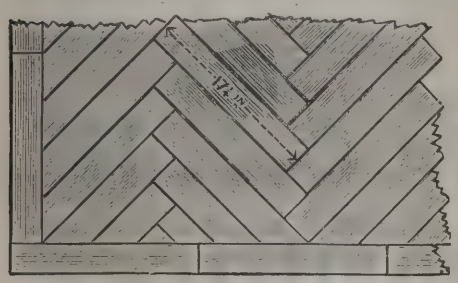
NOTES ON NOVELTIES.

THE SPENCER CORONA CO., of 3 Hyde Street, New Oxford Street, W., make the announcement that by the use of their patent corona, ceilings never become blackened. Important experiments have shown that the amount of light given by a flame depends also on the temperature of the air surrounding it; the higher the temperature the greater the amount of light. This result is obtained by the use of the Spencer corona, which also regulates the amount of air supplied to the flame. The great merit of this invention is that all former coronas have only dispersed the carbon about the room, and prevented it forming one black spot immediately above the flame: the Spencer absolutely consumes the carbon. We have no doubt that, once this patent is known, it will be largely adopted by architects and the trade.

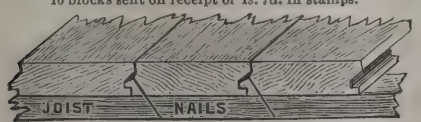
BERMONDSEY MORTAR.

A MEETING of the Bermondsey Vestry was held on Monday when the sanitary inspector reported that he had discovered that the mortar used in the erection of several new houses in the course of construction in Long Lane was largely composed of sediment taken from the sewers, and he understood that it

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices :—1¼×4½ Dry Wainscot Oak, 54s. 9d. per square; 1×4½ ditto, 45s.; 1¼×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s. 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office :—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills :—537 King's Road, Chelsea, S.W.
Branch Yard :—65 Poland Street, Oxford Street, W.
Telephone 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

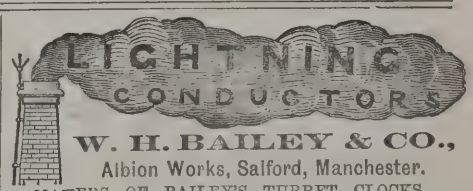
ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

T. W. ADAMS & SON,
MANUFACTURERS OF
Builders' and Contractors' Carts and Wagons,
Lurries, Floats, Timber Carriages,
Furniture Vans, Dobbin Carts, and Barrows.
Postal Address: DOVERIDGE, DERBY.
PRICE LISTS and Particulars on application.
LONDON REPRESENTATIVE—
MR. JOSEPH JOPLING,
49 FINSBURY PAVEMENT, E.C.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.



W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

FIREPROOF FIXING BLOCKS
FOR WALLS AND FLOORS
(Wright's Patent). Wood Joint Pieces, Plugs, Fixing Fillets, Grounds, &c., successfully superseded without extra cost. Extensively used by Leading Architects and Contractors for several years past; H.M. War Department, &c.
NOTE.—These Fixings take and RETAIN nails equal to wood They never burn, decay, shrink, or become loose, and will carry any weight that can be put upon them in a building.
Colonel W. J. STUART, Commanding Royal Engineers, Chatham, writes :—"The frames are most strongly fixed, and the blocks did not split with the 5½ in. screws that were used."
Write for new catalogue, containing full particulars and references post free.
"Highly Commended" at the Firemen's Exhibition, May 1886.
WRIGHT & CO. { No. 3 Westminster Chambers, Victoria Street, London, S.W.
Manufactories :—Gosport, Hants, and at Carnforth, Lancs.

WILLIAMS & CO.,
Lillie Bridge Works, London, S.W.,
MANUFACTURERS OF PATENT
METAL CASEMENTS
AND
LEADED WINDOWS.
Our Patent Steel "SIMPLEX" Casements have the following advantages over any other Casements in the market :—
They are thoroughly weathertight.
They can be made to open inwards or outwards, hung at the sides, or head, or sill, and in all cases the PLANE OF GLASS and the SIGHT LINE are the same.
They will not SAG, or TWIST, or JAM.
The Glass being secured by metal fillets the ragged appearance of putty is avoided.
The face being moulded has a more pleasing appearance than the ordinary uncouth finish.
By the use of these Casements all difficulties of window-cleaning are overcome.
The Patent "Cottage" Casement is made for such positions where plane of glass and thorough weathertightness are not absolute requisites, and where the extent of finish is not necessary.
Prices and particulars will be gladly furnished on receipt of inquiry.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely Bound in Cloth, Gilt Lettered, price 12s. 6d.
Office: 175 Strand, London, W.C.

had been sold to the builder by the contractor to the Metropolitan Board of Works. He had ordered the removal of the stuff under the Nuisances Removal Act, and he respectfully asked the vestry to take such steps as would in future prevent such substances being used in connection with the construction of human habitations, for it was most dangerous to health. In reply to a member, the officer said the stuff had not actually been mixed with mortar when he saw it. Mr. Dumphries said he saw the "filth;" it was nothing more nor less than the deposit of matter which had been taken from the sewers, and he desired to know if the Board of Works approved of their contractor selling such stuff to builders. Mr. W. Shepherd, of the Metropolitan Board of Works, proposed that the Board should be written to upon the subject, and the facts of the case brought under their notice. Mr. Vice seconded this, and it was agreed to.

CO-OPERATIVE WORKSHOPS IN FRANCE.

A GOOD deal of attention has been given by political economists to the experiment in co-operation which was attempted in 1838 by M. Leclaire, a house painter in Paris, having about two hundred men in his employment. Even in the first year his success was remarkable, and although he relinquished a large part of his profits, M. Leclaire was able, after a time, to acquire a handsome competency. John Stuart Mill says that M. Leclaire set a beneficent example which found imitators among large employers in Paris. The latest of the Foreign Office Reports is devoted to the subject of co-operation as it is practised on the Continent and in America. Mr. Egerton, of the Paris Embassy, gives an account of the present state of the Maison Leclaire. The system has been altered since 1865, when Stuart Mill last described the establishment. At that time there were three partners, viz., M. Leclaire and M. Defournaux, who each received 240*l.* a year for superintendence, and a Provident Society, made up of all the employés, represented the third partner. Each partner had invested 100,000 frs., but the employés received one-half the profits, although owning no more than a third of the capital. It was agreed that on the retirement of the private partners the whole of the goodwill and plant should become the property of the Provident Society. At present the employés appear to have the entire control of the Maison Leclaire, but another title has been substituted, for the establishment now is known as Redouly & Co. The French of late appear to have a passion for obliterating names that were likely to be interesting. The following is Mr. Egerton's report:—

M. Leclaire, originally a working painter, having started a workshop, determined not only to interest his workmen in the profits, but by degrees to educate them to be able to take in hand his whole business. His aim was that they should advance by practical proof given of their individual capacities.

He began in 1838 by a mutual benefit society (Société de Secours Mutuel), to which he made over 25 per cent. of the net profits. This fund was not only for aid in case of illness and for pensions, but was intended to produce a capital to be employed in the business itself.

Every workman invalided was given from this fund (unless his illness were caused by drunken habits or vice) 2 frs. 50 c. a day; this was increased to 5 frs. after 1881. The pensions were fixed at from 500 frs. to 1,000 frs., and were always granted in cases of accidents or serious chronic illness, or after twenty years of service to those over fifty. This pension was increased after 1881 to 50*l.* Half of the pension reverted to the widows or orphans. Thus in 1877 36,450 frs. were paid to twenty-four old members and eleven widows, and these pensions rose in 1881 to 46,800 frs., thirty-four pensions to members and ten to widows and orphans. In case of a workman leaving the house before he is entitled to pension he receives 20 frs., the amount of his subscription to the benefit fund, and 10 frs. for each year of active service. This last sum is increased to 20 frs. for the widows of members who have died in active employment. Notwithstanding these heavy charges the fund possessed in 1877 a capital of 906,000 frs., which in 1883 had grown to 1,412,224 frs.

The co-operative part of the business itself is thus organised:—

Free or temporary workmen. Candidates for the nucleus ("noyau").

The "noyau" comprises the associated workmen and employés.

The "noyau" and the candidates for the "noyau" form about a quarter of the total number employed, say about 120 of the "noyau," and about 100 candidates. Beyond five years of service in the house, there is no condition but good work, conduct, and capacity for admission to the "noyau." The members of the "noyau" itself elect by simple majority of votes, after previous examination, and report those whom they judge fit to belong to it.

Equitable Fire & Accident Offices

FINANCIAL POSITION.

	Fire Co.	Accident Co.
Capital Subscribed	£263,335 —	£142,175
Capital Paid Up	52,667 —	28,435
Annual Income	88,943 —	21,264
Funds and Investments	98,969 —	36,528

HEAD OFFICE: 11 & 13, ST. ANN ST., MANCHESTER.

BRANCHES:
LONDON - - - 69, Lombard Street, E.C.
GLASGOW - - - - 101, St. Vincent Street.
BIRMINGHAM - Midland Bdgs., 2, New St.
LIVERPOOL - - - - 11, Tithebarn Street.
NEWCASTLE - 1, St. Nicholas Buildings.
BELFAST - - - - - - - 6, Royal Avenue.
DUBLIN - - - - - - - - 18, Dame Street.

Special Feature.

ONE PREMIUM RETURNED every FIFTH YEAR to those who have made no Claim.

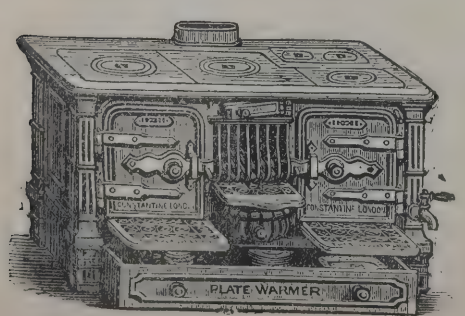
AGENTS APPOINTED.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S

PATENT "TREASURE"

COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

The members of the "noyau" have the following privileges:—If the general council approve, they receive 25 c. per day in excess of the salaries given for similar labour by the City of Paris. This addition to their pay is not given at once, but at the end of the year. They name the members of the "committee of conciliation," which is charged with the order and inspection of the business, with giving advice, and with inflicting the prescribed penalties. They name the overseers, the new members of the "noyau," and the two delegates, who have to examine, in concert with the president of the benefit society, the balance-sheet; and they have to see that the division of profits has been made in conformity with the statutes. (Publicity is necessary in all "sociétés anonymes.") They are entitled to the pensions above mentioned.

The two members who manage the house and represent it are chosen from and elected by the "noyau." These managers of the business receive 6,000 frs. yearly, and 25 per cent. of the net profits. The senior manager receives two-thirds of this, the junior a third. Beyond this the managers have no personal vested right in the house, and in case of death or leaving the house are simply replaced by election. The president of the benefit society may even move that they be replaced. Each of these two managers must be interested in the house to the amount of 100,000 frs.; but, in order that the want of this capital may not be an obstacle, this amount may be formed by the accumulation of two-thirds of the profits due each year to the newly-named manager, and the manager who is replaced can only withdraw his share in proportion as that of his successor is made good.

The remainder of the common working capital, say 200,000 frs., is given as a deposit by the benefit fund. The house is, in fact, the property of the picked body of workmen which constitutes the "noyau."

Twenty-five per cent. of the profit goes, as I have said, to the managers, 25 per cent. to the benefit fund, and the remaining 50 per cent. is divided amongst the workmen and employés of the house *pro ratâ* of their salaries. Practically, therefore, the workmen and employés are thus paid over 75 per cent. of the net profits.

The proportion of the profits to the salaries grew gradually to 12, 14, and 16 per cent. up to 1877, and in 1884 it reached 20 per cent., when the amount was 322,500 frs.; in 1882 the profits were 22½ per cent. more than the total amount paid for salaries.

The "noyau" does not of course directly interfere in the general direction and daily management, which is in the hands of the two managers.

It is interesting to see the use made of their profits by the workmen. In the year 1877, out of 135 workmen, 63 put their shares of profits in the benefit and savings funds, or in shares—capital invested in the house receives 5 per cent. a first charge, but does not participate in the profits; 17 spent them on their families, 16 paid debts made during want of employment or illness, seven put them into small shops kept by their wives or children, and one paid the money he still owed for exemption from military service. This is demonstration of the saving tendencies of the workmen.

In the Commission of 1883 it was stated in evidence that 3,326,142 frs. had been distributed amongst those employed by this house, as shares of profits or bonus from 1842 to 1882.

The element of success was, according to the evidence, the formation of the picked intelligent body of workmen called the "noyau." The idea of equality of pay would, it is said, be looked on by them as ridiculous. They had been at one time rather hampered by agitators, but the men had soon the sense to see where their true interests lay, and broke with them.

Co-operation under a different arrangement exists since 1877 in the large manufactory of kitchen and heating apparatus at Guise founded by M. Godin. It is known as the "Familistère"—a word that was probably derived from the "Phalanstère" of Fourier. In 1883 there were about 900 directly interested in the business of the establishment.

According to Mr. Egerton, the workmen are paid according to their capabilities, after free discussion before a council of their fellows.

The division, too, of profits is made on a graduated scale. Thus a first-class member (associé)—picked workmen of long service, of whom in 1883 there were seventy—receives twice as much; the second class (sociétaire) half as much again individually (there are 100 such) as the "participants" or third-class members (of whom there were 800).

M. Godin has found great advantage in this division of profits. The work has much improved, the hands much more careful to guard against mistakes, and that the interest taken in the business by the hands has much increased is shown by the constant new inventions and improvements made by the men. Since they were made partners a great number of patents have been taken out by the "Familistère."

All the workmen have a portion of their pay and profits reinvested in the house, and by this system M. Godin, the

WALTER JONES, MAGNET WHARF, BOW BRIDGE, E.,

MANUFACTURER OF

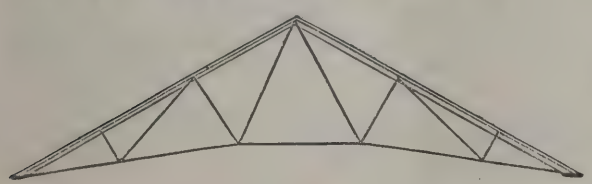
WROUGHT-IRON ROOFS,

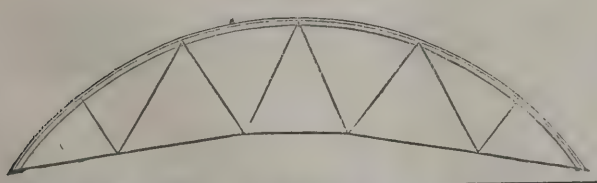
PLAIN OR ORNAMENTAL,

ADAPTED FOR

GALVANIZED IRON,

SLATES, TILES, or GLASS.

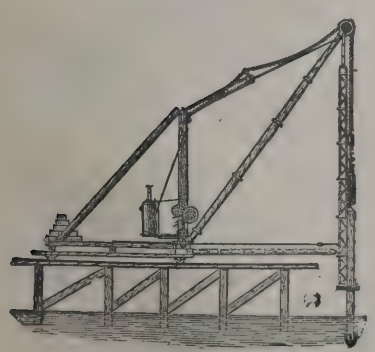




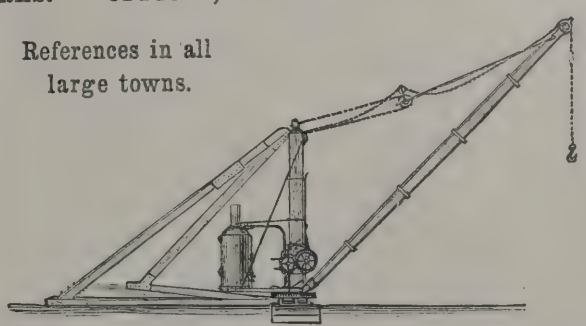
BUTTERS BROTHERS, ENGINEERS, GLASGOW.

PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

References in all large towns.



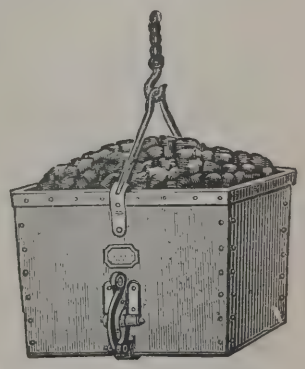
Crane used for Piling.



SCOTCH BUILDERS' CRANES.

Large Stocks. Send for List.

FOR SALE, HIRE OR HIRE-PURCHASE.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8	10 0
„ ¾ „	.	9	10 0
„ 1 „	.	10	10 0

original founder of the business, is being gradually bought out of it, and he means that this system shall continue. It is more generally beneficial, he considers, that the buying out in rotation shall continue indefinitely, so that those who have long profited by the great advantages of the institution—and have in fact enriched themselves—should in time give way to the young and poor who are beginning. Naturally, of course, this process is slow, as the capital of the business is increasing.

M. Godin practically keeps a certain management of the business in his own hands, though theoretically the business is managed by three councils or boards, viz. the board of management which meets monthly, the business council which is held every week, and the council for the management of the buildings and the commercial business.

Enormous buildings have been constructed by the association, so as to lodge the hands and their families. Some of the members, more especially the second class, or "sociétaires," are bound to live in these houses.

M. Godin, in his evidence before the Commission of 1883, gave very full details of the working of this remarkable and useful establishment, which is a complete partnership and co-operation of capital and labour. A branch of this "Familistère" has been founded near Brussels, and is successful.

The evidence given to the Commission of 1883 shows immense variety in the details of the systems adopted by the various co-operative societies, and by those firms where the profits are shared by the workmen: but all managers of houses, and those who have practical experience, were agreed that the system of co-operation and of sharing profits puts an end to strikes and improves production and good relations. Some associations, as that of the opticians, even took active part with the employers of labour in opposing a strike.

There has been no case of disposition to strike for increased share of profits. M. Roberts, an important witness, scouts the idea of this as a future danger.

The objection of some heads of houses to their workmen sharing profits seems to proceed mainly from dread of the extra trouble of management and account-keeping entailed thereby.

Co-operative workmen, and those working for a share of profits, rarely ask for a Monday holiday, as do most other workmen—thus their houses are able to execute orders with greater rapidity. When there was a strike amongst the painters the co-operative workmen at M. Leclaire's worked fourteen, and even more, hours per day without the slightest complaint.

COLONIAL AND INDIAN EXHIBITION.

THE BURMESE REGALIA FROM MANDALAY.—From King Theebaw's palace at Mandalay, a magnificent collection of jewellery and plate has been sent to England by the Viceroy, and it has been lent to the Exhibition by the Secretary of State for India. There are gold vases of different sizes, dishes of quaint shape, some in the form of a duck, betel boxes, reliquaries to hold the teeth of Buddha or other objects of veneration, jade ornaments, daggers and swords, dresses, hats, slippers, and a state umbrella; and, most noteworthy of all, drinking-cups with large cone-shaped covers which envelope the vessel; a gold bottle with a cray fish-shaped head, and King Theebaw's horoscope written on palm leaves. Most of these articles are heavily set with diamonds, rubies, emeralds, sapphires, pearls, and other precious stones. The collection has been placed in cases adjacent to the Ceylon Court.

THE PATENT OFFICE.

A PARLIAMENTARY paper has been issued containing the third report of the Comptroller-General of patents, designs, and trade-marks, with appendices, for the year 1885. From this report it would appear that, after making allowance for the large number of applications consequent upon the introduction of the new Patents Act in January 1884, the number of applications for patents during the year 1885 (16,101) shows that there was but little, if any, falling off in the number of inventions sought to be protected.

The following important provisions in favour of inventors were enacted by the Patents, &c., Amendment Act of 1885:—The requirement of a statutory declaration upon application was allowed to be dispensed with, and the Comptroller was empowered to grant extensions of time for filing and accepting complete specifications upon payment of an additional fee. The amending Act further provided that the specifications of applications for patents which had become void or had been abandoned should not be open to public inspection or be published by the Comptroller, thus removing a cause of possible litigation, besides effecting a large annual saving in the account for printing. It is noticeable that 79 per cent. of the total applications in 1884 were made from persons resident in the United Kingdom, and 77 per cent. in 1885. The number of applications communicated from abroad in 1884 amounted to 2,607,

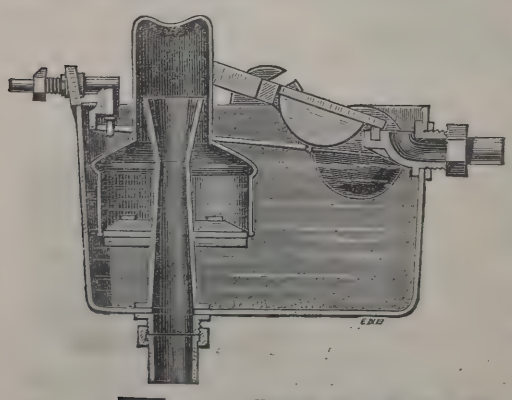
ASCHERBERG PIANOS,

Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot:—London, 211 Regent Street, W.



BEAN'S PATENT DIRECT-ACTING VALVELESS WASTE-PREVENTING CISTERNS.

These Waste-Preventers are simple in construction and rapid and powerful in action. The working parts have been improved and are well balanced. The arrangements for charging the siphon are such that a slight pull by hand is all that is necessary to cause the immediate and automatic discharge of the contents of the Cistern.

THE CHIEF ADVANTAGES are—(1) the direct-acting method of charging the siphon, by which the full flush is obtained at once; (2) simplicity of construction; (3) no valve in the bottom of the cistern to cause leakage; (4) no tight-fitting parts to corrode or get out of order; (5) no waste incurred by fastening the "pull"; (6) insures a rapid and regulated flush without holding down the pull.

SOLE MAKERS— PRICES AND PARTICULARS ON APPLICATION.

J. TYLOR & SONS,

SANITARY AND HYDRAULIC ENGINEERS AND BRASSFOUNDERS,

2 NEWGATE STREET, LONDON, E.C.

and in 1885 to 2,336. The largest number of applications on any one day in 1884 was 266 on January 1, and the smallest, 25, on September 26 in the same year; the corresponding numbers in 1885 were 109 on April 7 and 24 on August 17. The total number of applications, including communications from abroad—viz., 12,461 in 1884 and 11,695 in 1885, made through agents—amounted to about 73 per cent. in both years, the remainder, or 27 per cent., being made directly to the Patent Office by applicants themselves. In 1885 112 applications for amendment of specifications before the sealing of the patent and 61 applications for amendment after sealing were made at the Patent Office. Of these 173 applications 120 were allowed by the Comptroller, 13 were refused, 4 were withdrawn or abandoned, and 36 were not dealt with within the year. During the year 4,383 notices of similarity of inventions applied for were given in respect of 2,531 applications, and 49 applications previously included in prior applications were reported. About 120 under section 94 (which provides that a personal hearing shall be given to the applicant before refusal) were heard by the Comptroller.

The number of readers who frequented the library during the year 1885 was 44,176, against 39,508 in the previous year. The number of designs registered during the year amounted to 20,388, exclusive of 337 "sets" of designs. In the previous year 19,515 single designs and 238 "sets" were registered. The term "set" includes any number of articles ordinarily on sale together, irrespective of the varieties, of the size, or the arrangements in which the particular design may be shown on each separate article. The total number of applications for trade marks during the year (including 115 applications to the Cutlers' Company) was 8,026, as compared with 7,104 in the year 1884. The total receipts from various branches of the trade marks registry branch in the year 1885 amounted to 7,032*l.*

RAILWAY CONSTRUCTION IN AMERICA.

FROM a statement printed in the *Railroad Gazette*, it appears that up to the beginning of August 2,262 miles of new track had been laid down in the United States. This mileage is larger than that constructed in the corresponding period of any previous year since 1872, excepting the four years from 1880 to 1883. In 1873 the mileage to that date was 3,372; in 1880, it was 2,631; in 1881, 3,115; in 1882, 5,667; in 1883, 2,796. These figures have reference to main track only, and do not include additional tracks and sidings. Judging from the present great demand for rails in the United States, there must be a large amount of additional tracks and sidings in process of construction and in contemplation. The new main track reported up to the above date—2,262 miles—would require less than 225,000 tons of rails. Assuming that 5,000 miles of new main track will be laid during the whole of the year, the amount of rails required would be less than 500,000 tons. Deducting this from the estimated production (1,400,000 tons) of rails in the current year—an estimate based upon orders already executed and those still in hand—this leaves 900,000 tons for renewals, additional tracks, and sidings, or nearly three-fifths of the total production.

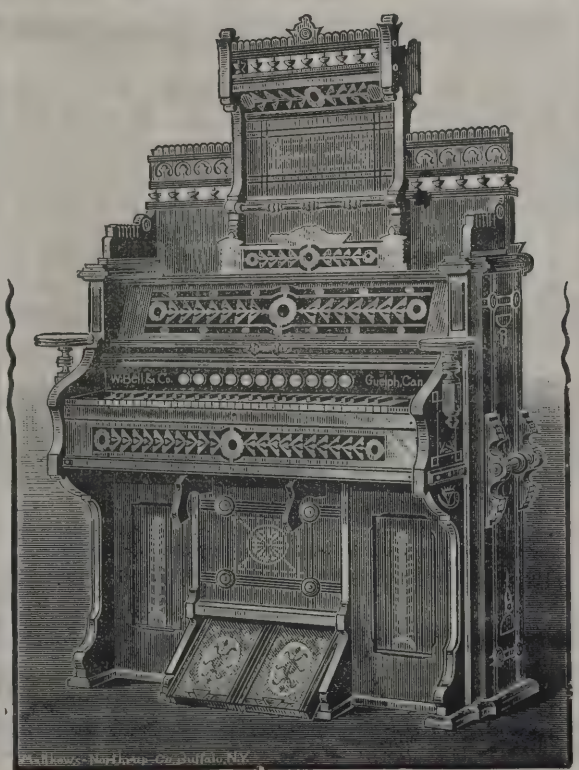
TECHNICAL EDUCATION IN INDIA.

THE following recommendations have been issued by the Home Department of the Government of India regarding the question of technical education :—

1. That inquiries be made whether it is not desirable that greater facilities for the study of law and medicine be provided in mofussil colleges in Madras and Bombay.
2. That the teaching staff of the Agra Medical School be strengthened, and the status of the school raised to an equality with that of Lahore.
3. That a medical school be established at Rangoon.
4. That the instruction in all medical schools be made more practical than at present.
5. That facilities for practical training be provided at the Rurki and Madras Civil Engineering Colleges.
6. That an art school on the Lahore plan be established at Agra.
7. That opportunity be taken where possible to establish agricultural and veterinary schools or classes in high schools.
8. That more attention be paid to the teaching of land surveying; and that the civil courts and other official bodies be required to employ certificated students of such schools in preference to non-certificated surveyors.
9. That instruction in drawing be made compulsory in all schools, the teachers of which are competent to instruct in drawing.
10. That competency to teach drawing be made as soon as possible an essential qualification in all teachers in middle and high schools.

W. BELL & CO.
AMERICAN ORGAN MANUFACTURERS,
AT THEIR NEW PREMISES,
58 HOLBORN VIADUCT,

Keep a full line of the
CELEBRATED
"BELL"
ORGANS
And the FAULTLESS
HARDMAN PIANOS
OF
NEW YORK.



ALWAYS ON HAND FOR
INSPECTION.

THESE INSTRUMENTS ARE
ACKNOWLEDGED
LEADERS OF ALL OTHERS.

CATALOGUES
FREE
From above Address.

11. That instruction in introductory science (the particular subjects of branches to be prescribed by the Education Department) be made compulsory in middle and high schools, similar provision being made as in the preceding head regarding teachers.

12. That examinations in middle schools include drawing and elementary science as compulsory subjects; and that a considerable latitude as to optional subjects of a practical character be allowed as in the Madras syllabus.

13. That the high school course be of two kinds :—

(*a*) Literary.

(*b*) Practical or "modern," as recommended by the Education Commission.

14. That to middle or high schools there be attached a technical branch, whenever inquiry brings to light the demand for technical training in any industry in the locality.

15. That such technical branch be an integral part of the provincial education system, subject to the control of the Education Department, and leading up to an examination to be instituted by the university.

16. That subject to the general supervision and control of the Department of Education, such technical schools be under the direction as to curriculum, &c., of the central art college, which should be affiliated to the university or engineering college of the province, as the case may be.

17. That the university establish two entrance examinations—one literary, at present; one "modern" as recommended by the Education Commission. The "modern" examination to include optional subjects to meet the requirements of Division A and Division B of paragraph 82 of this note.

18. That funds be provided for the promotion of the foregoing scheme by State grants when possible, and by appropriating some of the allotments now made to the support of higher English education, wherever this can be done without detriment to the interest of that education. That municipalities and local boards who are chargeable with the supports of education be also required to allot funds for technical schools, where the establishment of such be considered desirable.

The note concludes :—All has now been said which occurs to the writer to say in fulfilment of the Viceroy's commands. In conclusion, it may be observed that, although among the higher caste natives of India the obligations of caste still give a quasi-religious sanction to the distinction between the employments deemed menial and those deemed honourable, there are, nevertheless, indications that this sanction is losing something of its force, and that natives of all castes are in increasing number looking to technical education as affording an honourable livelihood and career in life. It is submitted that it is desirable to assist and encourage this popular feeling; that room exists for improvement in almost every department of technical instruction in India, and that the time is ripe not only for calling on local governments to take the matter up in earnest, but for indicating to them some of the directions in which improvement seems possible, and from which funds can be obtained for effecting it.

THE INSTITUTION OF CIVIL ENGINEERS.

As half a century has elapsed since the existence of the Institution of Civil Engineers was first announced to the world by the publication of its proceedings, the Council have considered it right to give a brief history of its career.

The honour of having originated the Institution is often assigned to Smeaton, or to Telford, but the idea is erroneous in both cases. Smeaton died many years before it was thought of, and Telford only joined it after its establishment.

A Society of Engineers, still existing, was founded by Smeaton in 1771. It includes many of the most eminent members of the profession; but it is rather of the nature of a social club than of a scientific association, and has no connection with this institution. It was, indeed, of too exclusive a nature to meet the wants of so large and mixed a body as soon became engaged in engineering, and early in the present century a feeling began to be entertained that an institution on a larger scale, having for its object the furtherance of professional knowledge, might be made eminently useful.

The persons who took the initiative in the matter were six young men, then beginning their engineering life—William Maudslay, Joshua Field, Henry Robinson Palmer, James Jones, Charles Collinge, and James Ashwell. Towards the end of the year 1817, they, impressed with the difficulties of gaining the knowledge necessary for the diversified practice of engineering, resolved to form a society for promoting regular intercourse between persons engaged in the profession, to the end that such persons might mutually benefit by the interchange of individual observation and experience.

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co's
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS. HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST, BENTLEY PRIORY, ROYAL, LANGHAM, GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S, BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

The first formal meeting was held at the Kendal Coffee-house, in Fleet Street, on January 2, 1818. The proposal was favourably received. The Society was established. Other engineers joined, and rules were framed for its government. During two years it continued to meet, and the result of its experience of the value of the meetings was such as to warrant an effort being made to extend the limits of the Society. It was perceived that a principal step towards this extension would be to obtain the direct patronage of some eminent and popular professional man. Accordingly, on January 23, 1820, the following resolution was passed :—

"That in order to give effect to the principle of the Institution, and to render its advantages more general both to the members and the country at large, it is expedient to extend its provisions by the election of a President whose extensive practice as a civil engineer has gained him the first-rate celebrity;" . . . "and that a respectful communication be made to Thomas Telford, Esq., civil engineer, requesting him to patronise this Institution by taking upon himself the office of President."

So little was the Society known up to this time, that Telford had never heard of it when the foregoing resolution was announced to him; but appreciating, with characteristic judgment, the value of such an Institution, and the useful results it was capable of yielding, he accepted the proffered chair without hesitation, and was formally installed on March 21 following.

Telford's name gave an impulse to the progress of the Society, which grew rapidly in importance under his fostering care, until, on June 3, 1828, it received a charter of incorporation under the Great Seal, by the title of "The Institution of Civil Engineers." Telford died on September 2, 1834. A few years before his death he had begun to contract his engagements, and, as he gradually withdrew from the toils of business, his attention became more and more concentrated on this Society. It was, indeed, the last object of his solicitude, and gave employment to his mind in the evening of his days. Its collections were enriched by his bounty, and when, full of years and of honours, he felt the close of life approaching, he endowed the Institution with the munificent bequest which has since done so much to encourage the production of original communications for reading at the meetings and for publication in the "Minutes of Proceedings."

In 1835 the chair was taken, in succession to Mr. Telford, by another engineer of acknowledged eminence, Mr. James Walker.

In 1836 the first volume of the "Transactions" was published. It was a handsome quarto of 325 pages, illustrated by 28 elaborate engraved plates, and it contained 28 selected communications, for the most part of high character, and written by men of considerable eminence. There were also added copies of the charter and subsidiary regulations, with a list of members, and in the preface a short history was given. From the date in this volume the state of the Institution at that time can be correctly ascertained.

According to the "regulations," as they were then called, the Institution was declared to have been formed "for facilitating the acquirement of professional knowledge, and for promoting mechanical philosophy."

It consisted essentially of three classes :—

1. Members, being persons engaged in the practice of civil engineering (those who lived out of London being called corresponding members).

2. Associates, persons whose pursuits constituted branches of engineering, but who were not considered as engineers by profession.

3. Honorary members.

There were four vice-presidents :—William Cubitt, Bryan Donkin, Joshua Field, and Henry Robinson Palmer; and seven other members of Council, among whom were I. K. Brunel, Robert Stephenson, James Simpson, and John Macneill. The secretary was William Gittins.

The members were 140 in number, and among them are found the names of Bramah, Brunel (senr.), Tierney Clark, Gravatt, Penn, Perkins, Seaward, Vignoles, Bidder, Bodmer, Buck, Fairbairn, Grainger, Thos. E. Harrison, Hick, Leather, Leslie, Locke, Murray, Aaron Manby, Rastrick, Rendel, Sopwith, Smith of Deanston, the Stevensons of Edinburgh, Nicholas Wood, Arthur Woolf, and others well known in the profession. The Associates (many of whom afterwards became members) numbered 100, and the honorary members fourteen. The whole strength of the Institution was therefore 254.

In 1837 the publication of the smaller "Minutes of Proceedings" in octavo was commenced. This publication was at that time intended to give only abstracts of the papers and of the discussions (or, as they were then termed, "Conversations") that took place thereon. The papers themselves were submitted to the consideration of the Council, and a certain number were selected for publication in full in the quarto form.

In the report for 1837 (the first published) the Council dwelt with satisfaction on the increasing success of the Institution, and

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

expressed a hope that the profession generally would unite in advancing the objects which the original projectors had in view.

During this year Mr. Thomas Webster, M.A., a well-known barrister, was appointed to the office of secretary.

In the report for 1838 the Council gave an account of some important changes which had, during the session, been made in the by-laws and regulations, for the purpose of rendering them more definite and consistent with the charter. The qualifications of members and of Associates were modified, and the class of corresponding members was merged in that of ordinary members. A new class was formed under the name of "graduates"; these were young men in course of education as engineers, like the present "students," but, differing from the course subsequently pursued with the students, full corporate privileges were given to the graduates—a step which afterwards led to much inconvenience.

The composition of the governing body was also altered. It had hitherto consisted (including the president and four vice-presidents) of twelve councillors, chosen entirely from the class of members, but it was thought advisable to add two selected from the associate class, and one additional from the member class, making the total number fifteen.

In the same year a second volume of quarto "Transactions" appeared, on a similar scale to the first. It contained twenty selected papers, illustrated, as before, by thirty-three steel engravings.

The institution at first occupied rooms hired at 15 Buckingham Street, Adelphi. In 1834 a small house was taken at No. 1 Cannon Row, Westminster; but as the numbers increased the accommodation was found to be too limited. It was then attempted to obtain from the Government, as other scientific Societies had done, apartments in Somerset House, but fortunately this application was unsuccessful, and suitable premises had to be sought elsewhere. It happened just at this time that a house was found in perhaps the most appropriate situation that could have been selected, and at Christmas 1838 the Institution entered upon the premises it now occupies in Great George Street, where a meeting-room, about 30 feet square, was built in the rear of the front house. Although the expenses attending the change were, for the then moderate income, somewhat onerous, the difficulty was met by the members, who, when appealed to, answered the call very liberally.

In the session 1839-40 some further alterations were effected in the by-laws, the chief one being that the total number of the Council was increased to seventeen, of whom two were selected from the class of associates as before.

During this session there was an important change regarding the office of secretary. It appeared to the Council that the increasing business was such as to require the whole and undivided time and attention of a properly qualified gentleman to fill this position as a paid officer, and it was taken on this condition by Mr. Charles Manby, who entered upon the duties at Midsummer, 1839.

In 1842 a third quarto volume of "Transactions" was published, and this was the last that appeared. A fourth volume had been contemplated, but on account of the great cost attending this form of publication, the Council deemed it right to refer the subject to a Committee for consideration. The report of this Committee, mentioned in the Report of the Council for the session 1845, represented that the quarto form, with elaborate plates, was found, as it had been in other Societies, too expensive; that the selection of certain papers, to the exclusion of others, might be considered invidious; that the delay in the publication of the papers was prejudicial to the interests of the authors, and had prevented many valuable communications from being read at the meetings; and that the character of the quarto volumes prevented their circulation from being as extensive as was consistent with the objects of the Institution. These and other arguments appeared conclusive against the continuance of the double form of publication, and it was decided that from March 12, 1844, the papers should be published in octavo in full, or with only such curtailment as could be practised without injury to the authors' views, and that such illustrations should be given as were necessary. In this way the publication of the Minutes of Proceedings has been regularly continued, and they contain, in their long and ample series of volumes, now numbering eighty-four, a full account of the progress of the Institution, and of the matters which have engaged attention at the ordinary meetings.

At the end of the year 1844 an alteration was made which materially influenced the future of the Institution; this was a change in the duration of the presidentship. Mr. Walker had occupied the chair since the death of Telford, a term of ten years, and, although the regulations required annual election, there was an implied understanding that the appointment was a permanent one. It had, however, been forcibly represented to the Council that a shorter period for the tenure of the office of President and of the other posts in the Council would be advantageous. The question was fully discussed at a meeting

RUPTURES! RUPTURES!!

HARNESS' GOLD MEDAL ELECTROPATHIC XYLONITE TRUSS.

ADVICE FREE.

Price 21s. POST FREE.

Guaranteed to Last a Lifetime!

SELF-ADJUSTING, Light, Comfortable, Washable, Non-irritating. Can be worn by any person, under all circumstances, in any climate. Manufactured of the best Sheffield Steel, covered with XYLONITE (Flesh-coloured Artificial Ivory). It is absolutely free from Rubber, Leather, and other objectionable material, and is admitted by the most distinguished Surgeons to possess all the advantages and none of the disadvantages of every other Truss in the Market. PATIENTS SUFFERING from any form of Hernia are thus supplied with the *most perfect remedial appliances* at moderate prices. THE SKILLED ADVICE (free of charge) of a gentleman who has had *extensive experience* in the treatment of Hernia is at the disposal of those who can call at 52 Oxford Street, London, W.

ORDERS BY POST should state the nature of the displacement. Measurement required—circumference of the body one inch below the hips.

HARNESS' XYLONITE TRUSS.

Combines COMFORT, SUPPORT, ELEGANCE, AND CLEANLINESS.

RUPTURES! RUPTURES!

A NEW TRUSS—AN IMPORTANT INVENTION.—MR. C. B. HARNESS, the well-known Inventor of Electropathic Belts and other Curative Electrical Appliances, has lately introduced a new ELECTROPATHIC XYLONITE TRUSS, which has already been highly approved of and adopted by the highest Scientific and Medical authorities. It has a beautifully smooth, flesh-coloured surface of a washable and durable material. It is cheap, will last a lifetime, and the healing influences of its mild electric action renders it a boon to the afflicted patient. No sufferer should be without one of these *perfect trusses*. SKILLED ADVICE FREE OF CHARGE. Note address and call without delay on The MEDICAL BATTERY COMPANY (Limited), 52 OXFORD STREET, LONDON, W.

Note the Address:

THE MEDICAL BATTERY COMPANY, LD.

52 OXFORD STREET, LONDON, W.

on December 23, and, in consequence of resolutions then passed, a communication was addressed to Mr. Walker, which led to his objecting to be put in nomination again for the office of President. Notwithstanding this, however, at the annual general meeting on January 21, 1845, Mr. Walker was chosen; but on his declining to serve, the meeting was adjourned till the 27th, when Sir John Rennie was duly elected, taking his seat at the next ordinary meeting on February 4.

On January 6 and 27, 1846, special general meetings were held, at which the change regarding the presidentship was incorporated in the by-laws. It was enacted that in future no member should be nominated by the Council for election to the office of President more than two years consecutively, and that at the expiration of such two years he should not be re-eligible for three years.

At the same time the qualifications of candidates for admission were more accurately defined, those of members being made somewhat more strict, while those of associates were widened, so as to comprehend a larger range of individuals. The corporate privileges of the class of graduates were now curtailed. They were prohibited from voting at the election of the Council and officers, or from taking any share in the direction and control of the affairs of the Institution. In fact, it was virtually decided to allow this class gradually to become extinct; no other elections into it took place, and some years later the remaining graduates were transferred to other classes. It was arranged to admit young engineers as associates, from which class they could subsequently be transferred to the grade of members.

It had been found during this session that, owing to the increase in numbers, and to the consequent larger attendance at the meetings, the accommodation was insufficient. On July 28, 1846, a special general meeting was held to consider some plan of meeting the difficulty. A report of the Council having been read and discussed, inquiries were ordered to be set on foot to obtain a site on which to erect a building suitable for the wants of the Society. At an adjourned meeting, held on August 11, a second report of the Council was received. It stated the impossibility of finding a piece of ground possessing the advantages of the present situation, except on terms which it would be unwise to entertain. It was, therefore, decided to enlarge the meeting-room, and to make such other alterations in the existing building as should render it more convenient for the purposes of the Institution. These works were carried out during the recess, at a cost of 4,350*l.* To meet this outlay, it was arranged that every member should subscribe 7*l.* 7*s.*, and every associate 4*l.* 4*s.*, and that new members and associates should enter into an obligation to contribute like sums to form a "Building Fund" for defraying future expenses of the same kind. In the meantime debenture bonds of 100*l.* each were issued to the extent of 2,500*l.*, to provide for the immediate requirements. Some of these bonds were afterwards voluntarily cancelled, and in other cases the holders, or their nominees, were placed on the books as life subscribers, in consideration of their surrender, so that in one way or other the whole of the bonds have disappeared.

A special general meeting was held on May 3, 1855, in compliance with a formal requisition, to consider propositions for making certain changes in the constitution of the Council, such as causing a certain number of the members of Council to retire every second year. But after full discussion these propositions were withdrawn.

In June 1856 Mr. Manby, who had held the post of secretary for seventeen years, tendered his resignation, having accepted a professional engagement which prevented his devoting the necessary attention to the work of the office. He agreed, however, to continue to act gratuitously, and subsequently was appointed honorary secretary, a position he held till his death, on July 31, 1884. The present secretary, Mr. James Forrest (who had been for fourteen years more or less intimately connected with the Institution, in which he was to some extent brought up), was appointed assistant secretary at Midsummer 1856, his position being changed to that of secretary on January 3, 1860.

In the course of 1866 the Council was led to consider the possibility of allowing engineering students to benefit by access to the Institution, a subject which had been in abeyance since the virtual abandonment of the class of graduates in 1846. The Council thought that the object might be accomplished by the establishment of a class similar to the former graduates', but with certain modifications; and brought the subject before a special general meeting with a view to the necessary provisions being made in the by-laws. This meeting was held on June 26, 1867, when the proposed alterations were passed, the essence of the provisions being that the members of the new class, though attached to the Institution and enjoying many special privileges, should have no corporate rights, and should only be admitted by, and remain students during the pleasure of, the Council. The class was accordingly constituted, and, under the arrangements adopted, has been entirely successful.

BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.

Telephone: No. 586.
Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.

Telephone: No. 2,617.
Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

"THE PEDESTAL VASE,"

JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1¼ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,

SANITARY ENGINEER, STANGATE, LONDON.

A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



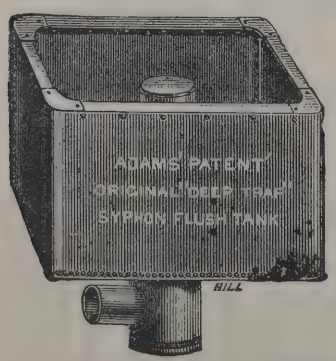
ELECTRIC & PNEUMATIC BELLS.

NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.

MECHANICAL TELEPHONES. Everything for a line complete for £3.

PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

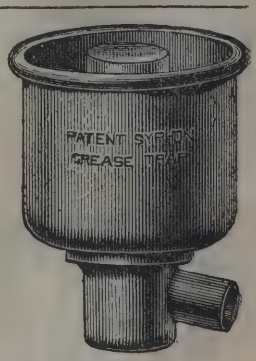


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
" **FLUSH SYPHONS** for Sewer Flushing.
" **FLUSH LATRINES** for Barracks, Schools, &c.
" **FLUSH URINALS** " " "
" **TROUGH CLOSETS** " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, September 24, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, OCTOBER 1, 1886.

THE ARCHITECT
AND
CONTRACT REPORTER.

ADVERTISEMENT SCALE.

For Two Lines and under (eight words to the line)	£0 2 6
For every Additional Line	0 0 6
For Quarter Page	2 10 0
For Half Page	4 10 0
For a Page	8 8 0
For 1 inch deep by 2½ wide	0 7 6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & CO., 175 *Strand, London, W.C.*

EDITORIAL NOTICES.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested as much as possible to make their communications brief. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

ELLAND.—Nov. 9.—Plans are invited for the Erection of a Town Hall. Mr. J. L. Garsed, Hon. Secretary, Town Hall Company's Offices, Southgate, Elland.

LEEDS.—Oct. 9.—Designs are invited from Architects of Leeds for proposed Art Gallery and Museum. Mr. G. W. Morrison, Town Clerk, Leeds.

LEWES.—Oct. 9.—Designs and Estimates are invited for Public Hall and Offices, by way of addition to present Buildings. Mr. A. Holt, Borough Surveyor, Town Hall, Lewes.

CONTRACTS OPEN.

ABERDEEN.—Oct. 6.—For Building Dwelling-house, Clarence Street. Mr. William Smith, Harbour Engineer, Provost Matthews' Quay, Aberdeen.

AYR.—Oct. 11.—For making Addition to Holy Trinity Church. Mr. J. L. Pearson, R.A., Architect, 13 Mansfield Street, Portland Place, W.

BARROW-IN-FURNESS.—For Building Three Houses. Mr. Thomas Barrow, 14 William Street, Barrow-in-Furness.

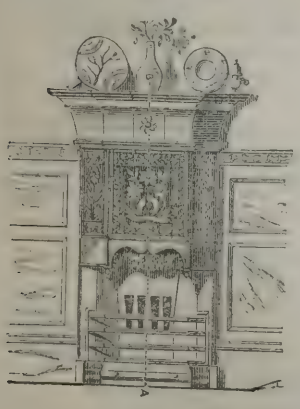
BARROW-ON-SOAR.—Oct. 11.—For Building Casual Wards at the Workhouse. Mr. J. J. F. Scott, Clerk to the Guardians, Mountsorrel.

BELFAST.—Oct. 6.—For Construction of Waterworks (Contract No. 2). Mr. L. L. Macassey, C.E., Waterworks Office, Belfast.

BIRKENHEAD.—Oct. 5.—For Building Two Shops, Grange Road. Mr. W. Hesketh, Architect, Central Buildings, North John Street, Liverpool.

BLAYDON-ON-TYNE.—Oct. 7.—For Laying Cast-iron Pipes, Sanitary Pipes, Valves, Hydrants, &c., and Construction of Reservoir. Mr. Hawdon, Surveyor, Blaydon-on-Tyne.

BRADFORD.—Oct. 5.—For Building Lodge and Entrance Gates, Schoolmore Cemetery. Mr. H. Isitt, Architect, Queen Anne Chambers, Sunbridge Road, Bradford.



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE,

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

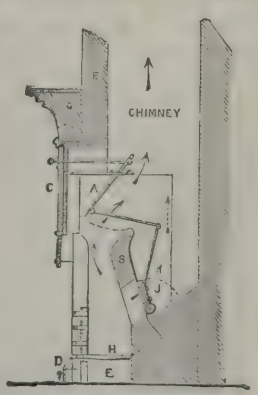
WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.



BRIGHTON.—Oct. 6.—For Heating Casual Wards at the Workhouse. Mr. B. H. Nunn, Architect, 129 Queen's Road, Brighton.

CADOXTON.—Oct. 2.—For Addition to Board School. Messrs. Seward & Thomas, Architects, St. John's Chambers, Cardiff.

CARDIFF.—Oct. 11.—For Building Lecture-rooms at University College. Mr. G. E. Robinson, Architect, 32 St. Mary Street, Cardiff.

COLCHESTER.—Oct. 5.—For Pair of Labourers' Cottages and Outbuildings at Langham. Messrs. Turner, Deane, Elwes & Turner, Solicitors, Colchester.

DENBIGH.—Oct. 18.—For Construction of Reservoir, Discharge Culvert, Pipe Laying, &c., Tank at Malpas, &c., Yrnwy Waterworks. Mr. G. J. Atkinson, Town Clerk, Municipal Offices, Liverpool.

DONCASTER.—Oct. 15.—For Cooking Apparatus, for the Union Workhouse. Mr. F. E. Nicholson, Clerk, Union Offices, High Street, Doncaster.

DUBLIN.—Oct. 20.—For Works of Addition at the Ordnance Survey Office, Mountjoy Barracks, Phœnix Park. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

DUBLIN.—Oct. 5.—For Building Cottages for Labourers' Dwellings, Bow Lane West. Mr. D. J. Freeman, City Architect, Municipal Buildings, Cork Hill, Dublin.

DUNMANWAY.—Oct. 4.—For Alterations and Repairs to Dunmanway House. Mr. F. Fitzmaurice, Solicitor, Dunmanway, Co. Cork.

ELGIN.—Oct. 5.—For Building House. Messrs. A. & W. Reid, Architects, Elgin.

FRYSTONE, CASTLEFORD.—For Building Fifty Dwelling-houses, for the Frystone Coal Company. Messrs. Richardson & Simpson, Architects, Southgate Chambers, Wakefield.

GELLIGAER.—Oct. 13.—For Building Board School at Hengoed. Mr. J. Williams, Architect, Morgan Town, Merthyr Tydfil.

GOOLE.—Oct. 5.—For Taking Down and Rebuilding Part of Boundary Wall at the Union. Mr. E. C. B. Tudor, Surveyor, Goole.

GORLESTON.—Oct. 9.—For Construction of Two Lighthouses. Mr. H. Dudley Arnott, Architect, High Street, Gorleston.

GLOUCESTER.—Oct. 14.—For Construction of River Wall (191 lineal yards, 22 feet deep). Mr. R. Read, City Surveyor, Gloucester.

HALIFAX.—Oct. 2.—For Reinstating Mill for the Salterhebble Cotton Company. Messrs. Horsfall & Williams, Architects, 15 George Street, Halifax.

HALIFAX.—Oct. 8.—For Reinstating Flour Society's Mill and Building Stive Room. Messrs. Horsfall & Williams, Architects, 15 George Street, Halifax.

HALIFAX.—Oct. 6.—For Painting North Bridge. Mr. Edward Escott, Borough Engineer, Town Hall, Halifax.

HALIFAX.—Oct. 12.—For Building Eight Houses and Appurtenances, Forming Street, &c. Messrs. Horsfall & Williams, Architects, 15 George Street, Halifax.

HAYFIELD.—Oct. 12.—For Building Board School. Mr. C. W. Johnson, Architect, Whaley Bridge.

HIGH HOLBORN.—Oct.—For Alterations at the Western Central District Post Office. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

ISLINGTON.—Oct. 5.—For Cast-iron Post and Wrought-iron Bar and Chain Fencing, &c., on Highway Fields. The Superintending Architect, Metropolitan Board of Works, Spring Gardens, S.W.

KEIGHLEY.—Oct. 5.—For Building Warehouse at Ingrow Mills. Messrs. J. Haggas & Co., Keighley.

KEIGHLEY.—Oct. 9.—For Alterations and Additions to Lock-up. Mr. J. Vickers Edwards, West Riding Surveyor, Wakefield.

KILLARNEY.—Oct. 8.—For Temporary Buildings for Patients, Killarney District Lunatic Asylum. Mr. J. F. Fuller, Architect, 179 Great Brunswick Street, Dublin.

KINGSLAND.—Oct. 6.—For Building Shops, High Street. The Resident Engineer, Broad Street Station, E.C.

LEEDS.—Oct. 5.—For Building Two Houses and Shops, Kirkstall Road. Mr. James Charles, Architect, 14 Butts Court, Albion Street, Leeds.

HOLDEN & CO.'S PATENT ZINC ROOFING

WITH THEIR

PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,

Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.

Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.

ZINC AND IRON WORKERS AND COPPERSMITHS.

Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.

HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

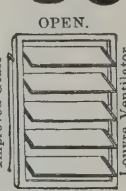
H. W. COOPER & COMPANY, LIMITED,

HEALTH EXHIBITION,



MEDAL AWARDED, 1884.

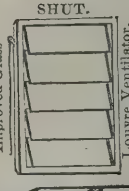
OPEN.



Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883. **H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.**

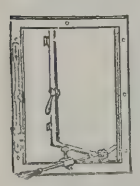
SHUT.



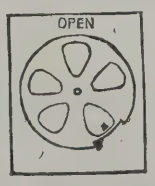
GLASS SELLERS' COMPANY EXHIBITION,



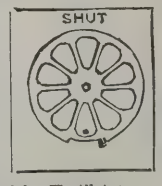
MEDAL AWARDED, 1876.

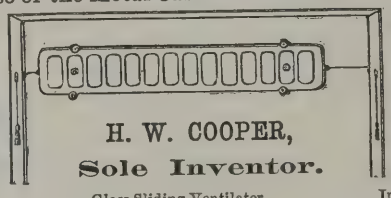


Improved Casement.



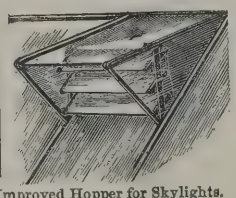
Circular Glass Revolving Ventilator.





H. W. COOPER,
Sole Inventor.

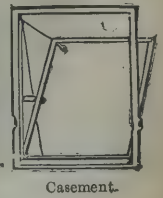
Glass Sliding Ventilator.



Improved Hopper for Skylights.



Hopper Ventilator.



Casement.

Steam Works: Little Queen St., Upper George Street, Edgware Road, W.

Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.



SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.

LONDON DEPOT:
Kinson Wharf,
Albert Embankment,
LAMBETH, S.E.

CARTER, JOHNSON & CO.,
ENCAUSTIC TILE MANUFACTORY,
St. George's Works,
WORCESTER.

20 Victoria Buildings,
Victoria Street, MANCHESTER.

Agents:—STURGEON & SMITH,
Cross Lane, Eastcheap, E.C.

LONDON.—Oct. 5.—For Enlargement of Board Schools, Deptford and Bethnal Green. School Board Office, Victoria Embankment, W.C.

LONDON.—Oct. 6.—For Constructing Passenger Station, York Road, Maiden Lane. The Resident Engineer, Broad Street Station, E.C.

LYNTON.—Oct. 2.—For Building Wing to Valley of Rocks Hotel. Messrs. Gould & Webb, Architects, Castle Street, Barnstaple.

MANCHESTER.—Oct. 6.—For Alterations to Bradford Town Hall and Forming Portion into Reading Room. The City Surveyor, Town Hall, Manchester.

MATLOCK BRIDGE.—For Rebuilding Portion of Smedley's Hydropathic Establishment. Mr. G. E. Statham, Architect, Town Chambers, Wheeler Gate, Nottingham, and Matlock Bridge.

MOUNTSORREL.—Oct. 11.—For Erection of Casual Wards at the Workhouse of the Barrow-upon-Soar Union. Mr. Fairfax Scott, Clerk.

NEWCASTLE-ON-TYNE.—Oct. 1.—For Building the Fleming Memorial Hospital for Sick Children. Names to Mr. W. Cochrane, St. John's Chambers, Newcastle-on-Tyne. Messrs. John S. Quilter & George Wheelhouse, Architects, London.

NORTH SHIELDS.—Oct. 13.—For Building Market. Mr. C. T. Gomoszynski, Borough Engineer, Norfolk Street, North Shields.

PORTSMOUTH.—Oct. 19.—For Building Offices and Stores at Entrance Gate to Camber Dock and Construction of Weighbridge. Mr. Alexander Hellard, Town Clerk, Portsmouth.

RAWMARSH.—Oct. 5.—For Building Board Schools, Ashwood Road, Parkgate. Mr. J. Platts, Architect, Rawmarsh.

REDDISH.—Oct. 7.—For Construction of Brick Sewers (1,830 yards) and Works in Connection and for Supply of 18-inch Cast-iron Sewage Pipes (1,800 yards). Mr. R. Vawser, Engineer, 17 Cooper Street, Manchester.

ROMSEY.—For Additions and Alterations to Rectory House at Lockerby. Messrs. J. Harding & Son, Architects, Canal, Salisbury.

SCARBOROUGH.—Oct. 7.—For Construction of Sea-wall and Promenade (1,200 yards long), North Sands. Mr. Whately Eliot, Resident Engineer, Town Hall, Scarborough.

SHAW.—Oct. 1.—For Building Four Houses, Grains Road. Mr. J. Mawson, Architect, Rochdale Road, Shaw.

SOUTHAMPTON.—Oct. 5.—For Fittings for Iron Buildings at Survey Department. Drawings at the Office of the Clerk of Works, Ordnance Survey Office, Southampton.

STEVENAGE.—Oct. 7.—For Construction of Reservoir, Laying Mains and Branches, and Works in Connection. The Clerk to the Local Board, High Street, Stevenage.

SWINDON.—Oct. 2.—For Building Villa Residence. Mr. Orlando Baker, Architect, 38 Regent Street, Swindon.

TOLWORTH, LONG DITTON.—Oct. 13.—For Building Infectious Hospital. Messrs. Jacomb, Gibbon & Woodroffe, Architects, 3 Verulam Buildings, Gray's Inn, W.C.

WALSALL.—Oct. 7.—For Building Two Labourers' Cottages, Brockhurst Farm. Mr. J. R. Cooper, Town Clerk, Walsall.

WHITEHAVEN.—Oct. 6.—For Alterations and Additions to Board School at Kelton. Mr. J. Shepherd, Architect, 12 Lowther Street, Whitehaven.

TENDERS.

BOURNEMOUTH.

For Works on Hamilton Park Estate, for the Bournemouth Land Society. Messrs. C. T. & W. H. MILES, Surveyors, Observer Chambers, Bournemouth.

Fencing.

W. Curtis, Poole	£1,200 0 0
S. Minty, Bournemouth	636 7 9
G. Potts, Boscombe	461 5 0
James & Taylor, Bournemouth	405 3 0
J. Watson, Moordown	398 7 6
E. WELLMAN, Bournemouth (*accepted*)	369 16 0
C. Hunt, Bournemouth	354 16 0

Road-making.

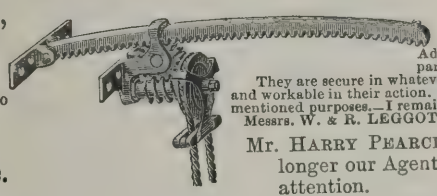
G. Troke, Bournemouth	393 0 0
SAUNDERS & WHITE, Bournemouth (*accepted*)	359 7 8
S. White, Moordown	279 0 0
J. Walton, Moordown	254 10 0

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,
Is admitted to be the best ever put before the Public.
From 5s. each.

Write for REDUCED PRICE LIST and Testimonials to
W. & R. LEGGOTT,
70 Park Road, Bradford, Yorkshire.
N.B.—Size and height of window no object.

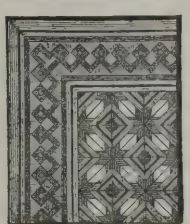


TESTIMONIAL.
BANGOR, N. Wales: September 14, 1885.
Sirs,—I have pleasure in testifying that I have used Leggott's Sight Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction.
They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.
Messrs. W. & R. LEGGOTT, Bradford.

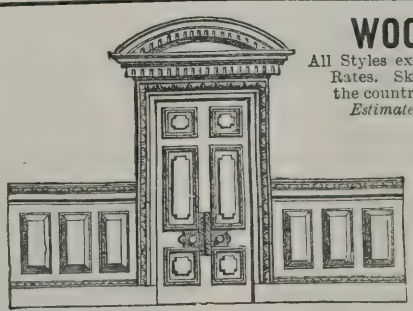
Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD., 22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.
150,000 ft. super. in Stock, ready for Laying.
RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.
Immense Stock always ready for Laying.



THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction



WOOD CARVINGS.
All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.
Estimates and Designs on Application.



ARTISTIC JOINERY.



ORNAMENTAL PARQUET.
DEAL BACKING.

THE
LONDON & EDINBURGH IRON BUILDINGS CO.,
PATENTEES,
IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.
Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.
Special Plans prepared to meet the requirements of our Customers.
Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

ALNWICK.

For Building Steaming Shed, Cooperage Loft, &c., Alnwick Brewery, for Mr. John Bolam. Mr. G. REAVELL, jun., Architect, Alnwick.

J. Whinham, Alnwick, mason.
J. Dunn, Alnwick, carpenter and joiner.
W. Darling, Alnwick, slater.
J. Hindmarsh & Son, Alnwick, plumber and smith.
J. Dunn, Alnwick, painter.

BARNSLEY.

For Building Bakery, for the British Co-operative Society, Barnsley. Mr. FREDERIC SMITH, Architect, 29 Bridgewater Chambers, 6 Brown Street, Manchester. Quantities by the Architect.

Accepted Tenders.

Robert Snell, Rotherham, excavator, bricklayer, mason, and concretor	£810 0 0
Carter Bros. & Co., Manchester, ironfounder	222 0 0
J. Hardcastle, Barnsley, carpenter	198 10 0
J. Smith, Barnsley, plumber	77 0 0
Pickles Bros., Leeds, slater	46 9 0
E. B. Fletcher, Barnsley, plasterer and painter	35 0 0

BURNLEY.

For Extension of Receiving Wards at the Workhouse. Mr. T. BELL, Architect, Burnley.

Parker Bros., Walshaw, excavator, mason, and bricklayer.
Pollard & Co., Nelson, carpenter and joiner.
W. Stanworth, Burnley, slater.
T. Radcliffe, Burnley, plasterer and painter.
Varley & Son, plumber and glazier.

CARDIFF.

For Alterations to the Stuart Hall, Hayes, Cardiff. Mr. J. P. JONES, Architect, 28 Park Street, Cardiff.

T. Gough, Oakfield Street	£585 0 0
D. Thomas, 180 Richmond Road	574 0 0
G. Beams, 1 Violet Row	490 0 0
Jones Bros., Park Street	410 0 0
J. THOMAS, Charles Street (*accepted*)	390 0 0
Cadogan & Williams, Newport Road	275 0 0

All of Cardiff.

BRIGHTON.

For Sanitary and other Alterations, Improvements and Additions to No. 111 King's Road, Brighton, for Mr. E. J. Turner, Surgeon. Mr. CHARLES E. GRITTON, M.S.A., Surveyor, Brighton, London, and Sidcup.

R. E. BOTTING, Brighton (*accepted*).

CARLISLE.

For Alterations, Rebuilding, and Reconstruction of House of Recovery, Carlisle, for Fever Hospital Committee and Corporation of Carlisle. Mr. GEO. DALE OLIVER, Architect, Carlisle and Workington.

Alterations to Main Building New Wards, &c.

J. Beaty, excavator, mason, and bricklayer	£642 14 4
Batey & Foster, carpenter and joiner	365 0 0
J. B. Anderson, plumber	163 0 0
S. Ferguson, plasterer in Robinson's cement	160 0 0
C. J. Nanson, slater	97 2 6

Reconstruction of Corporation Wards.

J. Beaty, excavator, mason, and bricklayer	267 1 8
Batey & Foster, carpenter and joiner	218 0 0
J. B. Anderson, plumber	94 0 0
S. Ferguson, plasterer in Robinson's cement	84 0 0
C. J. Nanson, slater	49 10 6

All of Carlisle.

For New Public Slaughter-houses, Carlisle. Mr. H. W. M'KIE, City Surveyor.

Excavating, Brickwork, and Masonry.

T. Creighton	£2,734 0 0
J. & W. Lang	2,685 0 0
J. Beaty	2,650 0 0
J. & W. Baty	2,648 0 0
BEATY BROS. (*accepted*)	2,640 14 0
J. Metcalf	2,342 0 0

Carpenter and Joiner.

G. Black	848 0 0
T. Scott	807 0 0
W. Court	775 0 0
J. Reed	768 0 0
H. & R. Court	766 1 0
H. Davidson	751 0 0
J. Hewit	750 0 0
J. Lattimer	639 0 0
BATEY & FORSTER (*accepted*)	594 0 0

PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

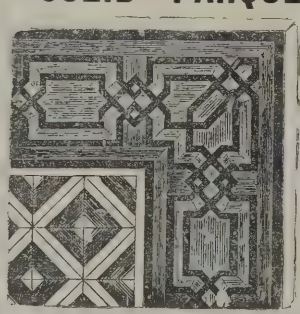
J. & W. E. ARCHBUTT,
201 WESTMINSTER BRIDGE ROAD, LONDON, S.E.
Branch Establishment:
11 BRIDGE STREET, WESTMINSTER, S.E.
Surveying and Drawing Instrument and Stencil Plate Manufacturers
To H.M. Office of Works and Stationery Office, Commissioner of Woods and Forests, Royal Engineers, &c.
All Instruments guaranteed. Quality, accuracy, and prices unsurpassed. Original Manufacturers of Vulcanite Scales, Protractors, Curves, Angles, &c. General Catalogue, No. 1, 160 Illustrations, 62 pages, three stamps. Stencil Plate Catalogues, No. 3, 200 Illustrations, three stamps. Established 1795.

ABOUT 2,000 IN USE.
Patent Chimney Cans for Curing a Blow Down. These are made of Fire Clay, are Cheap and Durable. Apply to
J. & K. HOWIE,
Hurlford Fire Clay Works, Kilmarnock, N.B.
Who also manufacture Enamelled Bricks, Baths, Sinks, Mangers, Cattle Troughs, Cisterns, &c., &c.

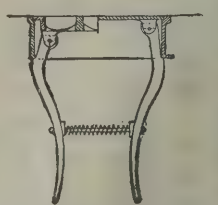
PERMANENT EXHIBITION OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

CONTRACTS.
THE LONDON GUARANTEE & ACCIDENT COMPANY (Limited) issue Bonds as security on behalf of Contractors or Builders for the due performance of Government, Municipal, or other Contracts of every description, at moderate rates. On application, leave will be given to send in the Company's name as surety with any Tender, no charge being made unless the bond is ultimately required. For terms, &c., apply to the Office, 10 Moorgate Street, London, E.C.
The Bonds of this Company are accepted by the several Government Departments.

E. SCOTT & CO., 166 City Road.—Estab. 1861.
E. SCOTT & CO.,
Sole Manufacturers of the Improved Patent
MICA LETTERS,
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.,
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
166 CITY ROAD, LONDON.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered.
PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

WILLIAM HALFORD
(The Patent Self-Fastening Coal Plate Co.),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT.  NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

CARLISLE—*continued.*

For Cement Work.

O. Lister	£728 6 2
R. Ormerod	690 0 0
J. Harrington	666 0 0
G. Smith & Co.	620 0 0
S. Ferguson	598 13 6
BEATY BROS. (*accepted*)	533 0 0

Ironwork.

Pratchitt Bros.	765 0 0
Shennan	736 17 0
Wharton Bros.	645 11 6
W. & J. Herbert	634 9 0
S. Baldwin	589 17 11
Porter Bros.	589 1 2
R. Graham	545 10 0
J. & J. Matthews	516 13 10
D. Stanfield	501 0 0
J. RICHARDSON (*accepted*)	418 11 3

Plumber Work.

W. Foster	151 5 6
W. Anderson	101 0 0
J. B. ANDERSON (*accepted*)	66 11 9

Slater Work.

C. J. Nanson	173 15 6
SMITH & SONS (*accepted*)	130 0 0

Painter and Glazier.

T. PALMER (*accepted*)	169 0 0

CHELTENHAM.

For Building Villa at Charlton Kings, Cheltenham, for Mr. E. J. Brydges, Town Clerk of Cheltenham. Mr. J. J. DARBY, Architect, Cheltenham.

H. D. Brown, Cheltenham	£1,777 0 0
Cox, Charlton	1,750 0 0
C. CHANNON, Cheltenham (*accepted*)	1,680 0 0

COALVILLE.

For Alterations and Additions to Abbot's Oak and New Outbuildings, Coalville, for Mr. W. Green. Messrs. PETTIFAR & SIMPSON, Architects, Berridge Street Chambers, Leicester.

W. Moss, Coalville (*accepted*).

DERBY.

For New Stores and Manager's House, Littleover, for the Derby Co-operative Provident Society. Messrs. COULTHURST & BOOTY, Architects, 4 Albert Street, Derby.

Hardy & Kelham, Derby	£550 0 0
Pemberton	546 0 0
Parker	540 0 0
Durant	525 0 0
Sharp	515 0 0
A. Brown	499 0 0
J. DICKINSON (*accepted*)	498 0 0

For Villa Residence, Kedleston Road, Derby, for Mr. H. Sherwin. Messrs. COULTHURST & BOOTY, Architects, 4 Albert Street, Derby.

J. Dickinson, Derby	£505 0 0
W. Walkerdine, Derby	498 0 0
J. PARKER, Derby (*accepted*)	487 0 0

DEWSBURY.

For Building Mortuary and Laundry, Dewsbury Infirmary. Messrs. J. KIRK & SONS, Architects, Dewsbury.

Accepted Tenders.

J. & T. Audsley, Dewsbury, mason	£620 0 0
Land & Nettleton, Ossett, joiner	135 0 0
J. Wright, Batley Carr, plumber	64 0 0
T. Brear, Dewsbury, slater	50 0 0
J. Wright, Batley-Carr, painter	19 0 0

Fitting-up Laundry.

Bradford & Sons, Manchester	176 0 0

DUNSFOLD (SURREY).

For Building House at Dunsfold, Surrey, for Mr. S. Barrow. Mr. T. R. HOOPER, Architect, Redhill.

Greatorex & Co., London	£3,100 0 0
Pannett Bros., Horsham	2,950 0 0
Wells, Bermondsey	2,860 0 0
E. & J. H. Holden, Cranleigh	2,758 0 0
Bottrill, Reading	2,720 0 0
Woolgar & Son, Horsham	2,699 0 0
Newland, Cobham	2,660 0 0
J. & C. Bowyer, Upper Norwood	2,648 0 0
Battley, Old Kent Road	2,599 0 0
Holt, Croydon	2,500 0 0
Longley, Crawley	2,387 0 0
Horrocks, Croydon	2,373 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

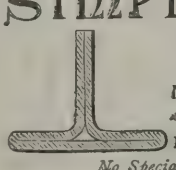
CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET SOHO. LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

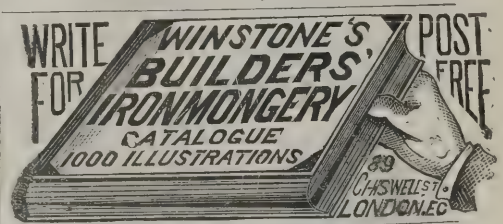
STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

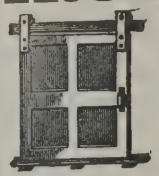


Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET, HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK.
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of **Bath Stone**, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

ELGIN.

For Works in South Street, Elgin. Mr. H. M. S. MACKAY, Road Surveyor, Elgin.

Grey Granite Setts.

J. Gibb & Son, Aberdeen	£693 6 2
Bower & Florence, Aberdeen	686 8 1
A. & F. Manuelle, Aberdeen	665 18 7
J. Littlejohn, Banchory, red granite	549 15 0
J. FYFE, Aberdeen (*accepted*)	520 8 2
Engineer's estimate	638 12 5

Laying Setts, &c.

D. Bowden, Edinburgh	238 7 9
R. C. Brebner, Cullen	226 13 0
A. MACLEAN, Elgin (*accepted*)	220 0 0
Engineer's estimate	217 8 0

FARNHAM.

For Construction of Service Reservoir and Works in connection, Farnham, Surrey, for the Farnham Water Company. Messrs. POLLARD & FORDER, Engineers, 7 Great Queen Street, Westminster.

Dickenson, Loughborough Junction	£1,450 0 0
Mackinlay & Boyd, 27 Walbrook	1,250 0 0
Mitchell & Robins, Farnham	1,195 0 0
Cox, Farnham	1,155 12 6
Bath & Blackmore, Clapham	1,130 0 0
Marshall, Brighton	1,117 0 0
Wise, Deal	1,083 0 0
Cowdrey, Deal	1,073 0 0
Crooke & Sons, Southampton	1,037 0 0
Diamond, Farnham	1,027 10 0
S. E. Bentley, Lee	970 0 0
Hill, Lee	928 15 0
Patrick, Farnham	880 0 0
Catley, Clerkenwell	860 0 0
Knight, Morden	815 0 0

GREENOCK.

For Building Board School at the Corner of Ann and Dempster Streets, Greenock.

Masonry.

William Steel, Greenock	£4,776 0 0

Joiner.

Miller & Brown	2,244 13 11

GORT.

For Building Dispensary and Residence at Ardrahan, for Medical Officer, Gort Union, Co. Galway.

T. NESTOR, Gort (*accepted*)	£605 0 0

GRAVESEND.

For Building Stable, Cart-shed, and Loft in the rear of No. 7 Harmer Street, for the Committee of the Gravesend Co-operative Society. Mr. A. G. SMITH, M.S.A., Architect, Darnley Street, Gravesend. Quantities not supplied.

W. R. Barton, Gravesend	£186 0 0
Knight, Northfleet	185 0 0
W. Tuffee, Gravesend	149 0 0
W. Nightingale, Gravesend	148 0 0
R. Gates, Gravesend	138 0 0
T. Watson, Dulwich	135 10 0
MULTON & WALLIS, Gravesend (*accepted*)	129 0 0

GREAT YARMOUTH.

For Alterations and Additions to Two Cottages near Apsley Road. Mr. CHARLES G. BAKER, Architect, St. George's Plain, Great Yarmouth.

Hanson, Yarmouth	£209 0 0
Bray, Yarmouth	179 0 0
Rouse Bros., Yarmouth	166 10 0
Leggett, Gorleston	164 0 0
Moore, Yarmouth	162 10 0
Gumble & Watts, Yarmouth	158 0 0
Edwards, Yarmouth	155 10 0
Barnard, Yarmouth	149 0 0
G. E. SALMON, Yarmouth (*accepted*)	142 0 0

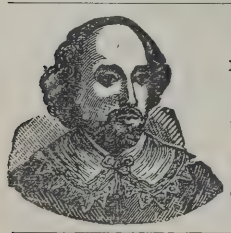
GUILDFORD.

For Supply of Cast-iron Pipes (4,900 yards), for the Guildford Urban Sanitary Authority.

Newton, Chambers & Co.	£631 17 6
Oakes & Co.	603 10 0
Laidlaw & Co.	589 1 3
Smith, Patterson & Co.	563 6 2
Jukes, Coulson & Co.	549 13 1
Carling & Co.	545 5 0
Thames Bank Company	544 1 3
Stanton Iron Company	523 10 3
Cochrane, Grove & Co.	521 14 4
Clay Cross Company	517 6 3
Watson, Gow & Co.	516 10 1
COCHRANE & Co., Dudley (*accepted*)	508 2 6

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.



NASH & HULL,
LETTER
MANUFACTURERS,
WRITERS AND ENGRAVERS
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

ISLE OF WIGHT.

For Building St. John's Parish Room, Sandown, Isle of Wight. Mr. James Newman, Architect, Sandown.

Alfred Young	£805 0 0
William Jolliffe	783 0 0
Fred Colenutt	689 0 0
James Hayden (*accepted*)	645 0 0

For Building Infants' Schoolroom, &c., the Mall, Brading, Isle of Wight, for the Brading School Board. Mr. James Newman, Architect, Sandown.

Fred Colenutt	£923 18 0
E. M. Daish	863 7 0
R. Griffin	822 17 3
George Hayles	793 10 0
James Ball	787 0 0
Alexander Neunham	770 0 0
Isaac Barton	764 0 0
James Hayden	740 0 0
John Meader (*accepted*)	674 0 0

KETTERING.

For Alterations at the Workhouse, Kettering. Mr. J. Alfred Gotch, F.R.I.B.A., Architect.

C. & F. Henson, Regent Street	£198 0 0
Margetts & Neal, Station Road	197 0 0
C. Sharman, Market Street	190 0 0

LEICESTER.

For Forming Streets, Highfields Estate. Mr. A. Wakeley, Surveyor, Leicester.

W. Cordon, Burton Joyce	£3,189 0 0
J. Smith, Belgrave	2,937 0 0
M. Hutchinson, Leicester	2,664 0 0
Gibbins, Leicester (*accepted*)	2,427 10 0

LONDON.

For Works of Cleansing, Vestry Hall, St. George-in-the-East.

Palmer & Co., Old Gravel Lane, E.	£190 0 0
J. F. Holliday, Anthony Street, E.	127 10 0
E. Coombe, Old Gravel Lane, E.	125 0 0
W. G. Lilley, Crown Court, W.	123 0 0
F. Deacon, Turners Road, Bow	97 0 0
J. Young, St. George Street, E. (*accepted*)	62 10 0
J. Young (Gas Apparatus) (*accepted*)	35 0 0

LONDON—*continued.*

For Erection of Warehouse and Offices on site adjoining Clifford's Inn, Fetter Lane, for Messrs. Sampson Low, Marston, Searle, Rivington & Marston. Mr. W. Seckham Witherington, F.R.I.B.A., Architect, 79 Mark Lane, E.C.

Stanley Bird	£10,027 0 0
C. F. Kearley	9,970 0 0
Grover & Sons	9,923 0 0
W. Shepherd	9,854 0 0
Brass & Sons	9,753 0 0
Kirk & Randall	9,740 0 0
Colls & Sons	9,700 0 0
Priestley	9,579 0 0
Patman & Fotheringham	9,463 0 0

For Laying Granite Carriageways, York Stone Footways, and other Works, Bermondsey New Road and Star Corner Improvements, Bermondsey.

Webster	£5,786 0 0
Hindle & Morrish	5,393 0 0
Cross, Bristol	5,364 0 0
J. Biggs, Birmingham	5,150 0 0
Trehearne, Battersea	4,978 0 0
Chadwick, Liverpool	4,900 0 0
Griffiths, Kingsland Road	4,755 0 0
Mowlem & Co.	4,680 0 0
Turner & Son, Chelsea (*accepted*)	4,450 0 0

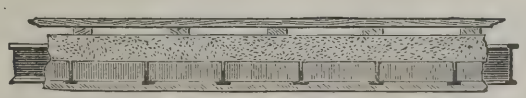
For Building Three Houses and Shops, Nutbrook Road, Peckham Rye, for Mr. J. Barrow. Mr. J. B. Wootton, Surveyor, 35 High Street, Peckham.

T. Lane, Cricklewood	£1,055 0 0
Dover, Wood & Co., Walworth	1,047 1 8
Field & Butler, Peckham	895 0 0
J. Hill, Gravesend	895 0 0
J. J. Morse, jun., Peckham	840 0 0
J. Carter, Hammersmith	838 0 0
F. Dawes & Co., Peckham Rye	800 0 0
T. Pierpoint, Crystal Palace Road	795 0 0
Bouttell & Hammond, West Hampstead	788 0 0
G. Cropper, Peckham	780 0 0
T. Watson, Dulwich	765 13 6
R. & E. Evans, Peckham	750 0 0
C. A. Neale, Camberwell	697 0 0
F. L. Linzell, Princeton Street, W.C.	678 0 0
W. Bickel & Pellett, Peckham (*accepted*)	640 0 0

FLAT BRICK FIRE-PROOF FLOORS.



LONDON, 1874.



LONGITUDINAL SECTION.



BRUSSELS, 1876.

THE BEST as well as the CHEAPEST Fire-proof Floors yet introduced. Their small cost makes them specially suitable for artisans dwellings, residential flats, offices, chambers, and private houses.

They are constructed with hard-burnt bricks, laid flat, and bonded on the upper face with tough concrete 3 inches thick; and by the method of laying all iron is protected from the action of fire.

Experiments show a resistance to load and impact greater than furnished by the ordinary concrete floors. No thrust is transmitted to the walls, as in all arched construction, the walls being tied in and strengthened.

The floors are practically noiseless, the different densities of the concrete, brick and plaster, with the air space above, intercepting the sound vibrations.

The brick soffit forms a capital key for the plaster, and no laths or counterceiling are necessary, but for high-class work wood blocks are introduced in the soffit, to which the ordinary lath and plastering or fibrous plaster is fixed. This also provides a second air space, and furnishes the most perfect sound-resisting floors known.

They are not affected by water, acids, or alkalies, and they may be fixed during the progress of the building, thus dispensing with the use of internal scaffolding.

The concrete being tough instead of friable, the boarded finish may be nailed down without the use of sleeper joists. It is recommended to use an inch strip as a sleeper fillet. This will provide ventilation, and space for gas and water-pipes.

The depth of the finished floor is 6 to 9 inches only, and when the saving on this head is taken into account, the cost does not exceed that of the ordinary combustible timber floor of corresponding strength.

HOMAN & RODGERS,

Engineers and Patentees,

17 GRACECHURCH ST., LONDON, E.C., & 13 DAWSON ST., MANCHESTER.

WORKS: RATCLIFF, LONDON, E., & HULME IRONWORKS, MANCHESTER.

Homan's Patent Girders, Rolled Joists, Cast-iron Columns, Roofs, Bridges, and every kind of Constructional Ironwork.

London Telephone, No. 1,026. Registered Telegraphic Address—"Homan Rodgers, London"; "Namoh, Manchester."

LONDON—*continued.*

For Mansions, Pont Street, Cadogan Square. Mr. EDWIN T. HALL, F.R.I.B.A., Architect, 57 Moorgate Street. Quantities by Messrs. Evans & Deacon, Adelaide Street, W.C.

Longmire & Burge	£13,400 0 0
T. Boyce	13,154 0 0
J. & J. Greenwood	13,132 0 0
Perry & Co.	12,837 0 0
E. Toms	12,738 0 0
W. Oldrey	12,377 0 0
FOSTER & DICKSEE (*accepted*)	12,324 0 0

For Erection of Nine Small Houses, Plumstead. Mr. H. WHITEMAN RISING, Architect, Hawkhurst.

	Tender for Nine Houses.	Concrete Dressings.
Lonergan Bros., Plumstead	£3,700 0 0	—
J. T. Chappell	3,495 0 0	—
R. Rayner	3,483 0 0	£415 0 0
Harris & Wardrop	3,173 0 0	373 0 0
O. Craske	3,120 0 0	232 10 0
B. E. Nightingale	3,083 0 0	269 0 0
J. Holloway	3,029 0 0	211 0 0
Drake & Co.	—	251 13 9

For Repairs to No. 19 Malden Crescent, Prince of Wales's Road, Kentish Town, N.W., for Mr. F. W. Rowney. Mr. WALTER J. EBBETTS, F.R.I.B.A., Architect, Savoy House, 115 Strand, W.C.

H. Baylis	£95 0 0

LONG EATON.

For Street Works, Long Eaton.

T. A. Davidson	£434 0 0
J. F. Todd, Derby	340 3 6
W. Cordon, Burton Joyce	340 0 0
J. Howley, Ickeston	318 0 0

MILEHAM.

For Building Primitive Methodist Chapel at Mileham. Mr. J. A. HILLAM, Architect, King's Lynn.

Crisp, Litcham	£163 10 0
Mallon, Swaffham	159 10 0
Howlett, Swaffham	150 15 0
Impson, Swaffham	144 0 0
BEESTON, East Dereham (*accepted*)	143 0 0
Hooks, Tittleshall	127 10 0
Brown, Whissonsett	124 10 0

NEW SHOREHAM.

For Building Chimney and other Works at the Workhouse, New Shoreham, Steyning Union. Mr. CHARLES DALBY, Architect, Steyning.

W. A. Gates, New Shoreham	£220 0 0
C. CURD, New Shoreham (*accepted*)	184 0 0
W. T. Watson, Steyning	175 0 0
G. Burchell, New Shoreham	174 17 6
T. Still, Patcham	145 0 0

NORTH SHIELDS.

For Alterations and Additions to the North Shields Baths and Washhouses, for the Tynemouth Corporation. Mr. C. T. GOMOSZYNSKI, Borough Engineer.

J. Hutchinson, Tynemouth	£1,245 4 0
T. Forrest, North Shields	1,203 12 5
W. Johnson & Son, North Shields	1,185 14 6
G. Reay & G. Leighton, North Shields	1,146 10 0
J. & W. Simpson, North Shields	1,126 6 3
Motton Bros., North Shields	1,079 1 11
J. W. ATKIN, South Shields (*accepted*)	942 5 0

Machinery and Washing Apparatus.

Manlove, Alliot, Fryer & Co., London	1,360 0 0
Mather & Armstrong, Newcastle-on-Tyne	940 0 0
T. BRADFORD & Co., Salford (*accepted*)	895 0 0

RUSHDEN.

For Residence, Stables, and Boundary Walls, Rushden, Higham Ferrers, Northamptonshire. Mr. ABRAHAM HART, Architect and Surveyor, Wakefield and Rushden. Quantities by the Architect.

For the Whole Work.

J. Thorpe, Oundle	£2,068 0 0
William Claridge, Banbury	1,745 0 0
Austen, St. Albans	1,710 0 0
George Henson, Wellingborough	1,675 0 0
W. Foskett, Rushden (without plumbing)	1,640 0 0
G. Barlow, Rothwell	1,620 0 0

Accepted Tenders.

George Dawkins, Wellingborough, bricklayer, mason, plasterer, and slater.
Adnitt & Everard, Rushden, carpenter and joiner.
W. Woodward, Rushden, plumber and glazier.
Total £1,545.

ASCHERBERG PIANOS,

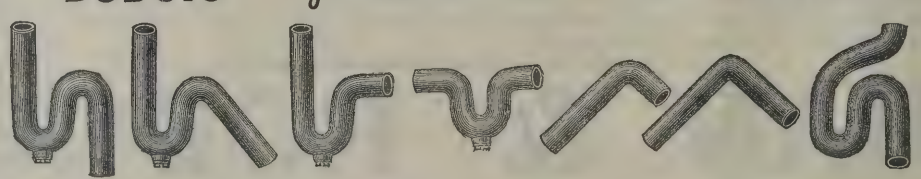
Acknowledged by all **MUSICAL AUTHORITIES** and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, **211** Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET, KING'S CROSS, W.C.

NOTTINGHAM.

For Building Factory, Ilkeston Junction, Nottinghamshire. Mr. Gilbert S. Doughty, Architect, 14 Fletcher Gate, Nottingham. Quantities by the Architect.

Marshall & Leggett, Ilkeston	£4,248 0 0
T. Cuthbert, Nottingham	3,973 0 0
Bell & Son, Nottingham	3,883 0 0
Lynam & Kidd, Nottingham	3,825 0 0
Ingham & Sons, Nottingham	3,822 0 0
J. Cooper, Nottingham	3,769 0 0
J. J. Adams, Nottingham	3,761 0 0
W. Needham, Loughborough	3,720 0 0
G. Fullalove, Long Eaton.	3,678 0 0
H. Vickers, Nottingham	3,650 0 0
Evans & Woodcock, Nottingham	3,633 0 0
W. Haynes, Ilkeston.	3,562 0 0
John Manners, Ilkeston	3,460 0 0
Frederick Shaw, Ilkeston	3,440 0 0
J. F. Price, Nottingham	3,433 0 0
Wheatley & Maule, Nottingham (*accepted*)	3,431 0 0

For Building Two Cottages to Factory situate at Ilkeston Junction, Notts. Mr. Gilbert S. Doughty, Architect, 14 Fletcher Gate, Nottingham. Quantities by the Architect.

Marshall & Leggett, Ilkeston	£254 0 0
Lynam & Kidd, Nottingham	242 0 0
Bell & Son, Nottingham	221 0 0
W. Haynes, Ilkeston	213 11 0
J. J. Adams, Nottingham	213 0 0
J. Manners, Ilkeston	212 0 0
T. Cuthbert, Nottingham	211 0 0
H. Vickers, Nottingham	210 0 0
W. Needham, Loughborough	205 0 0
G. Fullalove, Long Eaton	200 0 0
J. Cooper, Nottingham	196 10 0
Ingham & Sons, Nottingham	192 19 0
Wheatley & Maule, Nottingham	187 0 0
J. F. Price, Nottingham	178 7 6
F. K. Shaw, Ilkeston	175 0 0
Evans & Woodcock, Nottingham	173 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE NINE ELMS.

NOTTINGHAM—*continued.*

For Carrying out Repairs to Farmhouse and Buildings situate at Thrumpton, Notts. Mr. Gilbert S. Doughty, Architect, 14 Fletcher Gate, Nottingham.

First Portion Priced from Specification.

J. Bull, Long Eaton	£65 0 0
J. Haywood, Gotham	57 8 0
G. Fullalove, Long Eaton (*accepted*)	57 0 0
J. & G. Wilder, Keyworth	—

WAKEFIELD.

For Building Seven Cottages, Westgate End, Wakefield. Mr. Abraham Hart, Architect. Quantities by the Architect.

Accepted Tenders.

Bagnall Bros., Wakefield, bricklayer, &c.	£438 10 0
N. Ibbotson, Bellevue, carpenter, &c.	211 13 0
John Platt, Wakefield, plasterer	50 0 0
Joshua Snowden, Ossett, plumber, &c.	49 10 0
Pickles Bros., Leeds, slater	48 19 0
Thomas Naylor, Wakefield, painter	19 0 0

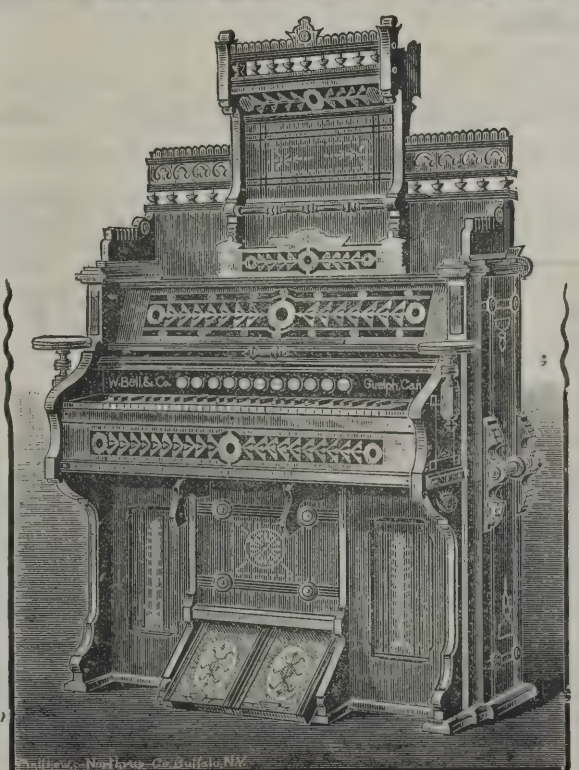
WALTHAMSTOW.

For Building Stables, Low Hall Farm, Walthamstow. Mr. G. B. Jerram, Engineer and Surveyor.

		Deduction for Alternative Scheme.
Cooper & Leaky	£1,380 10 0	£185 0 0
W. & T. Waite	1,156 5 11	153 17 1
J. Church & Co.	1,099 0 0	149 3 6
A. G. Barton	1,095 0 0	155 0 0
J. Stone	1,094 10 2	116 2 7
C. Read	1,061 0 0	147 17 6
W. J. Davenport	1,003 0 0	149 0 0
W. Mundy	1,000 0 0	150 0 0
E. Fuller	995 0 0	163 0 0
W. Thompson & Sons	990 0 0	134 0 0
J. Webb	975 0 0	149 10 0
T. Ede & Son	974 0 0	152 0 0
J. Godfrey & Son	968 0 0	130 0 0
W. Wood	955 0 0	140 0 0
M. A. Palmer & Co.	949 0 0	140 0 0
C. Barnes	928 0 0	141 0 0
J. Holland	893 0 0	145 0 0
W. Wood	955 0 0	140 0 0
G. Veale	874 0 0	109 0 0
W. J. Beale	856 0 0	100 0 0
G. Parker	836 0 0	120 0 0

W. BELL & CO.
AMERICAN ORGAN MANUFACTURERS,
AT THEIR NEW PREMISES,
58 HOLBORN VIADUCT,

Keep a full line of the
CELEBRATED
"BELL"
ORGANS
And the FAULTLESS
HARDMAN PIANOS
OF
NEW YORK.



ALWAYS ON HAND FOR INSPECTION.

THESE INSTRUMENTS ARE ACKNOWLEDGED LEADERS OF ALL OTHERS.

CATALOGUES FREE
From above Address.

WARLEY.

For Taking Down Old and Building New Residence, Peel House Lodge, Warley, near Halifax, on adjoining land, and extending Grounds. Mr. T. L. PATCHETT, Architect, Halifax.

Rowland Gaukroger, Warley, mason, &c.
J. & S. Murgatroyd, Luddenden, joiner.
Wm. Alderson, Luddenden, plumber.
J. & T. Alderson, Luddenden, slater.
Eastwood, Luddenden, gardener.

NOTES ON NOVELTIES.

Faija's Patent Cement Testing Machine.—The object of testing cement is to determine, in a short time, its quality and the results which may be expected from its use in practice. For this purpose it is necessary to use an apparatus called a cement tester. The action of this cement tester is based on the principle, which has been proved by practice, that moist heat accelerates the setting of cement, and that if judiciously applied the age of several days may be artificially given to a cement in a few hours. A sound cement acquires great hardness in a short time when treated in this apparatus, but an unsound one, or one that would under ordinary conditions "blow" when used in work, is caused to develop this characteristic in a few hours; and hence, by the use of this apparatus, a definite opinion may be formed as to whether or no a cement is a safe one to use, independently, of course, of its tensile strength, which may or may not be equal to that required. Messrs. Bowes, Scott & Read, of Broadway Chambers, Westminster, are the sole licensees and manufacturers of the above patent, which has been proved to be one of the best on the English market.

TRADE NOTES.

THE American Elevator Company, of 38 Old Jewry, London, have received an order to fix at the new National Liberal Club on the Embankment, which is being erected from the designs of Mr. A. Waterhouse, R.A., an elaborate lift service. Three of their Standard hydraulic elevators will be employed. The type selected is the same as that adopted in the Northumberland Avenue Hotel and the Albert Hall Mansions. In the former there are four of these elevators, and in the latter six. The method of working is the same in all, viz. by low pressure derived from tanks on the roof, into which the water is pumped from tanks of similar capacity in the basement. This reduces the working cost of the elevators to the simple cost of pumping. One of the elevators in the National Liberal Club is to rise 112 feet 6 inches, another 100 feet, and the third about 49 feet. In the Northumberland Avenue Hotel the rise of one is 91 feet 6 inches, of another 88 feet, and the two remaining 78 feet each. In the Albert Hall Mansions one elevator rises 102 feet 4 inches, another 92 feet, and the other four about 60 feet each.

MESSRS. BRADLEY & CRAVEN, of Wakefield, a leading firm in brick-making machinery, inform us that they are making bricks from a fine bed of clay near their works. Two of their own machines are in constant working, and the bricks have a particular density and hardness. Excellent railway facilities are at hand for supplying any part of the country.

A VERY handsome pair of polished brass sanctuary standard lights have just been executed for St. Michael's Church, Headingley, near Leeds, by Messrs. White & Sons, metal-workers, of 207 Oxford Street, London. This firm likewise made the brass altar rails and iron chancel gate for the same church.

THE master plasterers of Edinburgh and Leith, on Tuesday, agreed to grant an application by the men for an advance of a halfpenny per hour in their wages.

THE horses belonging to the Corporation of Edinburgh have this year been valued by Mr. John Waddell, contractor, at 6,720*l.* for 108 head, being an average of 62*l.* 4*s.* each, as compared with an average last year of 59*l.* 2*s.* for 105 horses.

MR. ALEXANDER MILLER, who obtained the mason work of the new town hall, Helensburgh, having withdrawn from the contract after signing agreement and commencing operations, the Hall Committee have accepted the offer of Mr. John Jack, Helensburgh, to complete the masonry for 1,959*l.*, or a sum of 83*l.* 10*s.* over Mr. Miller's original estimate. Mr. Jack will at once proceed with the work. The joiner's estimate has not yet been decided.

THE ANDERSTON FOUNDRY COMPANY (Limited), Glasgow, has just tested some glass railway sleepers for Dr. Siemens, of Messrs. Siemens & Halske, of London and Berlin, who has long been engaged in the development of that article. It is stated that the result of the experiments has been of a satisfactory character.

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

At the meeting of the Executive Committee of the Jubilee Exhibition, Manchester, on Wednesday, an offer from Messrs. John Galloway & Sons to supply, free of cost, the whole of the boilers, with their necessary valves, required for the exhibition, was accepted. An offer by Messrs. W. H. Bailey & Co., to supply all turnstiles required for the entrances, together with the necessary fittings, free of cost, was also accepted.

After severe testing of stoves for the warming of the Bank of England, the Honourable Governors, with their architect, have decided to warm it by means of Shorland's patent Manchester stoves, which they have found eminently satisfactory at the Bank and its branches throughout the country.

Messrs. Wheatley, Kirk, Price & Goulty, electrical and mechanical auctioneers, Queen Victoria Street, E.C., will on Thursday, the 7th inst., sell by auction all the modern brick-making plant, boilers, engines, shafting, gearing, &c., at the Milton Church Brick Fields, near Sittingbourne, Kent.

THE PRINCESS'S THEATRE, EDINBURGH.

An application was made last week to the justices for a renewal of license for the Royal Princess's Theatre, Edinburgh. The magistrates had ordered a report to be prepared by the Burgh Engineer and Firemaster, which was laid before the court on the same occasion. The report referred at the outset to the outcome of a similar report on the same premises submitted to the justices in 1883. In that report a number of vital defects were described in detail, and recommendations made for a thorough overhaul of the premises. The reporters found that while a few of these recommendations had received attention, the most important had not; and, with the exception of the removal of inflammable materials in the form of lumber of disused scenic furnishings, five direct points of danger within the main structure, the building up of a window in Nicolson Street towards a tenement which was in dangerous contiguity with the theatre roof, it was difficult to say that the condition of the theatre was much, if at all, better than at the time of the previous report. Proceeding to deal with the condition of the theatre in detail, the report referred in the first place to its situation, which, for a much-frequented place of entertainment, it considered most unsuitable, in respect that it occupied a site immediately behind tenements of dwelling-houses forming the southern corner of Nicolson Street and Hill Place, its accesses passing directly underneath the dwelling-houses in Hill Place on the one hand, and traversing a long narrow passage between the Nicolson Street tenements on the other. Besides, a number of the lumber cellars and property rooms penetrated directly underneath Hill Place property, so that in respect of the two essentials of access and isolation the theatre laboured under serious disqualification. The report next dealt with the arrangements and accommodation of the theatre, pointing out that there was no fireproof separation between stage and auditorium. The chief agent in promoting exhaust ventilation was a central sunlight, vitiated air escaping through a louvred ventilator in the roof. There were also numerous openings in the roof at other points, which were, however, at present covered with canvas to prevent smoke or sparks from the outside gaining access. The fresh supply was nowhere provided for except at these openings. The floor and subsoil were damp, and, with the large number of gaslights burning, the atmosphere, in a full house, became in a short time vitiated and impure. The only sanitary convenience was a single water-closet, in a dilapidated state, inconveniently situated. Dealing with the means of egress, the report stated that each section of the auditorium had its own egress, but the dress circle, the orchestra, and pit stalls, which used jointly the exit to Nicolson Street. The ratio of exit space to a full house was one foot to eighty-two persons; the report considered the ratio should not be greater than one foot to fifty persons. The main exit to Nicolson Street was 24 yards long, with the ceiling lined with canvas in close proximity to the gaslights, the only protection being a glass shade. At the end of the passage was a number of steps, which in the event of a panic would be a treacherous source of danger. Across the gallery seats were stretched a number of iron rods intended as a support for the back, which in the event of a panic would also prove a source of danger. The condition of the property and dressing-rooms was described as very unsatisfactory, several of the former under the Hill Place tenements being stored with inflammable materials. The lime-light tanks were said to be placed in a wooden enclosure in the "flies" over the stage. In most well-ordered theatres, the report stated, these were very properly placed in a fireproof chamber outside the theatre. In the present case the enclosure was of combustible material and seriously out of repair. In concluding, the reporters stated that, as the recommendations made in a former report had been in the main disregarded, they considered themselves shut up to the necessity of recom-

Equitable Fire & Accident Offices

FINANCIAL POSITION.

	Fire Co.	Accident Co.
Capital Subscribed	£263,335 —	£142,175
Capital Paid Up	52,667 —	28,435
Annual Income	88,943 —	21,264
Funds and Investments	98,969 —	36,528

Head Office: 11 & 13, ST. ANN ST., MANCHESTER.

BRANCHES:

LONDON - - - 69, Lombard Street, E.C.
GLASGOW - - - - 101, St. Vincent Street.
BIRMINGHAM - Midland Bdgs., 2, New St.
LIVERPOOL - - - - 11, Tithebarn Street.
NEWCASTLE - 1, St. Nicholas Buildings.
BELFAST - - - - - - 6, Royal Avenue.
DUBLIN - - - - - - - - 18, Dame Street.

Special Feature.

ONE PREMIUM RETURNED every FIFTH YEAR to those who have made no Claim.

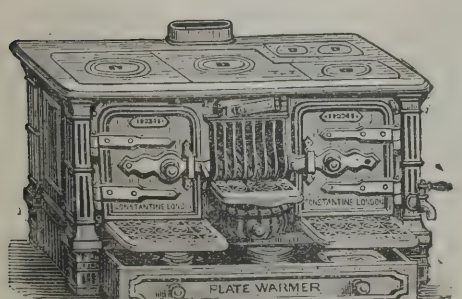
AGENTS APPOINTED.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S

PATENT "TREASURE"

COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

mending that, under existing circumstances, the Royal Princess's Theatre should not be licensed.

A discussion followed. The Dean of Guild proposed that the subject should be postponed until the Dean of Guild Court should have the place inspected, while the Lord Provost advocated that a license should not be granted, as the building was not in a proper place for a theatre. On a division, there were nineteen votes for delay and twelve for refusal.

THE HALL, BUSHEY.

THIS magnificent mansion, formerly the residence of the late Mr. E. Marjoribanks, who built it at a lavish outlay for his own occupation, has lately been converted into a hydropathic hotel and health resort. Standing in one of the most beautiful parts of the picturesque county of Hertfordshire, about one mile from the Bushey and Watford stations of the London and North-Western Railway, it has become a very favourite resort, being in immediate telephonic communication with London. The mansion is luxuriously furnished and decorated, the comfort and health of the guests being well cared for by its courteous and agreeable medical superintendent, Dr. Banning.

To add to the pleasure of a stay in this charmingly situated hotel, the managers have recently introduced the electric light, the installation having been carried out by Mr. Henry J. Rogers, M.I.M.E., of the Watford Engineering Works, Watford. It is an extremely soft and brilliant light, the artistic decorations of the rooms and passages being preserved in their original purity of design.

The dynamo is driven by the engine, which is also used for the laundry machinery, and requires no electrician, but only the ordinary stoker. Close to the dynamo is a fuse and cut-out which would effectually prevent an accident happening from short circuit. The lights are run from the dynamo direct, and we must remark that they were perfectly steady. By this means the cost to charge and maintain batteries is dispensed with, consequently it appears that we are nearing the stage when the electric light will be within the reach of the upper and middle classes. The lamps have been attached to the gas-fittings, none of which have been removed, and yet not a single black wire is visible in any part of the ceilings or walls. Yellow silk wires have been passed down the chandeliers, so as to harmonise exactly with the fittings themselves, the lamps being mounted on effective white Venetian shades, and attached by lacquered brass clips to the arms of the chandeliers. We believe the whole cost of the installation did not exceed 300*l.*

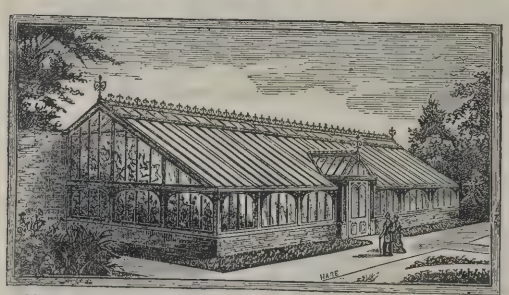
THE EGYPTIAN OBELISK IN NEW YORK.

A RECENT examination shows that the obelisk in the Central Park is not so thoroughly protected as many supposed it would be by the hot paraffin treatment last fall. The *Scientific American* says the process consists in heating the stone and applying a mixture of paraffin, creosote, and turpentine. Previous to this the stone had been carefully gone over, and pieces supposed to be loose, on testing with a hammer, or where there were cracks, were removed. It now appears that the stone is again in some places flaking off or showing slight signs of slow disintegration, although such action is only perceptible on careful examination. It is said to be the result of an insufficient trimming off of the surface of the stone, to remove imperfections before the paraffin was applied; others attribute the result to the application of heat to the stone before putting on the paraffin. It has been decided best to do nothing further in the matter at present, until it is shown to what degree the preservative process will be actually effective for a longer period, although in the end it may be necessary to enclose the stone by building a light glass structure around it.

THE POSITION OF SUB-CONTRACTORS.

A CURIOUS case was tried in the Conway County Court a few days ago. The plaintiff, William Pritchard, plasterer, Augusta Street, Llandudno, sued Evan Williams, contractor, Bangor, for 50*l.* damages for alleged breach of contract. The action arose in connection with a contract for additions to the Llandudno Market Hall, executed by the defendant. He invited tenders for plastering, slating, and cementing. The plaintiff tendered to do the work for 51*l.* 13*s.*, and this tender was accepted. The plaintiff commenced work, but after being engaged upon it for about four days he received a letter from the defendant stating that he would not be allowed to proceed, as the architect, Mr. E. Turner, who had power by the original contract to turn anyone from the work, objected to the plaintiff. From the evidence adduced it appeared that the

RICHARDSON'S HORTICULTURAL BUILDINGS.



ARCHITECTS' DESIGNS FOR CONSERVATORIES, &c.,

Carried out with great care, correct in detail, and with the latest improvements in Construction.

W. RICHARDSON & CO.

Awarded a SILVER MEDAL by the SOCIETY of ARCHITECTS, London, April 1886.

Hot-Water Apparatus fixed by Experienced Workmen in Horticultural Buildings, Churches, Chapels, Schools, Mansions, &c.

CATALOGUE FREE.

NORTH OF ENGLAND HORTICULTURAL WORKS—
DARLINGTON.
FIXED COMPLETE IN ANY PART OF THE KINGDOM.

REGENERATIVE GAS LAMPS

(WENHAM'S PATENTS).

Whereas it has recently come to the notice of the WENHAM COMPANY, Limited, Sole Proprietors of the above Patents, that REGENERATIVE GAS LAMPS are being manufactured and offered for Sale in infringement of the above Patents: Notice is hereby given that Legal Proceedings will, without further notice, be taken against all Persons manufacturing, selling, or using REGENERATIVE GAS LAMPS so made in infringement of the said Patents.

April 20, 1886. J. HENRY JOHNSON, 47 Lincoln's Inn Fields, W.C., Solicitor.

ESTABLISHED 1838.

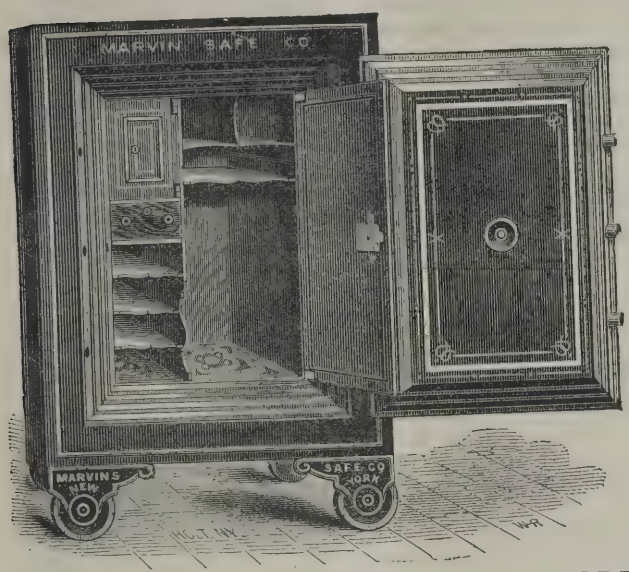
MARVIN'S

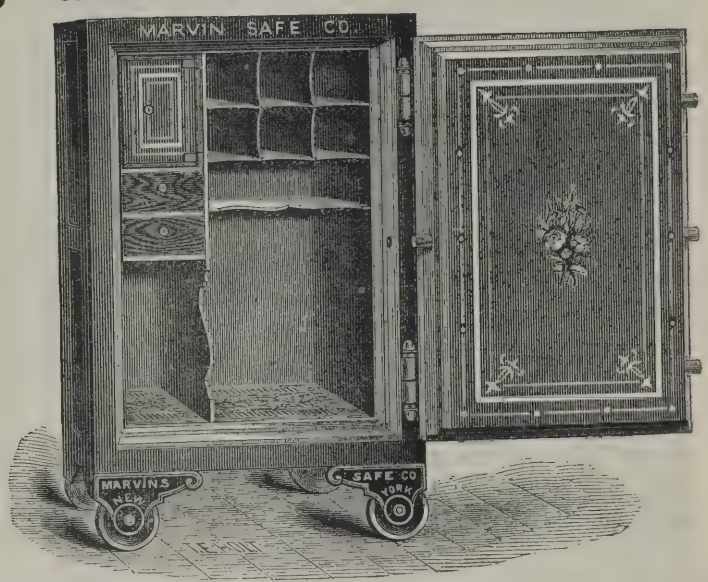
AMERICAN

FIRE & BURGLAR PROOF SAFES,

STRONG ROOM DOORS & BANKERS' VAULTS,

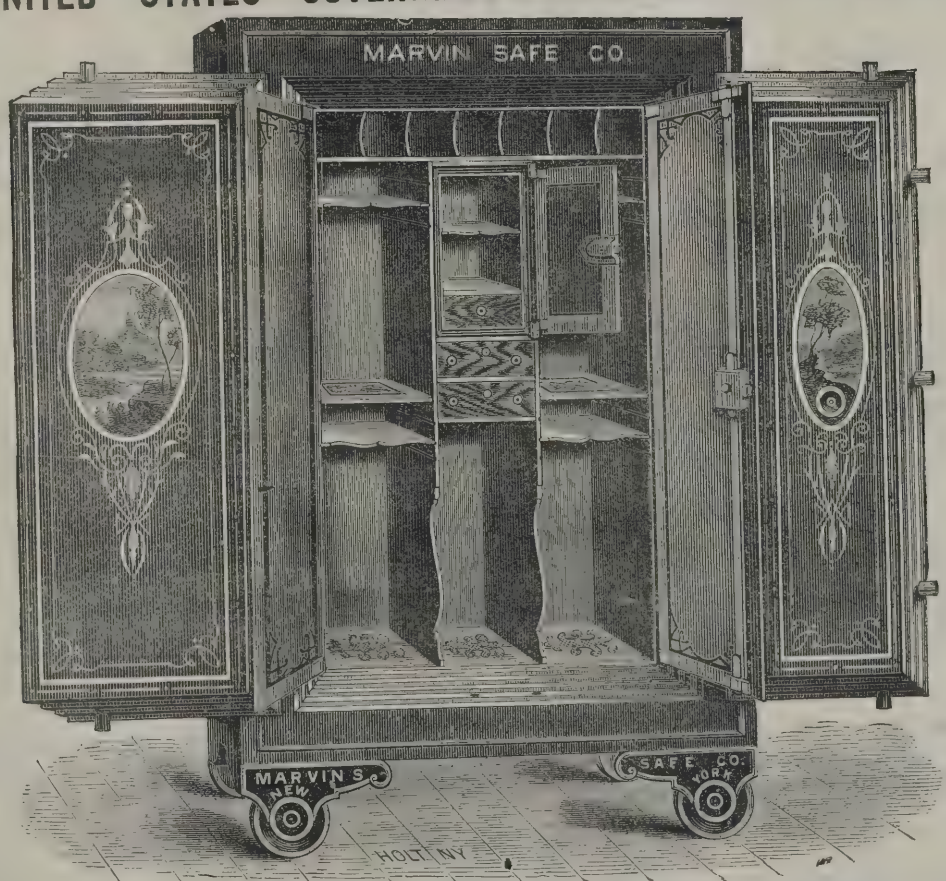
NEW YORK, U.S.A., and LONDON, E.C.





BY SPECIAL APPOINTMENT CONTRACTORS
TO THE UNITED STATES GOVERNMENT TREASURY AND POST OFFICE.

PROOF AGAINST BLASTING, DRILLING, AND PICKLOCK.



SECURITY AGAINST FIRE AND THIEVES.

EUROPEAN BRANCH: 66 QUEEN STREET, CANNON STREET, LONDON, E.C.

plaintiff had had a quarrel with Mr. Turner, and pinned him to the wall, and Mr. Turner in return locked plaintiff in his office. The plaintiff was asked to apologise, but he declined, and said he would sooner see Mr. Turner in his grave. It was argued for defendant that the suppression of the fact from the defendant that there existed a bad feeling between the plaintiff and the architect justified the defendant in putting an end to the contract. The defendant in his evidence stated that when he told the plaintiff that Mr. Turner objected to him, the former said he did not expect anything else, as he had done the same thing twice before. Subsequently His Honour gave judgment for plaintiff, with nominal damages of 1*l.*

COLONIAL AND INDIAN EXHIBITION.

One of the most important features of the exhibition has been the excellent fire-extinguishing arrangements provided under the superintendence of General Festing and Mr. J. H. Cundall, the electric light engineer.

To give the Colonial visitors a practical illustration of the power available for the protection of their valuable exhibits, a special display of the steam fire-engines took place yesterday (Wednesday) morning, when, notwithstanding the early hour, nine o'clock, a number of the Colonial and other gentlemen interested in the exhibition were present, amongst whom were Sir Saul Samuel, Sir G. N. Chambers, Sir J. Rose, Lieutenant-Colonel Palmer, Mr. Scott (representing Sir Samuel Davenport), Mr. A. F. Thomson (Western Australian Commission), Mr. W. E. Davidson (Ceylon Commission), Mr. C. H. Fishbourne (Hong Kong Commission), &c., &c. The first engine to be tested was one of Messrs. Shand, Mason & Co.'s Metropolitan pattern engines, part of an equipment of three constructed for the Fire Insurance Companies' Brigade, Melbourne. Steam was raised in wonderfully quick time, and the engine threw first one 1½-inch jet to a height of about 160 feet, this being replaced by two and subsequently four jets. The ease with which the engine could be managed, and its adaptability for Colonial use was clearly demonstrated by the various experiments. Another and more powerful engine by Messrs. Shand, Mason & Co. was then set to work. Eight minutes only were taken in obtaining the full working pressure of 100 lbs. steam, when an enormous volume of water issued from a 1½-inch jet, at the rate of 900 gallons per minute, and rising to a height of over 200 feet. Four 1-inch jets were subsequently brought into play with equally good results, and the experiments, which were considered exceedingly successful, were brought to a close at half-past ten.

THE CRERAE QUARRY ACCIDENT.

On Saturday a lamentable accident, of an almost unprecedented description, occurred at the Crerae Quarries, on Loch Fyne, near Inverary. The Corporation of Glasgow obtain stone from the quarries, and once a year it is customary for a party of officials, their friends, and others, to visit the place, and witness a blast on a large scale. On Saturday 50,000 tons of rock were to be displaced. There was the additional interest of the occasion being a jubilee celebration of the Statute Labour Committee. The steamer with the party arrived off the quarries shortly after one o'clock, and was brought up a little within a mile from the shore. As on former occasions, the signal for the explosion to take place was given by the steamer sounding her steam whistle. The charge was immediately fired, and in less than a minute the whole face of the quarry heaved outwards, between 60,000 and 70,000 tons of rock being dislodged, and the operation proving very successful, as far as the purpose for which it was intended is concerned. The smoke having somewhat cleared away, the steamer was taken a little nearer the shore, and those of the passengers who desired to do so were allowed to land in boats for the purpose of examining the results of the blast. About three hundred persons, many of them ladies, availed themselves of the opportunity, and were landed on the beach. The steamer then continued her run to Inverary, the arrangement being that she should pick up those who had gone ashore on the return journey. When the company assembled on the beach they immediately proceeded to the quarry, accompanied by Messrs. Alexander and John Faill, the lessees, Mr. Sharp, the manager, and Mr. William Sim, the proprietor, these gentlemen explaining to various groups of ladies and gentlemen the nature and extent of the operations carried on at Crerae, and the blasting processes by which the rock was obtained. In this way the visitors entered the quarry—which, it should be explained, takes in the interior the shape of a horseshoe—and there was nothing, so far, to indicate that they were incurring the smallest possible risk. Before many minutes had elapsed, however, many members of the party, at all points, seemed suddenly, and in the midst of animated conversation, to be overpowered by some invisible vapour, and fell motionless to

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER SEVEN HUNDRED ENGRAVINGS OF DIFFERENT PERIODS, WITH DESCRIPTIONS.

BY PAUL ROUAIX.

"This large and sumptuous book is issued by the publishers of *L'Art*, a journal which we have frequently referred to as being one of the best publications of its kind in Europe. The French Librairie de l'Art has been known for long in connection with works treating of the fine arts, and *Les Styles* is certainly equal to anything we have ever seen of the kind, and by far superior to the vast majority of similar works issued in this country. There is something about the atmosphere of France which confers refinement of taste in everything relating to designs, and so pronounced is the national aptitude for discovering beauty and symmetry, that the very fact of a book coming from across the straits is generally a sufficient guarantee of the artistic excellence of the contents.

"M. Rouaix treats of many species of decoration, commencing with that in vogue amongst the ancient Egyptians, and proceeding in regular order of date with the Etruscan, Greek, Byzantine, Roman, Gothic, the peculiar ornamentation of the Renaissance, and of the times of Louis XIII., XIV., XV., and XVI. Before each division the author introduces a short historical introduction, and afterwards, by means of a series of beautifully executed prints, illustrates the prevailing fashion of the time. For this purpose he has levied contributions on examples of architecture, carving on wood, suits of armour, bas-reliefs, tapestry and embroidery, mural painting, mosaical work, and a host of other subjects, including caskets and chalices. In fact, anything that can be called artistic and assigned with certainty to a particular era is represented, the result being an exhaustive and exceedingly pretty production."—Book Lore.

NEW EDITION. Price, Single Volume, 5*s.*; Complete Series, 12 Volumes (by Subscription), £2 8*s.*

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

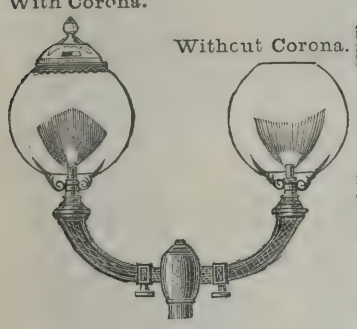
LONDON: GILBERT WOOD & CO., 175 STRAND.

the ground among the stones. The officials, at once realising that the catastrophe was due to choke-damp, called out to the people to run, but in the consternation with which everyone was more or less seized the warning was either not understood by many or they found themselves powerless to act upon it. For some minutes persons continued to fall, most of them without even uttering a word or a cry, and to lie upon the ground to all appearances dead. In this way it is said that in the course of a few minutes no fewer than from eighty to one hundred persons were prostrated. Eight men were killed and a large number injured.

The history of the Crerae Quarry at Furnace, and of the blasting operations there, is closely connected with the efforts made by the Glasgow Police and Statute Labour Committee during the last half century to improve the causewaying and paving of the city streets. When the management of the streets was transferred in 1836 from the old Statute Labour Trust to the Board of Police, the thoroughfares of the city were in a miserable state of repair, and all laid with "common rubble causeway." The contractor for the cleansing and lighting of the city was Mr. William Sim, who at once entered with energy into plans for realising the desire of the Committee to improve the system of street paving. The success of these plans is described in a memorandum prepared by Mr. Sim for the occasion of the large blast of Saturday, which was fired in honour of the Statute Labour Committee's jubilee, accompanying which memorandum is a statement by Messrs. William Sim & Co., the lessees of the quarries, containing particulars of the blast and elevations of the quarry face. The first paving experiments were made with blocks of square-dressed whinstone, for obtaining which quarries were opened at Kilsyth; but the results, as indicated in the paving of Jamaica Street, were disappointing, the blocks being found pitted and full of holes after being down only three years. The late Mr. David Lyon was acting manager for Mr. Gibb, contractor for the building of Glasgow Bridge, and he afterwards contracted for the building of a quay at Inverary, and was permitted to quarry a portion of the materials from the rocks at Furnace, some ten miles to the south, and on the western shore of Loch Fyne. Soon after the Committee took over the streets management several hundreds of tons of dressed granite causeway stones from Furnace were used in paving a portion of Jamaica Street, and in 1840 this was found to be in excellent condition, the stones being in such good preservation as still to show the marks of the tools used in preparing them. The result was to convince the committee of the necessity of substituting granite for whinstone in street paving; and in 1841 permission was obtained from the father of the present Duke of Argyll to open a quarry at Furnace, and a contract entered into to supply a thousand tons for the paving of High Street. From that date the operations for the quarrying of the grey granite of Furnace have gone on in an extending scale, so that the great bulk of the stones employed in paving the existing city streets has come from this source. In 1852 the first "great blast" took place, and was attended with such satisfactory results that the system has since been regularly continued, ten "blasts" having been fired up to the year 1855. The great blast fired on Saturday was, as has been stated, designed to be a celebration of the completion of the fifty years' labours of the Statute Labour Committee, and elaborate arrangements had been made in connection with it for the success of the operation, and for the safety of life and property. It was to be fired, as the official statement says, "immediately on the arrival of the Lord of the Isles at a safe distance within view of the quarry face. The gunpowder in the chambers will as usual be exploded simultaneously by means of electricity from a battery technically called an exploder. The captain of the Lord of the Isles will sound a steam whistle as a signal to the operators, and in less than a minute, if all goes well, the blast will be over." As the plans show, the "bull's eye," or mouth of the entrance mine, was situated 30 feet above the floor of the quarry, and from it to the top of the perpendicular face was other 60 feet of rock. Upwards from this, however, the rock had a receding rise to a considerable height, so that in vertical line from the mines and chambers to the flagstaff overhead there was in all 100 feet of super-imposed rock. The entrance mine extended backwards for 60 feet, and then divided, sending off at an obtuse angle, for other 20 feet, galleries to the right and left, each ending in a powder chamber. Between each chamber and the face of the quarry there was a depth of 70 feet of rock, and in each was contained 7,000 lbs. of powder — in all, 14,000 lbs., equal, according to the standard by which gunpowder is sold, to 7 tons. The working dimensions of the blast, from the western to the eastern dividing joint, was in width 100 feet, and taking the height as we have described it at 100 feet, and the thickness at 70 feet, there were 25,925 cubic yards of rock to be displaced, requiring, at 2 tons per yard, an expenditure of force equal to 51,850 tons. The expectation, however, of the contractors, fully borne out by the results, was that if the blast

NO MORE BLACKENED CEILINGS.

With Corona. Without Corona.



SPENCER CORONA

Fitting closely on the top of ordinary Gas Globes, forming a PERFECT REGULATOR.

Absolutely consumes all smoke. Officially proved to save 25 to 30 per cent. in Gas. Increases the light, renders the atmosphere purer, prevents tarnishing of gilding, and lessens the danger of fire.

The difference in the amount of light given by a gas flame when the Spencer Corona is placed on the ordinary open globe is instantaneous and surprising. The flame flattens out, the blue part becomes smaller, and the white is intensified in brightness. No one can realise the results obtained from the Spencer Corona unless he sees it in operation.

All former types of Coronas have only dispersed the carbon about the room, and prevented it forming one black spot immediately above the flame. The Spencer Corona is the only one which absolutely consumes the carbon.

Prices—Small, 2s. and 2s. 6d.; Large, 2s. 6d. and 3s. each.

OFFICE: 3 HYDE STREET, NEW OXFORD STREET, W.C.

FULL PROSPECTUS FREE. USUAL TRADE DISCOUNT.



Registered Trade Mark.

TO ARCHITECTS, CONTRACTORS, AND BUILDERS.

SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using

KALLKOLITH.

IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for Smoky Ceilings and for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering.

Price per Case of Eight Tins of 14 lbs. each, 40s., packing included. Sample Tins, 6s. each.

H. RANSOM & CO., 11 Queen Victoria Street, LONDON, E.C.

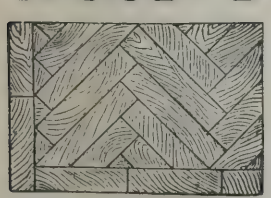
Agents wanted in every Town in the United Kingdom and Colonies.



Registered Trade Mark.

WOOD BLOCK FLOORING & PAVING BLOCKS

OF EVERY DESCRIPTION.



Speciality—London Board School Blocks out of 18 × 3 × 3, 10s. per 100, delivered. Also Blocks of every description for Stables, &c., 3 × 8 × 3, 4, 5, or 6 deep.

Builders supplied with Short End Deals, from 2 ft. × 6 ft., 2 × 7, and 3 × 9, sold per standard or fathom, all of best Swedish Yellow.

Poling Boards, from 3 ft. to 6ft. in length, at very low prices. Posts and Feather Edge Boards for Fencing.

JOSEPH DRAPER,

Draper's Wharf, Wellington Road, Battersea Bridge, S.W.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.—Office: 175 Strand, London, W.C.

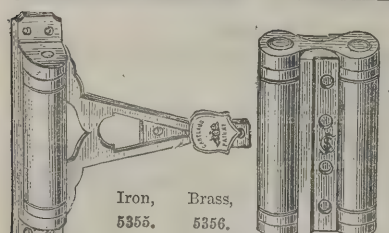
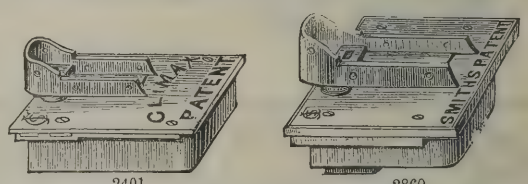
worked successfully a large number of tons additional would be removed by natural falls of the rock occasioned by the disturbing action of the explosion. As has been said, the blast was believed to be a great success by those who had charge of it. The great mass of rocks was torn to fragments by the explosion, and the belief was entertained that a greater fall than they had anticipated had been realised. Of course, the distressing nature of the subsequent proceedings naturally prevented the inspection necessary to verify the opinions formed. It may be mentioned that the blasting was carried out under the direction of Mr. Adam Sharp, the manager, and Mr. John Jardine, the engineer of the quarry.

THE WATER SUPPLY OF KIDDERMINSTER.

On Monday the new high-level reservoir, which has been constructed at Kidderminster with the object of improving the water supply of that borough, was opened, when the ceremony of turning the water into the mains was performed by Councillor Potter, the chairman of the Drainage Waterworks Committee. Two years ago a preliminary report was drawn up for the Council by Mr. E. Pritchard, C.E., and Mr. A. Comber, borough engineer, recommending, among other sanitary improvements in the borough, the construction of a reservoir on the plan now carried out. The report was followed up by a more detailed and exhaustive one at a later date, in which they pointed out that many defects existed in both water and sewerage, although the existing works had been only constructed comparatively a few years at an outlay of some 126,000*l*. In the report referred to, the construction of a high-level reservoir was strongly recommended. The site of the reservoir is a portion of the high land known as Sutton Farms, on the Bewdley Road, and it is some 1,100 yards distant from the waterworks pumping station on the Stourport Road. This land is the highest available site near Kidderminster, and will permit of forty-three feet greater head of water than could have been obtained from the existing open reservoir near the pumping station. The new reservoir is a covered one, and is constructed of masonry, brickwork in cement and concrete, and is partly in excavation and partly in embankment. Special care has been taken by puddling all portions of the work below the top water level, as the ground upon which it has been constructed contains a porous subsoil. The interior of the reservoir has the following dimensions (being square on the plan) :—145 feet long, 145 feet wide, with an available height for water of 14 feet 7 inches. The capacity, after making deductions for pillars and buttresses, will provide a storage of 1,850,000 gallons. The roof of the reservoir is constructed of a rolled iron girder floor and with cement concrete arches, upon which is placed some two feet of earth, the whole being supported by seventy-two cast-iron pillars. There are several inspection and air shafts. The present engines and pumps at the Stourport Road station will supply the water to the reservoir, the water being obtained from a bore-hole in the Bunter beds of the new red sandstone. Considerable difficulties were experienced in the construction of the works during the last severe winter, and the works were much delayed thereby. They have been most satisfactorily carried out by the contractor, Mr. George Law, of Kidderminster, who has constructed several large undertakings for works of water supply in different towns for the same engineer. The total cost of the reservoir, including the purchase of land, is stated approximately at 6,800*l*. Mr. Peirce and Mr. Tarbet were the resident engineers. The total outlay which the Local Government Board sanctioned for improvements in the water supply and sewerage of Kidderminster was about 25,000*l*., and in round figures two-thirds of this sum has been expended up to the present time.

SANITARY EXHIBITION AT YORK.

The Congress of the Sanitary Institute at York closed on Saturday night, after an agreeable and interesting week. It now only remains for us to call attention to those exhibits in which the readers of *The Architect* are likely to feel interested. These are few in number, for, although the exhibition as a whole is attractive and undoubtedly contains many good appliances, there are but few novelties, and but a small number of exhibitors connected with the architectural or building trades. The most important exception on the score of novelty is to be seen on the stand of Messrs. Joseph Cliff & Sons, Wortley, Leeds. We allude to Winser's channel pipes and bends, manufactured by them, but the invention of Mr. Winser, of Buckingham Palace Road, S.W. They are intended for laying in inspection chambers, and are made to form three-quarters of the circle instead of half, as in the old arrangement, and remedy a defect generally admitted to exist in the old

MELBOURNE INTERNATIONAL EXHIBITION, 1880, THE GOLD MEDAL
In addition to FIRST-CLASS HONOURS, was awarded to
JAMES CARTLAND & SONS,
Cabinet Builders and Naval Brass Founders,
BIRMINGHAM.
London Show-rooms: 40 Holborn Viaduct, E.C.
The extent, variety, quality, and finish of articles manufactured at this establishment cannot be excelled.
CARTLAND'S PATENT HELICAL, CLIMAX DOOR SPRINGS & HINGES.

Iron, 5355. Brass, 5356.
Double Action, Iron, 5353. Brass, 5354.
CAUTION.
Ironmongers, Builders, and others are requested to see that the Trade Mark is on each Spring, as the Patentees are informed that spurious imitations of the
"CLIMAX SPRING HINGES"
are being sold, which have neither the Power or Durability of Cartland's Patent Climax Door Springs and Hinges.


2401. 2860
Pattern Books, both full size and Miniature, containing every information, may be obtained through any Merchant or Factor on application. All Goods for Export are carefully packed in Cartoon Boxes, and distinctly labelled with orange-coloured labels, bearing our Trade Mark, as above.
NOW ON SALE. THE LAST FEW PORTFOLIOS.
Price Eight Guineas on Japanese Paper, and Ten Guineas on Parchment.
EIGHT ORIGINAL ETCHINGS
By THE BARONESS NATHANIEL DE ROTHSCHILD.
ENGRAVED BY MM. T. CHAUVEL, LEON GAUCHEREL, & DANIEL MORDANT.
"A magnificent set of Picturesque Views in Holland, which appear in the finest style, and display the exquisite touch of a born artist."
GILBERT WOOD & CO., 175 STRAND, LONDON, W.C.

kind. These channels are also made perfectly flat on the bottom, so that they are easily and securely laid. The advantages, too, of the increased covering of the channel are very marked. As the additional covering is at the part opposite to that at which the sewage enters, instead of being probably thrown over the bottom of the inspection chamber, it is prevented from doing so by striking against the extra covering, and in passing round the bend it is concentrated and folded over as a wave and turned in the direction of the outgo. In connection with these is shown Winser's improved iron inspection covers and frames, and an intercepting sewer-trap by the same inventor, the three inventions being, perhaps, the most perfect appliances for forming inspection chambers extant. Messrs. Cliff & Sons also exhibit most of the specialities with which their names have become associated, especially their highly-glazed porcelain baths, sinks, washing vessels, &c. A new sitz bath is shown for the first time here, and a new latrine trough, made to the order of Messrs. A. & C. Harston, for the new buildings for the Metropolitan Asylums Board, at Darenth, Kent. As the fiat has gone forth that "independent" closets are in future to hold the sway, it opens a wide field for the ingenuity of the designer to produce ornamental and decorative designs, and the Messrs. Cliff have not been slow in taking advantage of the change of fashion, the patterns exhibited being artistic and deserving of praise. There is, in addition, a new glazed flushing slop sink. The flushing openings in this sink are found formed in the clay itself around the sides, so that the metal flushing rim hitherto used, and which to some extent was objectionable, is dispensed with. They send, for the first time also, a new white glazed urinal floor and channel, and a new gully, the Simplex, reversible, so that it may be fixed in any direction required.

Messrs. W. & R. Leggott, Park Road, Bradford, are present with their well-known patent apex fanlight opener, worked with a rod and endless cord. We have often called attention to this invention, which is a simple and meritorious one, and we cannot add anything further in its favour than we have done. The firm also show their patent security bolt, intended for high doors and windows, shooting top and bottom at the same time. It is almost needless to say that it is of the *espagnolette* character, but it is a well-made article. In addition they exhibit what they term a heat indicator, which we may better call an oven thermometer, for regulating the heat in the oven for cooking purposes; also a neat little invention, called a pump pad, for attaching stamps, &c., to letters.

Messrs. Wright & Co., Westminster Chambers, S.W., send specimens of their patent fireproof fixing blocks, for walls or floors. They simply require bedding in mortar; there is no breaking up of the bond, they form a better key for plaster, and battens or flooring can be nailed on to them as on to wood joists. It is also claimed that they never get loose, are unaffected by fire or water, and are no extra cost to a building.

Messrs. Nightingale & Co., Great Grimsby, exhibit specimens of their patent wood-block flooring, which has received a veritable improvement since it last came under our notice. Each block is now tongued and grooved, and this, combined with a bevelled principle originally adopted by them, is calculated to make a flooring laid on their principle as sound as human agency can accomplish. It appears impossible by this arrangement for any single or two or three blocks to rise or become displaced; in fact, if any disarrangement occurs, the entire flooring would most likely move, and that we should imagine would be next to impossible, as the means we have described, coupled with the concrete foundation and the antiseptic compound in which each block is buried, secures the best possible safeguard. The system of tongueing and grooving also prevents the composition oozing up between the joints. The Vestry Hall at Chelsea has recently been laid with this flooring, under the direction of Mr. Bryden.

Messrs. Thomas Cordingley & Sons, Thorncliffe Road, Bradford, show their concrete flooring, which has received notice at our hands on former occasions. It is sufficient to say that this flooring is of excellent construction and generally of a most meritorious character.

Messrs. M. C. Duffy & Son, Stork's Road, Bermondsey, S.E., contribute examples of their "Immovable Acme" system of solid wood-block flooring. This, too, has been fully described in *The Architect*, and we need only add that each block is dowelled to its neighbour, with the object of securing perfectly tight and immovable floors.

Messrs. Doulton & Co., Lambeth, S.E., as usual, contribute an assortment of their specialities, and, if the display is not so large as we are often accustomed to see, the articles exhibited are of a sterling character. The exhibit comprises much of their ceramic ware in the various articles to which they have adapted it, and there is a collection of stoneware force-pumps and acid cocks, a variety of filters—a branch of their manufacture in which they are taking a leading position—and a general selection of sanitary war[illegible] and fittings.

Mr. E. S. Hindley, of Bourton, Dorset, sends one of the

THE ÆOLUS WATERSPRAY

SYSTEM OF

HEATING, COOLING, & VENTILATING

IS THE

CHEAPEST AND BEST.

For Particulars apply to

MANAGER, 235 HIGH HOLBORN, LONDON, W.C.

Applications for Agencies invited.

M. C. DUFFY & SON'S Improved and Perfectly "Immovable Acme" System of WOOD BLOCK FLOORING

(W. DUFFY'S PATENT)
OBTAINED THE
HIGHEST AWARDS
AT ALL THE
International
Exhibitions, 1885.

SUITABLE FOR
Churches, Schools,
Warehouses, Basements,
Railway Station Booking
Offices and Platforms,
Mansions, Hospitals, Banks,
AND
Public Buildings Generally.



PRICES and full PARTICULARS on application to the Manufacturers,

M. C. DUFFY & SON,
At their Chief Office,
66 STORKS ROAD, S.E.
ALSO AT
GLASSHOUSE STREET,
Albert Embankment, S.E.
UNION ROAD,
Rotherhithe, S.E.;
STATION ROAD,
Spa Road, S.E.;
VAUXHALL WALK, S.E.
AND AT
GREAT YARMOUTH.

Alcazar vertical steam-engines of his manufacture. Mr. Hindley was one of the first persons to introduce portable small-power steam-engines at a reasonable price, and their attractive appearance and simplicity of construction, coupled with their good workmanship, have won golden opinions in their favour from all quarters.

The Silicated Carbon Filter Company, Church Road, Battersea, S.W., exhibit a general assortment of their appliances, which have been rendered famous in their hands. It would be a useless repetition of words to enter again into a detailed description of their construction, as they have become generally known throughout the world. The specimens shown consist of main and constant supply filters for manufacturers' use, hospitals, schools, &c.; also travelling and pocket filters. They exhibit, in addition, a new self-aërating filter, in which the waste is aërated and filtered simultaneously, rendering it pure and bright.

Messrs. Adams & Co., the popular sanitary engineers, of Monk Bridge, York, are here "at home," and have taken advantage of the proximity of their works to contribute a large display of their special apparatus. Amongst their newest inventions may be mentioned a range of latrine closets, which differs from the existing system in so far that each closet is an independent appliance made of glazed stoneware, oval in plan, the range being connected by means of 6-inch glazed sanitary pipes, and flushed by their well-known syphon flushing apparatus. There is a collection of large deep trap flushing syphons of various sizes, and an excellent circular flushing tank and grease trap combined. They also show some good strong lavatory basins in brown stoneware, suitable for schools, on white glazed brick standards, and Grace & Firth's disconnecting trap, which is an excellent apparatus. The exhibit also comprises their patent sewer ventilator gas deodoriser, which is in use in several parts of the metropolis. This apparatus takes the place of the ordinary road grid, and is finished at the top in the style of a manhole cover, the square part of its area only having the ordinary openings. Around the entrance to the sewer, and surrounding the air exit, a chamber is provided for a suitable disinfectant; a loosely-woven wire hood covers the opening, and this hood is interlaced with a coarse asbestos cloth, which dips on all sides into the fluid, and by capillary attraction entirely saturates the whole, forming a wet disinfecting filter, through which the gases from the sewer must pass ere they escape into the street, which purifies them, and renders them innocuous. A dirt-box is fitted above the disinfecting chamber, with an overflow and small check flap, to prevent the admission of sewer gases, and this affords a ready exit for the street water without contact with the disinfectant. The apparatus is simple and ingenious, and is deserving of general application. It is stated that the loss of the disinfectant by evaporation is so trifling that a renewal is not often required. During the drought experienced in the summer, complaints were rife of the abominable stenches from sewer gratings of the ordinary kind, which might have been avoided had the Adams's ventilator been fixed in them. Mr. W. J. Adams of this firm has recently elaborated a system of simultaneous flushing for sewers, to which we may revert on a future occasion.

Messrs. W. Phillips & Son, 10 Baker Street, W., exhibit an interesting assortment of sanitary appliances, amongst which we notice their "Cerus" registered patent trap, a notable invention; a grease gully, fitted with container; an inspection cap inlet, a rain-water gully, fitted with inspection cap; Scarabæus patent trap syphon grease and rain-water; fitted earthenware removable dips; also the "Cerus" registered patent closet, combining the wash-out and valve system, a very complete apparatus. There is also a registered iron door, also bearing the name of "Cerus," and a registered flushing syphon, trapped short without head of water, besides other commendable appliances.

Mr. D. T. Bostel, of the Hygienic and Sanitary Engineering Co., Limited, Duke Street, Brighton, and Charing Cross, S.W., shows the specialities originally invented by him, and which have attained great popularity, consisting of the "Excelsior" water-closet, with automatic flushing cistern, the "Artisan" closet, made with seat action, and his registered intercepting trap and manhole.

Mr. Henry Ough, of Austin Friars, E.C., shows the various applications of Stanford's patent joint as adapted to all drain-pipes, traps, syphons, gulleys, &c., which is so well known as to render further comment unnecessary.

Messrs. H. & C. Davis & Co., Camberwell Road, S.E., exhibit a variety of their gas-heating and cooking appliances, comprising some pretty adaptations of gas for winter fires, gas-heating stoves and boilers, and their well-known "Metropolitan" cooking stoves.

The Æolus Waterspray Company, High Holborn, W.C., occupy a large space with various adaptations of their well-known patent, supplemented by a large ventilating gas-heating apparatus, as specimens of electric lighting by primary battery.

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for General Accidents with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

HENRY KING
(Late GREEN & KING).
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

T. W. ADAMS & SON,
MANUFACTURERS OF
Builders' and Contractors' Carts and Wagons,
Lurries, Floats, Timber Carriages,
Furniture Vans, Dobbin Carts, and Barrows.
Postal Address: DOVERIDGE, DERBY.
PRICE LISTS and Particulars on application.
London Representative—
MR. JOSEPH JOPLING,
49 Finsbury Pavement, E.C.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.



W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; Well-seasoned Drawing Papers, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
☞ *Legal and Commercial Stationery.*

A. J. SHAW,
58 & 60 Gower Street, Sheffield,
MANUFACTURER OF
Coloured Varnishes & Wood Stains,
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions. — STEVENS & CO., Ceres Ironworks, Kingston-on-Thames.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers, Cranes, and all Contractor's Plant, on best terms, apply Berry 6 Great St. Helen's, E.C.

It is unnecessary to enter into any details on the present occasion as to the Waterspray system, but we would remind our readers that it has been applied, amongst other places, to a large number of well-known buildings in London and the provinces, with considerable success, full particulars of which may be obtained from the Company.

Messrs. Kite & Co., the old-established ventilating engineers, of Chalton Street, N.W., have a full line of their appliances for ventilating buildings of all descriptions, which have from time to time been mentioned in these columns.

Messrs. Kinnear (Limited), 91 Finsbury Pavement, E.C., show their patent self-lighting gas-burner and some ingenious surgical instruments, in which the electric light is utilised with commendable effect.

Amongst the awards granted to exhibitors, in which our readers may feel interested, we find the following :—

Medals.

Casebourne & Co., West Hartlepool, Faija's cement testing machine ; J. F. & G. Harris, London, moulded wood decoration.

The following have received medals in previous years, and now are granted special certificates :—W. & R. Leggott, Bradford, opener for fanlight and skylight ; J. Cliff & Sons, Leeds, imperial porcelain bath.

Certificates of Merit.

Wortley Fireclay Company, Leeds, salt glazed bricks ; J. Cliff & Sons, Leeds, Hall's hanging tiles ; Wright & Co., London, fireproof fixing blocks ; E. & C. Dillon, York, ventilating corsets ; Hindle, Norton & Co., Oldham, acme door check and spring, double action ; Nightingale & Co., Great Grimsby ; E. Smith & Co., Coalville, vitreous floor tiles ; Adams & Co., York, 30-gallon combined flush-tank and grease interceptor ; J. Cliff & Sons, Leeds, white enamelled sinks ; Wortley Fireclay Company, Leeds, white enamelled sinks ; J. Cliff & Sons, Leeds, white enamelled urinal floor channel ; T. Wragg & Son, Burton-on-Trent, Mawbey's joint for stoneware pipes ; J. Cliff & Sons, Leeds, simplex reversible gully ; Wortley Fireclay Company, Leeds, Simpson's street gully ; Bailey & Co, London, Woodman's stoneware screw, plug, and collar, for access to drains ; W. Phillips & Son, London, Bronte's air-tight cast-iron manhole cover; J. Cliff & Sons, Leeds, white and coloured glazed bricks; Wortley Fireclay Company, Leeds, white and coloured glazed bricks ; J. Cliff & Sons, Leeds, imperial slop sink ; G. W. Potter, London, Tiphozella pipe fastening ; H. Trott, London, bibe-valves for hot and cold water ; H. Braithwaite & Co., Leeds, syphon action water-waste preventer.

With regard to the following exhibits, the judges are unable to give their decision until they have submitted the exhibits to a more complete and extended practical examination than is possible at this exhibition :—

Exhibits Selected for further Practical Trial.

Adams & Co., York, sewer ventilator and sewer gas deodoriser for manholes ; Sanitary Dry Lime Company, Liverpool, sanitary dry lime disinfecting powder ; Doulton & Co., Lambeth, London, lavatory valves ; T. Wragg & Co., Swadlincote, Hassell's safety joints ; Doulton & Co., London, self-adjusting joint for stoneware pipes ; Doulton & Co., London, improved manganoris carbon filter ; J. Cliff & Sons, "Cecil" stop sink with flushing rim ; Æolus Waterspray Ventilating Company, London, Æolus waterspray ventilators ; R. W. Hale & Co., London, exhaust and downcast ventilators ; J. Honeyman, Glasgow, diaphragm ventilator ; P. P. King & Co., Hull, Phillips's ventilator ; C. Kite & Co., London, exhaust, downcast, and chimney breast ventilators ; E. G. Wright, Portsmouth, "Reliance" chimney cowl ; Silicated Carbon Filter Company, London, improved silicated carbon filters. Exhibits which have already received medals at previous exhibitions of the Institute are excluded from awards of medals, but those exhibits to which a second medal would otherwise be awarded receive special certificates. Objects exhibited by the judges are excluded from awards of medals or certificates. The "Decedo" flushing cistern water-closet, exhibited by Messrs. Cliff & Co., which is the application of an invention of Mr. Rogers Field, is excluded from any award. The Richardson medal, for the exhibit selected from the entire exhibition, will be awarded by the judges in cases of pre-eminent merit only.

The following additional awards have been made :—

Medal.

Messrs. H. & C. Davis & Co., London, for enamelled Metropolitan gas cooking stove.

Starred Certificate.

Messrs. H. & C. Davis & Co., London, for fibre asbestos open gas fire.

Certificate.

Messrs. Duffy & Son, London, for immovable acme system of solid wood flooring.

BRYANT, POWIS & BRYANT LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.

Telephone : No. 586. Telegraphic Address : "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.

Telephone : No. 2,617. Telegraphic Address : "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT LIMITED,

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

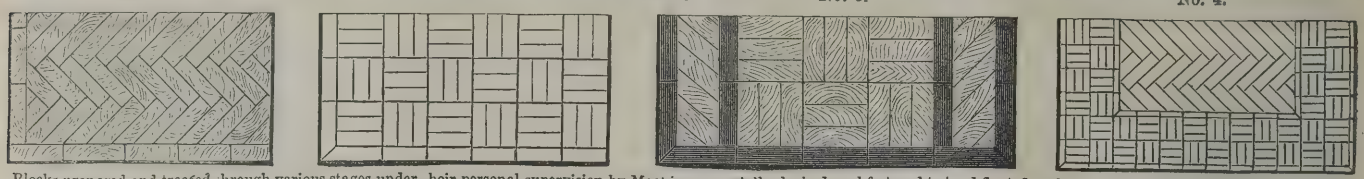
THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

PATTERNS.

No. 1. No. 2. No. 3. No. 4.



Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

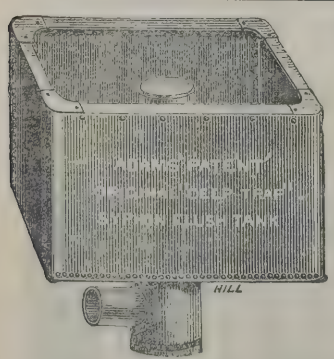
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL	**St. Philip's Marsh.**	**READING**	**Caversham Road.**
EXETER	**Basin Head.**	**DUBLIN**	**14 St. Andrew's Street.**
SOUTHSEA	**Beaufort Road.**	**MANCHESTER**	**20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

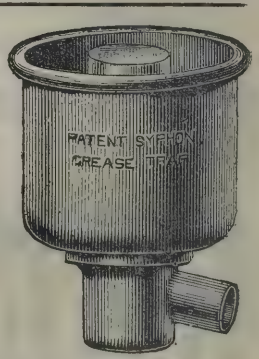


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
„ **FLUSH SYPHONS** for Sewer Flushing.
„ **FLUSH LATRINES** for Barracks, Schools, &c.
„ **FLUSH URINALS** „ „ „
„ **TROUGH CLOSETS** „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, October 1, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, OCTOBER 8, 1886.

THE ARCHITECTURAL ASSOCIATION.

THE annual conversazione of the Architectural Association will be held this (Friday) evening. The services of the band of the 2nd Life Guards have been secured for the occasion, and in the course of the evening a concert will be given, for which, among others, Mr. W. H. Brereton, Mr. Harold Savery, and Miss Mary Morgan have promised their services, Mr. Victor Gollmick being the accompanist. During the concert Mr. Cole A. Adams has undertaken to give a dramatic sketch. Several firms will, as hitherto, exhibit samples of art work, &c., and, among these, Messrs. Jeffreys & Co., wall papers; Messrs. Longdin, metal work, &c.; Messrs. Woollams, wall papers. Messrs. William Morris & Co., we believe, will be represented. Electric lighting will form a feature of the exhibition, two firms being present. The syllabus of meetings for the new session shows a series of excellent lectures. Mr. Aston Webb will give a lecture on "Pupilage." "Church Planning," by Mr. J. D. Sedding, comes next on the list. Then "Decorative Metal Work," by Mr. H. Longden; "Fireplaces," by Mr. T. Pridgin Teale; "The Complement of Architectural Instruction," by Mr. Thomas M. Rickman, F.S.A.; "House Sanitation," by Dr. Corfield; "The Architecture of Art," by Mr. Walter Crane; "Welsh Churches" (illustrated), by Mr. A. Baker; "Architect and Contractor," by Mr. H. Lovegrove; "Metric Projection," by Mr. H. H. Stannus; "Stray Thoughts on Architectural Education," by Mr. G. Aitchison, R.A.; and "Travelling Student's Notes on Gloucestershire," by Mr. R. W. Paul.

CONTRACTS OPEN.

AYR.—Oct. 11.—For making Addition to Holy Trinity Church. Mr. J. L. Pearson, R.A., Architect, 13 Mansfield Street, Portland Place, W.

BALLYCARRY.—Oct. 14.—For Building Manse for Presbyterian Church. Mr. J. Dick, Ballycarry.

BRADFORD.—Oct. 18.—For Building Sunday School and Classrooms, Holme Lane. Mr. S. Robinson, Architect, 55 Tyrrel Street, Bradford.

BREASTON.—Oct. 9.—For Alterations and Additions to the Manor House. Mr. W. H. Radford, Architect, Angel Row, Nottingham.

BUDLEIGH SALTERTON.—Oct. 8.—For Building Business Premises. Messrs. Wilkinson & Warren, Architects, Post Office Chambers, Exeter.

BURNLEY.—Oct. 9.—For Building Stables for 15 Horses. Mr. James Duerden, Finsley Gate, Burnley.

BURTON-ON-TRENT.—For Building Homestead on Sewage Farm, Eggerton. Mr. E. Clavey, Borough Surveyor. Mr. R. White, Architect, Duffield.

CARDIFF.—Oct. 11.—For Building Lecture-rooms at University College. Mr. G. E. Robinson, Architect, 32 St. Mary Street, Cardiff.

CARLISLE.—For Building Chimney, Boiler Seating, &c., Featherstone Colliery. Messrs. Thompson & Sons, Colliery Office, Kirkhouse, Milton, near Carlisle.

CHORLTON.—Oct. 15.—For Building Sheds and Stoneyard at the Workhouse at Withington. Messrs. Mangnall & Littlewoods, Architects, 29 Brown Street, Manchester.

COXHEATH.—Oct. 13.—For Altering the Hospital at the Workhouse. Mr. Robert Hoar, Clerk to the Guardians, 9 King Street, Maidstone.

CROOK.—Oct. 13.—For Building Slaughter-house. The Co-operative Society, Crook.

DALTON-IN-FURNESS.—Oct. 13.—For Building Road Roller Shed. Mr. J. Tyson, Clerk, Local Board Offices, Dalton-in-Furness.

DENBIGH.—Oct. 18.—For Construction of Reservoir, Discharge Culvert, Pipe Laying, &c., Tank at Malpas, &c., Vyrnwy Waterworks. Mr. G. J. Atkinson, Town Clerk, Municipal Offices, Liverpool.

DONCASTER.—Oct. 15.—For Cooking Apparatus, for the Union Workhouse. Mr. F. E. Nicholson, Clerk, Union Offices, High Street, Doncaster.

DUBLIN.—Oct. 20.—For Works of Addition at the Ordnance Survey Office, Mountjoy Barracks, Phœnix Park. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

ELGIN.—Oct. 12.—For Police Stables and Buildings in connection. Messrs. A. & W. Reid, Architects, Elgin.

GELLIGAER.—Oct. 13.—For Building Board School at Hengoed. Mr. J. Williams, Architect, Morgan Town, Merthyr Tydfil.

GORLESTON.—Oct. 9.—For Construction of Two Lighthouses. Mr. H. Dudley Arnott, Architect, High Street, Gorleston.

GLOUCESTER.—Oct. 14.—For Construction of River Wall (191 lineal yards, 22 feet deep). Mr. R. Read, City Surveyor, Gloucester.

HALIFAX.—Oct. 8.—For Reinstating Flour Society's Mill and Building Stive Room. Messrs. Horsfall & Williams, Architects, 15 George Street, Halifax.

HALIFAX.—Oct. 12.—For Building Eight Houses and Appurtenances, Forming Street, &c. Messrs. Horsfall & Williams, Architects, 15 George Street, Halifax.

HAYFIELD.—Oct. 12.—For Building Board School. Mr. C. W. Johnson, Architect, Whaley Bridge.

HIGH HOLBORN.—Oct.—For Alterations at the Western Central District Post Office. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

HORNCASTLE.—Oct. 11.—For Improvements to Holy Trinity Church. Messrs. Dunham & Pollexfen, Horncastle.

HULL.—Oct. 20.—For Works in Connection with the Water Supply, Building Engine and Boiler Houses, Chimney, &c. Mr. D. Maxwell, Engineer, Town Hall, Hull.

ILKLEY.—Oct. 16.—For Building Residence. Mr. E. J. Dodshun, Architect, 1 East Parade, Leeds.

KEIGHLEY.—Oct. 9.—For Alterations and Additions to Lock-up. Mr. J. Vickers Edwards, West Riding Surveyor, Wakefield.

KILLARNEY.—Oct. 8.—For Temporary Buildings for Patients, Killarney District Lunatic Asylum. Mr. J. F. Fuller, Architect, 179 Great Brunswick Street, Dublin.

KING'S NORTON.—Oct. 13.—For Forming Road on Site of Cottage Homes, Woodcock Hill, Northfield. Mr. George H. Cox (Messrs. Owen & Cox, joint architects), 26 Temple Street, Birmingham.

LEAMINGTON.—Oct. 11.—For Repairs and Alterations at Mineral Water Bathing Establishment and Pump Room. Mr. W. de Normanville, Borough Engineer, Town Hall, Leamington.

LEEDS.—Oct. 16.—For Rearranging and Repairs to Council Chamber. The Borough Engineer, Municipal Offices, Leeds.

LIVERPOOL.—Oct. 12.—For Widening Two Bridges. Plans at the Engineer's Office, Hunt's Bank, Manchester.

LONDON.—Oct. 19.—For Providing and Fixing Lights and Alterations, C Block, Infirmary. Mr. W. Vallance, Clerk to the Guardians, Union Offices, Baker's Row, Whitechapel.

LUTON.—Oct. 12.—For Repairs to Police Station. Mr. W. Watson, County Surveyor, Wren Park, Shefford, Beds.

LYNTON.—Oct. 8.—For Alterations to Valley of Rocks Hotel. Messrs. Gould & Webb, Architects, Castle Street, Barnstaple.

MANCHESTER.—Oct. 12.—For Erection of Farm Buildings, Hyde and Audenshaw. Plans, &c., at the Waterworks Office, Town Hall, Manchester.

MIDDLESBROUGH.—Oct. 16.—For Alterations to the County Hotel. Mr. Robert Moore, Architect, 7 Albert Road, Middlesbrough.

MORPETH.—For Building Six Cottages. Mr. W. J. Charlton, Engineer, Ashington Colliery, Morpeth.

MOUNTSORREL.—Oct. 11.—For Erection of Casual Wards at the Workhouse of the Barrow-upon-Soar Union. Mr. Fairfax Scott, Clerk.

NORTH SHIELDS.—Oct. 13.—For Building Market. Mr. C. T. Gomoszynski, Borough Engineer, Norfolk Street, North Shields.

OLDBURY.—Oct. 13.—For Repairs to County Court. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

OSSETT.—Oct. 13.—For Additions and Alterations to Residence. Messrs. Holtom & Fox, Architects, Bond Street, Dewsbury.

PAISLEY.—Oct. 8.—For Building Board School, Camphill. Mr. Davidson, Architect, Terrace Buildings, Paisley.

PENZANCE.—Oct. 22.—For Building Art Museum and Alterations to School of Art. Mr. H. White, Architect, 1 Parade Passage, Penzance.

PORTSMOUTH.—Oct. 19.—For Building Offices and Stores at Entrance Gate to Camber Dock and Construction of Weighbridge. Mr. Alexander Hellard, Town Clerk, Portsmouth.

RADCLIFFE.—Oct. 12.—For Alterations and Additions to Radcliffe Bridge Station. Plans at the Engineer's Office, Hunt's Bank, Manchester.

STOCKPORT.—Oct. 15.—For Alterations and Additions to Congregational Church. Mr. R. Price, Architect, 25 Cross Street, Manchester.

TOLWORTH, LONG DITTON.—Oct. 13.—For Building Infectious Hospital. Messrs. Jacomb, Gibbon & Woodroffe, Architects, 3 Verulam Buildings, Gray's Inn, W.C.

TUBERCURRY.—Oct. 11.—For Building Medical Officer's Residence. Mr. W. H. Byrne, Architect, 20 Suffolk Street, Dublin.

WHITBY.—Oct. 16.—For Alterations to No. 13 Skinner Street. Mr. R. Lennard, Architect, 5 North Terrace, Whitby.

WILLINGTON QUAY. — Oct. 12. — For Building Infant Schools. Mr. William Hope, Architect, 97 Howard Street, North Shields.

WORTHING.—Oct. 15.—For Building Coastguard House. The Director of Works Department, Admiralty, 21 Craven Street, Charing Cross, W.C.

TENDERS.

AUDENSHAW.

For Sewering Audenshaw Road, from Trail Dog Bridge to Manchester Road, for the Audenshaw Local Board. Mr. J. H. BURTON, Surveyor, Warrington Street, Ashton-under-Lyne.

Contract No. 1.

Worthington & Pownall, Manchester	£271 2 0
F. W. Cullock, Manchester	226 0 0
Stansfield & Allcock, Ashton-under-Lyne	181 0 9
Cocks & Smith, Ashton-under-Lyne	160 8 6
John Rogers, Ashton-under-Lyne	140 18 6
CHARLES WALMSLEY, Audenshaw (*accepted*)	150 15 0
Surveyor's estimate	163 15 0

Contract No. 2.

Worthington & Pownall	344 6 6
F. W. Cullock	275 0 0
Stansfield & Allcock	228 10 3
Cocks & Smith	203 16 6
John Rogers	194 15 9
Charles Walmsley	183 10 4
Surveyor's estimate	181 18 0

BURSLEM.

For Improvement Works, Daniel Street, Burslem. Mr. J. E. WORTH, C.E., Borough Surveyor.

W. Drewitt, Alsager	£120 0 0
S. Smith, Basford, Stoke-on-Trent	95 0 0
J. Mackay, Stoke-on-Trent	90 0 0
J. Buck, Burslem	88 15 4
J. HOROBIN, Burslem (*accepted*)	85 0 0
Surveyor's estimate	90 0 0

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

BATH.

For Additions to Royal United Hospital Laundry. Messrs. Browne & Gill, Architects, 1 Fountain Buildings, Bath. Burden & Giddings, Bath.

BRIDLINGTON QUAY.

For Pair of Villas, Victoria Road, Bridlington Quay. Mr. J. Earnshaw, M.S.A., Architect, Carlton House, Wellington Road, Bridlington Quay.

Mainprize	£730 0 0
Bailey (*accepted*)	660 0 0

For Alterations to Shop and Premises, No. 14 Prince Street, Bridlington Quay, for Mr. D. Houghton. Mr. J. Earnshaw, Architect, Bridlington Quay.

Rennard	£219 0 0
Clark (*accepted*)	179 0 0

For Dwelling-house, North Street, Bridlington Quay, for Mr. A. Amos. Mr. J. Earnshaw, Architect.

Gray	£224 0 0
Clark	220 0 0
Hudson	209 10 0
Mainprize (*accepted*)	180 0 0

CARDIFF.

For Building Board Schools for 1,120 Children at Radnor Road, Canton, Cardiff, for the Cardiff School Board. Mr. E. M. Bruce Vaughan, A.R.I.B.A., Architect, Cardiff. Quantities supplied.

C. Dunn, Cardiff	£10,445 0 0
David Davies, Cardiff	10,060 0 0
Shepton & Sons, Cardiff	10,045 0 0
David Thomas, Cardiff	9,878 0 0
Charles Bird, Cardiff	9,850 0 0
Thomas Evans, Cardiff	9,850 0 0
James Allen, Cardiff	9,801 0 0
Jones Bros., Cardiff	9,450 0 0
E. Turner & Sons, Cardiff	9,266 0 0
Stephens & Bastow, Bristol	9,249 0 0
C. Burton, Cardiff	9,238 0 6
John Haines, Cardiff	9,150 0 0
D. J. Davies, Cardiff	8,996 0 0
E. C. Howell & Sons, Bristol (*accepted*)	8,400 0 0

£7 10*s.* per head, including boundary walls, playgrounds, covered playsheds, and caretaker's house.

CARMARTHEN.

For Construction of Road Approach to Great Western Railway Town Station, Carmarthen. Mr. G. A. Hutchins, Borough Surveyor.

D. Griffiths, Carmarthen	£736 0 0
W. Davies, Carmarthen	640 0 0
D. Jenkins, Llanstephan, Carmarthenshire	597 10 0
W. Matthias, Ferryside, Carmarthenshire	597 10 0
T. Morris, Carmarthen	559 10 0
T. David, Langharne, Carmarthenshire	520 6 0
T. Jones, Carmarthen	479 10 0
W. Evans, Carmarthen	469 0 0

CHEADLE HEATH.

For Erection of a School at Cheadle Heath, near Stockport. Plans, Specification, and Quantities by Mr. J. H. Burton, Architect, Warrington Street, Ashton-under-Lyne.

Thomas Warrington, Newton Moor	£1,834 0 0
Joseph Clayton, Denton	1,778 0 0
Amos Mason, Didsbury	1,718 0 0
Butters & Carson, Manchester	1,678 10 0
Thomas Rome, Manchester	1,623 0 0
Joseph Broadhurst, Stockport	1,622 0 0
H. J. Hampson & Co., Manchester	1,612 0 0
T. & W. Meadows, Stockport	1,574 19 0
W. H. & H. C. Brown, Stockport	1,540 0 0
Roger Bateson, Stockport	1,513 0 0
Froggatt & Briggs, Stockport	1,480 0 0
James McFarlane, Manchester	1,472 0 0
John Ross, Manchester	1,466 0 0
Thomas Dean, Ashton-under-Lyne	1,460 0 0
Samuel Robinson, Hyde	1,440 0 0
John Brown & Co., Hyde	1,440 0 0
W. Winniard, Wigan	1,432 5 9
Davison & Carr, Manchester	1,414 0 0
John Lee, Stockport (*accepted*)	1,400 0 0

CUBLINGTON.

For Repair and Partial Reseating of Cublington Church.

Webster & Cannon, Aylesbury	£138 8 0
Rickard, Whitchurch, Aylesbury	137 10 0
Fleet, Wingrave, Aylesbury	130 0 0
Garside, Leighton Buzzard	126 10 0
Grist, Bierton, Aylesbury (*accepted*)	122 10 0

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

DOOR FURNITURE, LOCKS, &c.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS, MANUFACTURERS, &c.

SHOWROOMS:—14 ELM STREET, GRAY'S INN ROAD, LONDON, W.C.

Designers and Manufacturers of all kinds of Art Work for Ecclesiastic and Domestic purposes in Silver, Copper, Brass, and Iron.

PLEASE WRITE FOR ILLUSTRATED PRICE LIST AND ESTIMATES.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.

Special Plans prepared to meet the requirements of our Customers.

hief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth Gilt Lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.

DERBY.

For Lock Ward (isolated), for the Derby Union, for Twelve Beds. Messrs. COULTHURST & BOOTY, Architects, 4 Albert Street, Derby.

W. Walkerdine, Derby	£690 0 0
W. Fletcher, Derby	688 0 0
F. Slater, Derby	585 18 0
E. Wood, Derby	585 10 0
Walker & Slater, Derby	572 0 0
S. Pemberton, Derby	566 0 0
J. Dickinson, Derby	550 10 0
Smith & Weston, Derby	550 0 0
S. Wagg, Derby	544 17 0
J. Parker, Derby	543 16 0
A. Spencer, Derby	524 19 0
A. BROWN, Derby (*accepted*)	521 10 0

ENFIELD.

For Alterations, &c., at Chase Hill Farm, Enfield. Mr. W. D. CHURCH, Architect. Quantities by Mr. C. Stanger.

Field & Son	£2,332 0 0
J. Holloway	2,031 0 0
W. Shurmur	2,027 0 0
S. Godden	1,935 0 0
J. Patman	1,835 0 0
Fairhead & Son	1,797 0 0

HALIFAX.

For Building Two Houses at Staups, Shibden, near Halifax. Mr. JOSEPH F. WALSH, Architect, Waterhouse Chambers, Halifax. Quantities by the Architect.

Sam. Mitchell, Hipperholme, mason and bricklayer.
Joseph Hanson, Halifax, carpenter and joiner.
C. G. Calvert, Lightcliffe, plumber and glazier.
H. Crowther, Shelf, plasterer and slater.

ISLEWORTH.

For External Painting at Brentford District Board Schools and Board Room, Isleworth, for Brentford Board of Guardians.

Addis, Hounslow	£560 0 0
Hopper, Isleworth	345 0 0
Knight, Isleworth	307 8 0
Maton, Kew	279 0 0
Fensome, Turnham Green	229 7 6
Foord & Sons, Brentford	229 0 0
Barnham, Isleworth	215 0 0
CHURCH & Co., Coleman Street, E.C. (*accepted*)	175 0 0

LEICESTER.

For Building Twelve Houses and Enlargement of Hosiery Factory, Dun's Lane, Leicester, for Mr. J. Haines. Mr. W. S. BURTON, Architect, Leicester. Quantities supplied.

Excavator, Bricklayer, Mason, Slater, Plasterer, and Carpenter.

J. Stevens	£3,528 0 0
Hutchinson & Son	3,486 0 0
J. Flude	3,426 0 0
T. Bland	3,294 10 0
W. H. Kellett	3,265 0 0
J. Cox	3,210 0 0
J. E. Johnson	3,171 0 0
Jewsbury	3,150 0 0
T. C. Tyers	3,109 0 0
C. Wright	3,100 0 0
G. W. HARRISON (*accepted*)	3,050 0 0
Timson	2,796 8 6

Ironfounder.

Illston	224 0 0
Wright Bros.	217 7 6
Jayes & Co.	215 8 0
Cort & Paul	214 18 0
GOODWIN & BARSBY (*accepted*)	202 10 0

Plumber, Gasfitter, and Glazier.

Hudston	200 17 0
Smith	198 6 0
Matts & Biggs	191 0 0
Norman & Underwood	186 10 0
Fearne	184 7 0
Whitmore	175 15 0
Hill	168 10 0
GETLIFFE & MATTHEWS (*accepted*)	161 19 6

Painter.

Whitmore & Pratt	106 15 0
Millis	96 17 0
Barker	95 10 0
Groves	92 10 0
Banton	89 10 0
Brown	88 5 0
SHIPLEY (*accepted*)	79 16 2

All of Leicester.

MR. BUSBRIDGE'S EVENING DRAWING CLASSES will resume the first week in October, in various parts of London, for instruction in Building Construction and Geometrical Drawing.

Fees, 13*s.* 6*d.* for Six Months' Course.

Full Particulars from W. BUSBRIDGE, "Grasmere," Plumstead.

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

PERMANENT EXHIBITION OF ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

ABOUT 2,000 IN USE.
Patent Chimney Cans for Curing a Blow Down. These are made of Fire Clay, are Cheap and Durable. Apply to
J. & K. HOWIE,
Hurlford Fire Clay Works, Kilmarnock, N.B.
Who also manufacture Enamelled Bricks, Baths, Sinks, Mangers, Cattle Troughs, Cisterns, &c., &c.

ACCIDENT ASSURANCE TRANSACTED BY THE ATLAS FIRE AND LIFE OFFICE. Established 1808. West End Office, 32 COCKSPUR STREET.
Head Office, 92 CHEAPSIDE. Secretary, SAML. J. PIPKIN.

E. SCOTT & CO., 166 City Road.—Estab. 1861.
E. SCOTT & CO.,
Sole Manufacturers of the Improved Patent
MICA LETTERS,
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.,
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
166 CITY ROAD, LONDON.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.
Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely Bound in Cloth, Gilt Lettered, price 12*s.* 6*d.*
Office: 175 Strand, London, W.C.

GRUNDY'S PATENT WARM-AIR VENTILATING FIRE GRATE.

The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.

TESTIMONIALS.

"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."

"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.

"To Mr. John Grundy."

From James Garry, Esq., Architect, West Hartlepool, July 1884.

"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."

From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.

"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."

Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."

Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

LONDON.

For Block of Buildings for the Right Hon. the Lord Walsingham, upon the Site now occupied by Nos. 150, 151, 151B, 152, 153, and 154 Piccadilly, and Nos. 23 and 24 Arlington Street, and Garden Ground in the rear. Mr. W. O. MILNE, Architect. Quantities by Messrs. Drower & Ruau t

Stephens, Bastow & Co., Bristol and London	£107,240 0 0
Peto Bros., London	106,890 0 0
Mowlem & Co., London	103,800 0 0

For Erection of Premises, 104 Bishopsgate Street, E.C., for Messrs. Moore & Moore. Messrs. CHATFEILD CLARKE & SON, Architects.

G. S. Pritchard	£7,977 0 0
Clark & Bracey	7,791 0 0
J. Brown, Son & Blomfield	7,718 0 0
Colls & Son	7,710 0 0
J. J. Greenwood	7,697 0 0
Ashby & Horner	7,681 0 0
Atherton & Latta	7,595 0 0
W. Shurmur	7,585 0 0
Patman & Fotheringham	7,497 0 0
C. Cox	7,477 0 0
Hall, Beddall & Son	7,446 0 0
J. Morter	7,393 0 0
Lawrance & Son	7,389 0 0
M. Patrick & Son	7,370 0 0
J. Woodward	7,273 0 0
B. E. Nightingale	7,129 0 0

For Paving Carriageways, Southwark Bridge Road, with Blue Guernsey Granite Cubes (5,783 yards).

Carey, Sons & Co., Bermondsey,	at 13s. 3d.	£3,831 4 9
H. R. Trehearne & Co.	at 12s. 5d.	3,590 0 0
A. Krauss, Bristol	at 12s. 3d.	3,542 1 9
Turner & Son, Chelsea	at 12s. 3d.	3,542 1 9
E. & H. Beevers, Borough	at 12s. 3d.	3,542 1 9
J. Mowlem & Co.	at 12s. 0d.	3,469 16 0
J. Briggs, Birmingham	at 11s. 0d.	3,180 13 0

For Improvement Works, Chesnut Road and Parkdale Road, for the Plumstead Board of Works. Mr. E. L. RUMBLE, Surveyor.

Rutty, Bow	£575 0 0
Marshall, Brighton	440 0 0
Woodham & Fry, Greenwich	432 0 0
MOWLEM & Co., Westminster (*accepted*)	381 0 0

LONDON—*continued.*

For Embankment Walls to the River Ravensbourne, Deptford Bridge.

Hocking & Tuttlebree, London Road	£1,954 0 0
Mowlem & Co., Westminster	1,900 0 0
Jas. Weaver, High Holborn	1,800 0 0
W. Webster, St. Martin's Place, W.C.	1,800 0 0
Samuel Chafen, Albion Street, S.E.	1,580 0 0
J. G. B. Marshall, Brighton	1,500 0 0
Joseph West, Deptford	1,419 2 0
Woodham & Ivy, Greenwich	1,394 0 0
S. & E. Bentley, Burnt Ash Farm	1,300 0 0
A. T. Catley, Lloyd Square, W.C.	1,250 0 0
Batchelor & Snowdon, Holbeck Road, S.W.	1,189 0 6
CHURCH & Co., Coleman Street (*accepted*)	900 0 0

For Board School, Chequer Alley, Finsbury. Mr. T. J. BAILEY, Architect.

Staines & Son	£9,668 0 0
G. Parker	9,051 0 0
F. & F. J. Wood	9,034 0 0
Dearing & Son	9,031 3 0
Howell & Son	8,864 0 0
F. Johnson	8,777 0 0
J. F. Sargeant	8,448 0 0
W. Oldrey & Co.	8,293 0 0
C. Cox	8,280 0 0
J. Holloway	8,000 0 0
Stimpson & Co.	7,985 0 0
W. Johnson	7,965 0 0
S. J. Jerrard	7,943 0 0
C. Wall	7,851 0 0
Wall Bros.	7,775 0 0

For Board School, Pakeman Street, Hornsey Road. Mr. T. J. BAILEY, Architect.

J. J. Robson	£9,244 15 9
C. Cox	8,660 0 0
Howell & Son	8,541 0 0
W. Oldrey & Co.	8,497 0 0
J. Holloway	8,400 0 0
Stimpson & Co.	8,346 0 0
W. Johnson	8,200 0 0
S. J. Jerrard	7,979 0 0
C. Wall	7,880 0 0
Wall Bros.	7,375 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
32 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

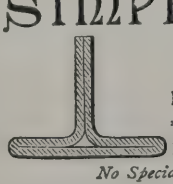
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper,
Drawing Paper, Sectional Paper,
Mounted Papers,
Continuous Papers, Pencils, Pens, &c.
&c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES
WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET SOHO. LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
WESTWOOD GROUND, BOX GROUND COMBE DOWN
CORSHAM DOWN, AND FARLEIGH DOWN.
RANDELL, SAUNDERS, & CO., LD.
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.

SIMPLEX LEAD GLAZING

For ROOFS, ********
****** SKYLIGHTS &
HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR
ILLUSTRATIONS, TESTIMONIALS & FULL
***** PARTICULARS (SENT POST FREE). *****



Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET,
HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO
ARCHITECTS,
BUILDERS,
AND
OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

HENRY KING
(Late GREEN & KING).
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.

LONDON—*continued.*

For Covered Playgrounds, Cayley Street, for the London School Board.

Ewart & Son	£168 0 0
T. Bendon	140 0 0
Riley Bros.	131 0 0
Holden & Co.	123 0 0
A. Martin	122 0 0
S. B. Ash	112 0 0
J. Holloway	100 0 0

For Alterations to the Great Eastern Public-house and the Erection of a Cottage adjoining, Millwall, E., for Messrs. Charrington & Co. Mr. JOHN HUDSON, Architect, 80 Leman Street, E. No Quantities.

Little, Whitechapel	£1,497 0 0
Eaton, Whitechapel	1,488 0 0
J. & H. Cocks, Mile End	1,395 0 0
Gladding, Mile End	1,310 0 0
COULSELL BROS., Bethnal Green, (*accepted*)	1,125 0 0

For Wood Paving, Southwark Bridge Road, from Newington Causeway to Borough Road, and opposite Fire Brigade Station.

Muldoon Bros., Barnsbury	£1,905 0 0
A. Krauss, Bristol	1,607 18 4
J. Biggs, Birmingham	1,427 10 0
Carey, Sons & Co., Bermondsey	1,375 0 0
Improved Wood Pavement Co.	1,172 10 0
J. Mowlem & Co.	1,172 10 0
Turner & Son, Chelsea	1,127 10 0
H. R. Trehearne & Co., Battersea	1,092 10 0
W. HIRST, 9 Gracechurch Street (*accepted*)	1,029 3 4

For Building Fire Station, Great Marlborough Street.

STIMPSON & Co. (*accepted*)	£7,660 0 0

For Painting Exterior of Schools and the Board-room, for the Turnham Green Board of Guardians.

Addiss, Brentford	£560 0 0
Hopper, Isleworth	345 0 0
R. Knight, Isleworth	307 8 0
Mayton, Kew	279 0 0
Fenson, Turnham Green	229 7 6
Ford & Sons, Brentford	229 0 0
Barnum, Isleworth	215 0 0
CHURCH & Co., Coleman Street (*accepted*)	175 0 0

LONDON—*continued.*

For Building Vicarage at St. Clement's, Fulham, for the Rev. W. Paton Hindley, M.A. Mr. CHARLES HENMAN, Architect, 64 Cannon Street, London, E.C. Quantities by Mr. Charles Fitzroy Doll, F.S.I.

Maides & Harper, Croydon	£1,789 0 0
Goddard & Son, Farnham	1,704 0 0
J. Holloway, Lavender Hill	1,680 0 0
J. Smith & Sons, South Norwood	1,667 0 0
W. Marriage, Croydon	1,660 0 0
HOWLAND & WHITE, Fulham (*accepted*)	1,630 3 0

MARSDEN.

For Building Two Cottages, Marsden. Mr. A. SHAW, Architect, Knowle, Golcar.

Firth, Townend & Walker, Golcar, mason.
J. T. Whitehead, Marsden, joiner.
D. Shaw, Golcar, painter and plasterer.
Francis Goodall, Marsden, plumber.

NEWCASTLE-ON-TYNE.

For Alterations and Additions to Freemasons' Arms, Scotswood Road, Newcastle-on-Tyne, for Messrs. J. Sanderson, Brewers. Messrs. STOCKWELL & SPICER, Architects.

T. & R. Lamb, Gateshead	£529 0 0
J. R. Lunn, Newcastle	510 0 0
Broomhead & Keswick, Newcastle	505 0 0
W. & W. Scott, Spital Tongues	497 0 0
T. White, Newcastle	480 0 0
R. Veitch, Newcastle	462 0 0
W. Baston, Newcastle	457 0 0
T. Southern, Newcastle	450 0 0
S. Millard, Newcastle	414 0 0
E. WEATHERLEY, Newcastle (*accepted*)	397 10 0

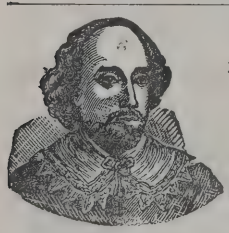
NORTHAMPTON.

For Additional Stabling at Sewage Works, Houghton Road, Northampton.

R. Hickman	£130 16 0
J. Dunkley	125 0 0
J. Clarke	119 10 0
G. W. Sousted	114 16 0
J. H. Watkin	114 14 0
Woodford & Son	108 0 0
J. BROWN (*accepted*)	102 18 0

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



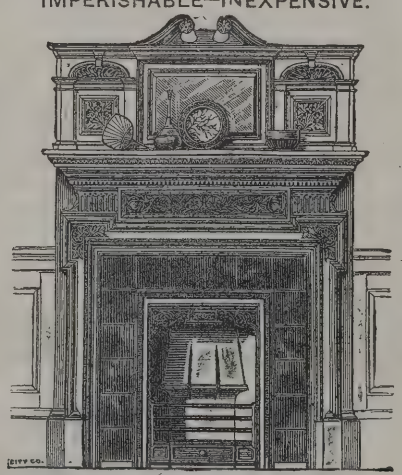
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS,
IMPERISHABLE—INEXPENSIVE.



IN PLAIN COLOURS OR VARIEGATED,
AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.,
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

NUTFIELD.

For House from Ground-line, Nutfield, Surrey, for Mr. Charles Maw. Cellars and Foundations already carried out. Mr. F. J. DIBBLE, Architect, Dorking.

Peerless, Eastbourne	£10,889 0 0
Brass & Son, London	10,350 0 0
Colls & Son, London	9,765 0 0
Goddard & Son, Farnham	9,190 0 0
Smith & Sons, Guildford	9,065 0 0

PENARTH.

For Alterations and Additions to Presbyterian Chapel, Penarth. Mr. J. H. PHILLIPS, Architect, 24 Duke Street, Cardiff.

Cadogan & Williams, Cardiff	£1,192 0 0
D. Thomas, Cardiff	890 0 0
SMALL & THOMPSON, Cardiff (*accepted*)	780 0 0

RASTRICK.

For Building Two Semi-detached Houses, Lower Newlands, Rastrick. Mr. R. WHITTAKER, Architect, Brighouse.

Cross & Sons, Brighouse, mason.
T. Rayner, Brighouse, joiner.
W. Brook, Brighouse, plumber.
A. Anderson, Brighouse, plasterer.
J. Smithies, Brighouse, slater.
J. Turner, Brighouse, painter.

SALFORD.

For Extension of Borough Cemetery, Salford.

STATHAM & SONS (*accepted*)	£3,725 0 0

SHAW.

For Building Four Houses, Shaw. Mr. JAS. MAWSON, Architect, Shaw.

O'Brian & Fawthrop, Shaw, mason	£200 0 0
Load & Harrison, Shaw, joiner	120 0 0
R. Howarth, Shaw, bricklayer	116 0 0
M. Bailey, Shaw, slating, plastering, &c.	59 10 0
W. B. Norris, Shaw, plumbing, &c.	17 0 0

Proprietor finds the stone for facings.

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY., RIVERSIDE NINE ELMS.

TIPTON.

For Building Board School for Infants, Great Bridge, Tipton. Mr. E. PINCHER, Architect, West Bromwich.

J. H. BATE, Dudley (*accepted*)	£859 10 0

UPMINSTER.

For Erection of a Pair of Labourers' Cottages on Hacton Farm, Upminster, Essex, for Mashiter's Trustees. Mr. JOHN HUDSON, Architect, 80 Leman Street, E. No quantities supplied.

Sibthorpe, Hornchurch	£565 0 0
HOOK, Upminster (*accepted*)	480 0 0

WEDNESBURY.

For Building Board School, Caretaker's House, &c., Ring's Hill, Wednesbury. Mr. E. PINCHER, Architect, West Bromwich.

J. Guest, Brettell Lane, Dudley	£4,900 0 0

WHITBY.

For Building Farmhouse, Outbuildings, &c., Egton Estate, Whitby. Mr. EDWARD H. SMALES, A.R.I.B.A., Architect, Whitby. Quantities by Mr. H. Neilson, Darlington.

John Russell, Whitby	£1,555 16 8
A. Spencer, York	1,183 4 0
Jonas France, Middlesbrough	1,040 1 3
W. C. Atkinson, Stockton-on-Tees	997 14 8
John White, Whitby	996 0 0
M. Grantham & Co., York	887 10 0
C. WINTERBURN, Whitby (*accepted*)	878 0 0

Lowest separate Tenders, £994 6*s.* 11*d.*

YORK.

For Rebuilding House and Shop, Coney Street. Mr. W. G. PENTY, Architect, Clifford Chambers, York.

Accepted Tenders.

G. Walker, excavating and brickwork	£331 0 0
W. Harrison & Co., carpenter and joiner's work	317 0 0
J. H. Shinksmith, plumbing and glazing	98 0 0
J. Young, plasterer's work	82 0 0
W. T. Walker, smith and ironfounder's work	60 16 0
G. Milburn, mason's work	21 0 0
Bellerby & Sons, painting	20 0 0
Baynes & Son, slater's work	13 5 0

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co^os
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST, BENTLEY PRIORY, ROYAL, LANGHAM, GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S, BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

NOTES ON NOVELTIES.

Engraved Glass.—The London Engraved and Etched Glass Company (Limited), of Mildmay Chambers, Union Court, Old Broad Street, E.C., are just introducing their new engraved glass for architectural and decorative purposes. By this patent process fac-similes of pictures can be reproduced by etching on glass. We would draw special attention to the engraved mirrors, which are a speciality of the company. This work has hitherto been wrought by hand diamond engraving upon glass. By this new process an exactly similar effect is produced, but at a very greatly reduced cost. We have inspected some beautiful specimens of fine engraving upon brass by the same process, and which we are told can be executed upon any metal, and also plates to be used by paper embossers. At the same time, the company are showing samples of leaded glass etched by their new process, the effect of which is quite equal to hand-painted glass. Street lamp tablets made by this firm, in a far superior style and at a lower cost than by the old system of embossing, have been already adopted by several large towns. We would recommend those of our readers interested to pay a visit to the above address, and we are sure that the time so spent would be well repaid.

TRADE NOTES.

WE have just had an opportunity of seeing two very fine stained-glass windows at the studio of Messrs. Bussell & Gibbs, Wells Street, W. They are intended to be placed in the town hall, Windsor, and are well worth a visit; they will remain on view for a few days. The windows are in three panels; in the centre are exceedingly life-like medallion portraits of H.R.H. Prince Leopold and H.R.H. Princess Beatrice, with their respective arms in the top panels, and the borough arms of Windsor in the lower panels, the ground being a pale vellum tint with a Tudor rose, the whole surrounded by a rich coloured border, with rose and crown device at the top and bottom, an inscription commemorating the birth and marriage of their Royal Highnesses, and in the case of Prince Leopold his death at Cannes, March 28, 1884.

MESSRS. FARADAY & SON, of Berners Street, W., have appointed the Vitrite Company of New York agents for the sale of their electric light fittings in the United States. The same firm has just introduced a new shade of rice paper of delicate tints to suit the Vitrite lamp holders. These, with their frames, cost about one-fourth of the price of the ordinary glass shades.

THE Architectural Association will to-morrow (Saturday) visit Mr. Stonor's house at Ascot, of which Messrs. Ernest George & Peto are the architects. We especially recommend the visitors to notice the excellent brickwork. The whole of the facing bricks and tiles were supplied from the brickworks of Messrs. T. Lawrence & Son, of Bracknell.

THE Town Council of Taunton have decided to employ electric light as the illuminant of their town. The system to be employed is that known as the Thomson-Houston arc system, which has already been subjected to a period of probation in a portion of the town, and has most successfully withstood the test. It is now to be used in all the principal portions of the town, and a contract for a period of seven years has been entered into, with a proviso, however, that it may be terminated by either party to it at the end of the third or fifth year, in the event of the light not proving such a success as it is confidently anticipated that it will. The work of installation is in the hands of Messrs. Laing, Wharton & Down, of 8 and 9 Holborn Viaduct, E.C.

ON Tuesday, October 12, Messrs. E. Jansson & Co., timber brokers, of 50 Bishopsgate Street Within, London, E.C., will hold their next sale at the "Baltic," when, we are informed, a valuable assortment of doors, mouldings, deals, battens, floorings, spruce, pine, St. Petersburg poles, &c., will be offered in lots specially made up to suit small buyers. The periodical timber sales of this well-known firm are worth the attention of purchasers of large or small lots.

IN the notice given of the patent of the Spencer Corona Company, of 3 Hyde Street, New Oxford Street, W., we omitted to state that the "corona" can act only as a preventative of blackened ceilings when used on the top of gas globes, where it also acts as a complete ventilator for the vitiated air.

A MEMORIAL window has just been fixed in the south aisle of Headingley parish church by Messrs. R. W. Winfield & Co., of Cambridge Street, Birmingham, with stained glass illustrating *The Transfiguration*, the subject occupying the three lights, with the scene of *Healing the Paralytic at the Foot of the Mountain* illustrated below in the base, also running through the three lights. The window was designed by, and executed under the superintendence of, Mr. T. W. Camm.

THE fine memorial church of St. John the Divine, at Triangle, Yorkshire, has lately been thoroughly renovated and

Equitable Fire & Accident Offices

FINANCIAL POSITION.	Fire Co.	Accident Co.
Capital Subscribed	£263,335 —	£142,175
Capital Paid Up	52,667 —	28,435
Annual Income	88,943 —	21,264
Funds and Investments	98,969 —	36,528

HEAD OFFICE: 11 & 13, ST. ANN ST., MANCHESTER.

BRANCHES:

LONDON - - - 69, Lombard Street, E.C.
GLASGOW - - - - 101, St. Vincent Street.
BIRMINGHAM - Midland Bdgs., 2, New St.
LIVERPOOL - - - - 11, Tithebarn Street.
NEWCASTLE - 1, St. Nicholas Buildings.
BELFAST - - - - - - 6, Royal Avenue.
DUBLIN - - - - - - - - 18, Dame Street.

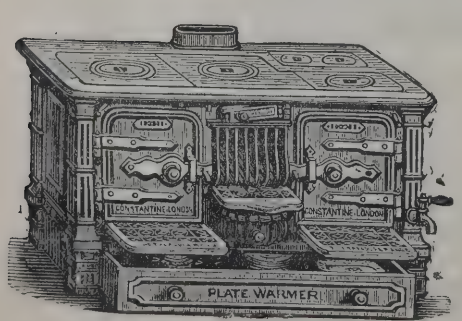
Special Feature.

ONE PREMIUM RETURNED every FIFTH YEAR to those who have made no Claim.

AGENTS APPOINTED.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S



PATENT "TREASURE"

COOKING RANGE,

With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

decorated. The decorative work has been entrusted to the well-known firm of ecclesiastical decorators, Messrs. Heaton, Butler & Bayne, of 14 Garrick Street, London, who supplied the whole of the beautiful stained glass placed in the church when erected. The chancel has a light, chaste, and pleasing appearance, and reflects great credit on the artists. Both vestries and the organ chamber have received special attention. Mrs. F. E. Rawson, of Thorpe, has generously defrayed the whole of the cost, which includes expenses attached to the organ, &c.

The Works Committee of the Southampton Town Council have received a letter from Mr. Arthur Reynolds, whose tender of 1,844*l.* had been accepted for the erection of certain cottages in connection with the water supply at Otterbourne, pointing out that an error had been committed in his tender, which should have been 2,844*l.* Though he was rendered liable to be held to his contract, the committee have allowed him to withdraw from it, on the forfeiture of his 10*l.* deposit, and to this he agreed.

THE ROYAL JUBILEE EXHIBITION, MANCHESTER, 1887.

The executive committee of the exhibition have issued their prospectus and regulations for exhibitors. The purpose of the exhibition is to illustrate, as fully as possible, the progress made in the development of arts and manufactures during the Victorian era, principally under the following sectional headings:—1. Industrial design, as shown in textile fabrics, pottery, glass, metal, wood, marble, and stone work, and all useful articles having a decorative or ornamental design. 2. Machinery in motion, and general engineering plant and appliances. 3. Chemical and allied industries. 4. Handicraft work in process of production. 5. Works committee, and representation of old Manchester and Salford, model of the Ship Canal, &c. 6. Fine arts—limited to works of art produced in the United Kingdom during the reign of Her Majesty the Queen. 7. Electric light, music, horticulture, &c. The prospectus further states:—

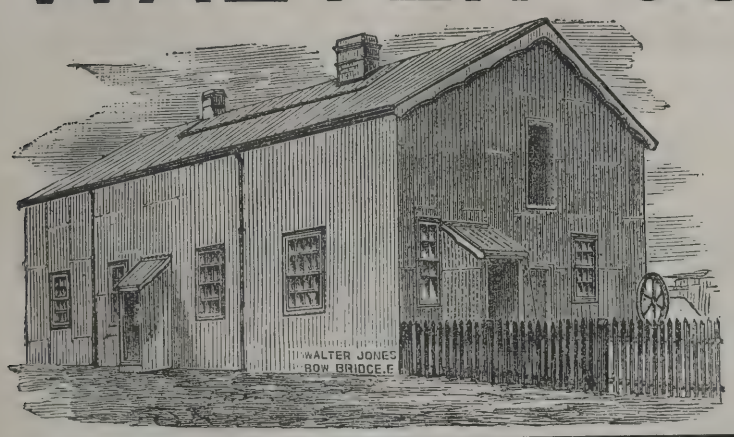
The site chosen is at Old Trafford, adjoining the Botanical Gardens, which it is proposed to incorporate with the exhibition. It will cover a space of about thirty-two acres, which, in case of need, may be extended, and is of easy access from the city by road and rail. The plans of the building, which have been approved by the executive committee, are exceedingly simple and compact. The main building consists of a central nave 1,022 feet long and 56 feet high, with a transept across the centre 370 feet long and the same height, and two lower transepts near the ends of the nave 60 feet wide. At the intersection of the nave with the central transepts is a dome 90 feet in diameter and 140 high, and at the intersection of the nave with the low transepts are square pavilions of a lower altitude. The spaces between the nave and the arms of the cross are filled with exhibition courts, in bays 30 feet wide. The machinery in motion will be provided for in a large annexe, separated from the main building by a 70 feet roadway, with a covered fireproof gallery of communication. Special care has been taken in the construction of the section intended to be devoted to fine arts. It is completely isolated from the main building by stout brick walls, with iron sliding fireproof doors; the brick walls will be covered inside with Parian cement, which secures absolute immunity from damp. The most complete arrangements will be made for watching, night and day; and the lighting will be so arranged that under no possible circumstances can any injury arise to the works exhibited. The committee therefore confidently appeal to the owners of treasures of art produced during the reign of Her Majesty the Queen, trusting that they will generously respond to the desire that this exhibition shall be in every way a worthy successor to the Great Art Treasures Exhibition held at Manchester in 1857. The guarantee fund exceeds 132,000*l.*, and the guarantors are represented by a council elected from their body, presided over by Mr. Alderman Philip Goldschmidt (Mayor of Manchester), and which council represents the ultimate court of appeal on all matters connected with the exhibition. The entire control of the whole arrangements is in the executive committee appointed by the council of guarantors, consisting of thirty members, with Sir Joseph C. Lee as chairman. The Lancashire and Yorkshire Bank (Limited) have undertaken to open a branch in the exhibition building, for the convenience of exhibitors and others, where all ordinary banking business will be transacted.

Of the regulations for the guidance of exhibitors, the following are of general interest:—

Exhibitors will be required to keep their stands clean and in good order, and will be permitted to employ attendants for this purpose, and to explain their exhibits. Such persons may receive orders, but shall not solicit them to the annoyance of the public or other exhibitors, and any exhibitor or assistant so doing may be expelled from the building and have his ticket cancelled.

Exhibits which are manufactured within the exhibition may

WALTER JONES, MAGNET WHARF, BOW BRIDGE,



MANUFACTURER OF

GALVANIZED IRON HOUSES,

OFFICES, WAREHOUSES, | CHURCHES, STABLES,

&c., &c.

IRON OR WOOD FRAMES.

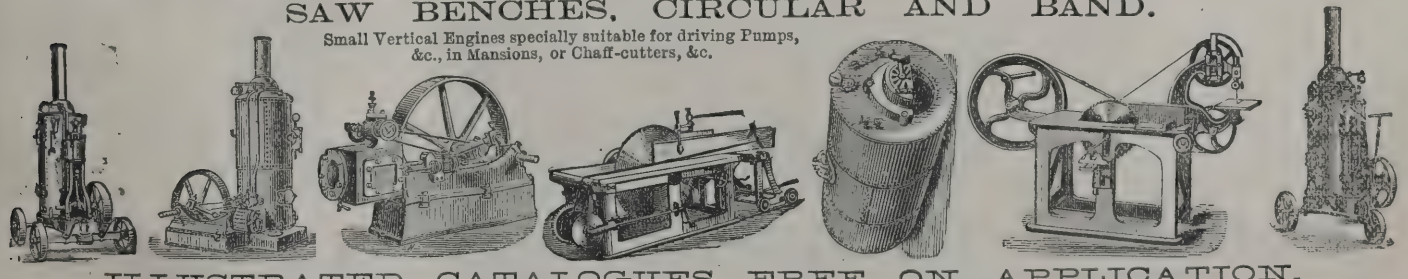
Apply for Designs and Prices.

E. S. HINDLEY, 11 QUEEN VICTORIA STREET.

VERTICAL STEAM ENGINES, PORTABLE OR FIXED. HORIZONTAL STEAM ENGINES } WITH OR WITHOUT VERTICAL BOILERS.

SAW BENCHES, CIRCULAR AND BAND.

Small Vertical Engines specially suitable for driving Pumps, &c., in Mansions, or Chaff-cutters, &c.



ILLUSTRATED CATALOGUES FREE ON APPLICATION.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

be sold and removed, but no exhibit will be allowed to be removed from the exhibition without the written permission of the general manager.

Should the exhibitors in any class require to have the relative merits of their several exhibits decided, the Executive Committee will, upon a requisition being made to that effect, appoint a technical jury for such purpose, whose judgment shall be absolutely final and conclusive.

Exhibits in the fine arts section will be strictly limited to works of art, viz. :—Paintings in oil and water colour, sculpture, engraving, etching, lithography, photography, and wood engravings produced in the United Kingdom during the reign of her Majesty the Queen.

Applications for space must be lodged on or before November 1. No exhibits will be received before March 15, 1887, except by special permission, and all goods must be delivered before April 15, and be in order by April 25, 1887.

SANITARY PROGRESS IN LIVERPOOL.

An address was delivered on Monday by Dr. Carter, the president, at the annual meeting of the Literary and Philosophical Society of Liverpool. The subject was, "Some Results of Recent Sanitary Legislation." He commenced by referring to what was said by Condorcet at the time when the philosopher was hiding in Paris, and shortly before he was guillotined. "It cannot be doubted," he wrote, "that the progress of the sanative art, that the use of more wholesome food and more comfortable habitations, that a mode of life which shall develop the physical powers by exercise, without at the same time impairing them by excess; in fine, that the destruction of the two most active causes of deterioration, penury, and wretchedness on the one hand, and enormous wealth on the other, must necessarily tend to prolong the common duration of man's existence, and secure him a more constant health and a more robust constitution. It is manifest that the improvement of the practice of medicine becomes more efficacious in consequence of the progress of reason, and that social order must in the end put a period to transmissible or contagious disorders, as well as to those general maladies resulting from climate, ailments, and the nature of certain occupations." Now, when it is remembered that Condorcet died in 1794, when none of those accurate inquiries into the intimate nature and mode of propagation and prevention of contagion, which have already borne much, and are destined to bear much more, fruit, had been entered upon or, perhaps, even thought of; and when it is further remembered that Voltaire, Condorcet's intimate friend and the literary king of his age, is accredited with saying that physicians were a class of men who put physic, of which they knew little, into stomachs of which they knew less, it must be admitted that Condorcet's belief in the future enlightenment and influence for good of that kind of men was little less than miraculous. Dr. Carter then went on to explain the sanitary progress of Liverpool. In 1843 it was said to be without exception the unhealthiest town in England.

By an enumeration made under the authority of the Town Council in 1841, there were 1,982 courts, with 55,534 inhabitants, in the parish of Liverpool. Of these courts 629 were closed at both ends, 875 were open at one end; and only 478 were open at both ends. By a return made in 1848 there were then 14,472 court-houses, of which 88 per cent., or 12,735, were inhabited, and by far the greater number of which would require to be dealt with as insanitary dwellings. Allowing six persons for each house, this would give 76,410 as the number then living in courts. The courts to-day, like those of 1843, are constructed on a vicious principle. Only a little better than court and cellar were the streets where the poor lived and died. In one large district, bounded on one side by Vauxhall Road and on another by Scotland Road, comprising 2,500 front houses, no fewer than 922 had neither yard, ashpit, nor privy. These facts will give some faint idea of the condition of a very large part of Liverpool in 1848. It really would not have been surprising if the authorities had been paralysed by the enormity of the difficulties that confronted them, and had decided to do nothing out of sheer despair at the hopelessness of the attempt. Happily, this is not the English way, and it was not their way. Their first step was to obtain an Act of Parliament—that of 1842—which among other things provided for a minimum width for new streets and courts; a certain size for rooms; for the construction of windows which would open and shut; for the closure of cellars in courts; for the modification as to height, and for the ventilation of other cellars; for the construction of ashpits, privies, and drains; for the flagging of courts; and for the compulsory cleansing of filthy and unwholesome houses at the expense of the occupier, who was liable to distress in default of payment. It still permitted one end of a court to be built up, however, and the entrance to be narrowed six feet in width for the erection of privies and ashpits. But, besides this

ASCHERBERG PIANOS,

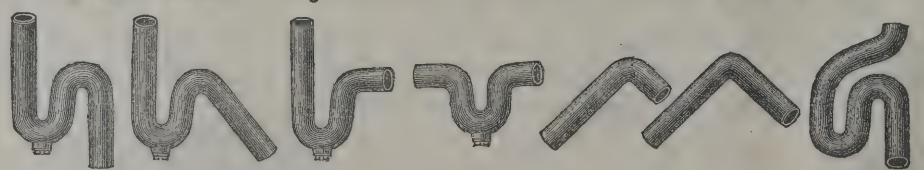
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., London and New York.

London Office and Works :—15 BRITANNIA STREET, KING'S CROSS, W.C.

last fatal error, there were two serious drawbacks to the efficient working of the Act. It was useless to order the drainage of houses without providing sewers to drain them into; and it was equally useless to say that unwholesome dwellings were to be cleansed unless there was someone in authority to say when the dwellings were unwholesome. The next step, therefore, was to do away with the Commissioners of Sewage, who made but few sewers, and put the work into more competent hands.

The good effects of these changes soon began to be shown. In the six years preceding 1856, fifty-eight miles and a half of sewers, and nearly thirty-one miles of court and passage drains, were constructed; while between 1847 and 1856 no fewer than one hundred and fifteen and a half miles of sewers were built, and this work has been going on ceaselessly ever since, so that to day there is not a court, alley, or passage, however poor, that has not the means of passing off its foul liquid into a sewer. Courts have been flagged, drained, whitewashed, and provided with a plentiful supply of pure water directly from the mains; many of them have been opened up to light and air; cellars have been closed; streets have been rendered impervious to soakage, while their surfaces are daily cleansed; foul privies and middens have been disappearing, and a more rapid removal than formerly of refuse matter effected; and this with results so splendid that they almost encourage us to hope that, when completer efforts shall have been made, supported by a newer and more enlightened generation, the magnificent dream of Condorcet may not be so impossible of realisation as most men have hitherto thought.

THE COMPANY OF PLUMBERS.

At the quarterly meeting of this company, Alderman Stuart Knill was elected master and Messrs. F. Machin and W. H. Bishop upper warden and renter warden respectively. The mastership of the company has been held previously for three successive years by Mr. George Shaw, C.C., the duration of the office being exceptionally extended in recognition by the court of the special value of the services rendered generally by Mr. Shaw to the objects of the company, and especially with reference to carrying out practically the registration of plumbers and the establishment of the technical classes of instruction for plumbers now held in connection with the City and Guilds Institute at Finsbury.

THE BIRMINGHAM MASONS AND TERRA-COTTA.

On Monday last a deputation from the Trade Society of Birmingham Stonemasons waited upon the mayor (Alderman Martineau) for the purpose of representing to his worship certain facts having reference to the use of terra-cotta in the new Assize Courts. The deputation, which was introduced by Councillor Whateley, consisted of Mr. H. Keyse, chairman of the society, and Mr. J. Farr, secretary. Mr. Whateley said his desire in introducing the deputation was that they should have an opportunity of demonstrating that stone was a better material than terra-cotta in building.

The deputation urged that terra-cotta had been spoken of to the General Purposes Committee of the town council in such a way as to damage the interests of the stonemasons' trade. Stone was stronger in every way, more durable, and able to "carry a better line"—that was to say, to preserve the integrity of its position in a building. As evidence of the weakness of terra-cotta, they referred the mayor to the archway of the new Liberal Club, which was already cracked, and in which the lines of the fluting were no longer parallel, and to several other examples. They represented, moreover, that if terra-cotta were the medium used for the Assize Courts, a sum of between 20,000*l.* and 30,000*l.* would be spent outside the town, which might go to benefit its inhabitants; and they were anxious to ascertain if it had been definitely decided to use terra-cotta.

The Mayor, in reply, said he believed that the contracts had not been given out, but he could not say if the matter was open now to reconsideration. He would, however, convey to the proper persons the representations which had been made to him. The deputation thanked the Mayor and withdrew.

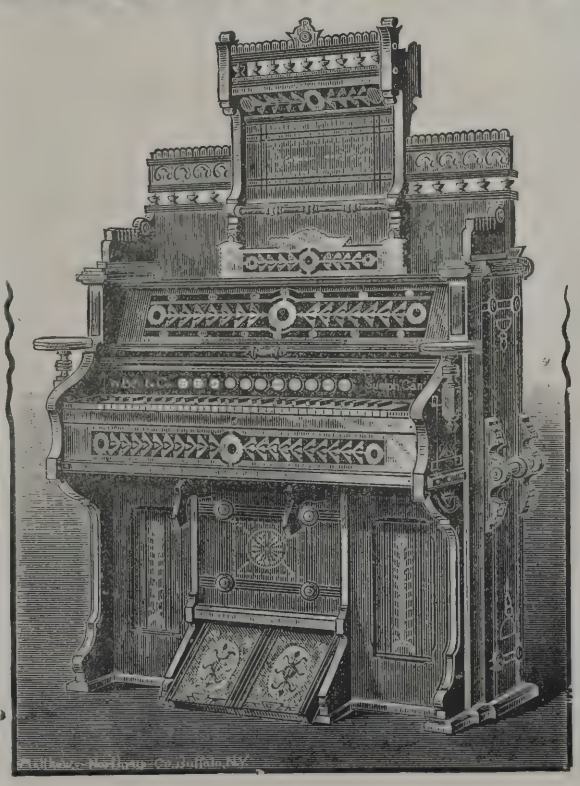
Mr. Jethro A. Cossins writes in respect of what is above stated about the terra-cotta of the clubhouse:—

As architect of the Liberal Club, will you permit me to say there are no signs of any failure of the minutest kind in the terra-cotta used in that building, and that I have perfect confidence in its ability to resist the great pressure to which it is in some parts subjected, and to defy the acid-laden atmosphere of this or any other town.

The deputation from the masons, introduced to the Mayor by Councillor Whateley, were singularly unfortunate in their search for facts on which to base their demonstration of the inferiority of terra-cotta, as there is not the slightest sign of crushing or splitting in the building which the masons seemed

W. BELL & CO.
AMERICAN ORGAN MANUFACTURERS,
AT THEIR NEW PREMISES,
58 HOLBORN VIADUCT,

Keep a full line of the
CELEBRATED
"BELL"
ORGANS
And the FAULTLESS
HARDMAN PIANOS
OF
NEW YORK.



ALWAYS ON HAND FOR INSPECTION.

THESE INSTRUMENTS ARE ACKNOWLEDGED LEADERS OF ALL OTHERS.

CATALOGUES
FREE
From above Address.

to have examined so anxiously in the hope of finding it. The small crack visible in one of the blocks of the arch over the doorway of the club is only a fire crack, the result of the enormous heat to which it has been subjected, and does not indicate any weakness in the block whatever. As to its yielding to the load above it, that is quite out of the question, as it has little more to do than carry its own weight, there being no superstructure to the porch.

Now the arches of the Arcade in Edmund Street each carry more than 120 tons, and this without the least sign of giving; but even if a slight sign of yielding to pressure could have been found, it would be no more than can be seen in very many of the stone buildings of the town, and would therefore go for nothing.

I know, and everybody else knows, that the same accuracy of lines that may be attained in stone cannot be expected in terra-cotta. But this difficulty should be remembered in designing the building, and the details should be adapted to the capabilities of the material. These slight defects would then become of secondary importance. It seems to be a pretty general opinion that in our climate—cold, grey, and murky for nine months out of the year—the colour of terra-cotta is extremely bright and agreeable.

THE FORTH BRIDGE.

THE fourteenth quarterly report of inspection by Major-General Hutchinson, R.E., and Major Marindin, R.E., of the works in progress for the construction of the bridge over the river Forth, dated August 31, 1886, says:—We have the honour to report, for the information of the Board of Trade, that, in compliance with the instructions contained in the order of October 26, 1882, and in accordance with the Forth Bridge Railway Act of 1882, we have made our fourteenth quarterly inspection of the works in progress for the construction of the bridge over the river Forth at Queensferry. During the last quarter very considerable progress has been made in all the branches of the works, as will be evident from the following remarks:—

Temporary Works.

Large additions have been made to the plant, chiefly for erection purposes; these include hydraulic apparatus, goliaths, cranes, hoists, steam winches with boiler, and a number of powerful and special-designed machines for rivetting the 8-feet and 12-feet tubes. These machines consist of internal and external frames constructed to slide up the tubes and form supports for the rams which execute the work. The external frames surrounded by wire netting form cages within which the men engaged are enabled to carry on their operations with safety both to themselves and to those at work beneath them.

Permanent Works: South Queensferry.

Main Piers.—The lower bed-plates are now complete. On the two southern piers the skewbacks, with the junctions therewith, about 30 feet of the vertical columns and struts, and 20 feet of the bottom members of the cantilever are in position and partially rivetted. On the north-east pier nearly the whole of the skewback and junction, about 15 feet of the vertical column, and 10 feet of the diagonal struts, are bolted up, and the rivetting is in a forward state. On the north-west pier about half of the skewback is in position, and the rivetting has been commenced. The bracing girders between the skewbacks are practically complete; the horizontal tube between the eastern skewbacks is complete, and that on the western side is being rivetted. Including the tubes and girders, about 1,175 tons have now been rivetted.

Cantilever and Viaduct Piers.—The main girders on No. 3 span have been completed, and have been joined to those on Nos. 2 and 4 spans; the girders on the whole of the spans have been raised to the level of 63·75 feet above O.D., the masonry having been raised 24 feet both on the cantilever pier and on piers Nos. 3 to 9 inclusive.

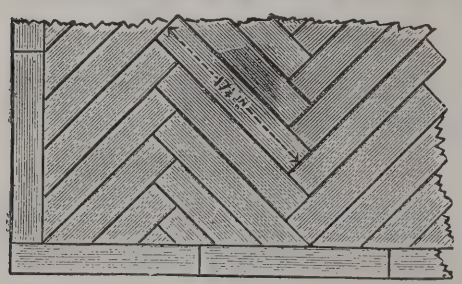
Inchgarvie.

Main Piers.—About three-quarters of the skewback on the north-west pier is bolted up, and about one-half of the rivetting is complete. The upper bed-plate on the south-west pier is rivetted; that on the south-east pier is erected, and the rivetting is being proceeded with. Since the last report about 56 feet have been added to the western tube, and about 32 feet to the eastern tube; about two-thirds of the northern bracing girder has been bolted up, and the greater portion rivetted. About 1,000 tons of steel work have now in all been rivetted.

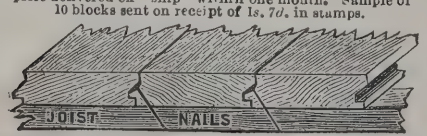
North Queensferry.

Main Piers.—Since the last report rivetting has been commenced, and is being proceeded with on all the skewbacks. The rivetting of the horizontal tubes and bracing girders has been completed. The wind bracing between the vertical

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¼×4½ Dry Wainscot Oak, 54s. 9d. per square; 1×4½ ditto, 45s.; 1¼×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s. 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone 3,158.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88–92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

T. W. ADAMS & SON,
MANUFACTURERS OF
Builders' and Contractors' Carts and Wagons,
Lurries, Floats, Timber Carriages,
Furniture Vans, Dobbin Carts, and Barrows.
Postal Address: DOVERIDGE, DERBY.
PRICE LISTS and Particulars on application.
LONDON REPRESENTATIVE—
MR. JOSEPH JOPLING,
49 FINSBURY PAVEMENT, E.C.

RUPTURES.
THE
NEW FORM OF TRUSS,
INVENTED BY
HODGE & CO.,
327 OXFORD STREET, W.
Factory—18 James's Street, W.
"Is the most perfect, easy, effective truss we have ever examined," says the *Lancet* and *Medical Press*, October 3.
DESCRIPTION FREE.



W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
☞ *Legal and Commercial Stationery.*

FIREPROOF FIXING BLOCKS
FOR WALLS AND FLOORS
(Wright's Patent). Wood Joint Pieces, Plugs, Fixing Fillets, Grounds, &c., successfully superseded without extra cost. Extensively used by Leading Architects and Contractors for several years past; H.M. War Department, &c.
NOTE.—These Fixings take and RETAIN nails equal to wood They never burn, decay, shrink, or become loose, and will carry any weight that can be put upon them in a building.
Colonel W. J. STUART, Commanding Royal Engineers, Chatham, writes:—"The frames are most strongly fixed, and the blocks did not split with the 5½ in. screws that were used."
Write for new catalogue, containing full particulars and references post free.
"Highly Commended" at the Firemen's Exhibition, May 1886
WRIGHT & CO. { No. 3 Westminster Chambers, Victoria Street, London, S.W.
Manufactories:—Gosport, Hants, and at Carnforth, Lancs.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions.—STEVENS & CO., Ceres Ironworks Kingston-on-Thames.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers Cranes, and all Contractor's Plant, on best terms apply BERRY 6 Great St. Helen's, E.C

columns has been commenced, and both on the north and south columns it has been bolted up as far as the first intersection, a distance of about 85 feet. The erection of the upper portion of the main bracing columns is now in progress. This work is carried on with the aid of movable platforms, one on each side; these platforms (provided with fencing) are supported on girders, which again are carried by cross girders; the whole structure is raised as required by means of hydraulic rams of great power attached to the vertical columns, one to each. These platforms have now been raised about 23 feet without any difficulty. The steel plates are raised as required in guides by steam hoists to the level of the platforms, where they are received and placed in their ultimate position by goliaths fitted with hydraulic lifting and traversing gear running on rails the whole length of the platforms. The machines for rivetting the vertical columns and struts between them are put together, and two of those for the 8-feet tubes are working satisfactorily. The total quantity of steel work rivetted at North Queensferry amounts to 1,250 tons.

Cantilever and Viaduct Piers.—Since the last report the cantilever pier has been raised 14·5 feet, and the viaduct piers 22·75 feet, or to 107 feet and 103 feet respectively above O.D. The girders have been lifted 22·5 feet, and now stand 108 feet above O.D.

General.

Masonry and Concrete.—Up to the present date 372,000 cubic feet of granite have been delivered, and 337,000 cubic feet set. About 98,000 cubic yards of rubble masonry and concrete work have been built, and about 20,000 tons of cement have been used.

Steel Work.—The whole of the skewbacks have been completed in the yard, with the exception of a small quantity of drilling and fitting for that for Inchgarvie, N.E.; the fitting of the plates and angles at the important junctions of the 8-feet tubes at their crossing between the vertical columns at the North Queensferry piers is being proceeded with. Including the horizontal and vertical tubes erected on the main piers, 4,000 lineal feet of 12-feet tubes and 4,500 lineal feet of 8-feet tubes have been fitted and drilled. Of the lattice tension members and bracing girders 7,725 feet have been drilled, and the greater portion of the latter have been erected. The main girders of the internal viaduct between the vertical columns at the North Queensferry piers have been drilled and fitted, and the top and bottom booms for the same at the South Queensferry piers have also been drilled. In all 27,232 tons of steel have been delivered. The average number of men employed on the works has been increased, and is now 2,545. We are of opinion that the works have made rapid progress during the past three months, and we have every reason for continuing to be satisfied with the way in which they are being executed.

EMPLOYERS' LIABILITY IN GERMANY.

THE following report was prepared by Mr. A. F. G. Leveson-Gower, second secretary to the Embassy at Berlin :—

The liability of employers to compensate workmen injured in their service depends on special legislation, the first law passed on the subject being the "Haftpflichtgesetz" (law relating to the liability of employers to pay compensation to persons injured in their service or in their trade), promulgated on June 7, 1871. This law was passed, not only for the benefit of workmen, but for the benefit of all persons injured by the working of railways, mines, quarries, and manufactories.

By the "Haftpflichtgesetz," any person injured on a railway, or in the railway service, was entitled to a compensation from the railway direction, unless the said railway direction could prove satisfactorily that the accident had been caused by circumstances over which it, as an employer of labour, could have no control ("höhere Gewalt"), or by the fault of the injured person himself; also by this law any person injured by the working of a mine, quarry, or manufacture, was entitled to compensation from the owner of such mine, quarry, &c., provided the person injured could prove that the injury had been caused by the negligence of the owner, or of a functionary in a position of authority in the owner's service.

The above law, "Haftpflichtgesetz," although not formally abrogated, has practically been superseded, as far as workmen are concerned, by the "Unfallversicherungs-Gesetz" of July 6, 1884.

This law, which has been in force since October 1885, imposes on the employer the obligation :—(*a*) to compensate workmen injured in his service; (*b*) to pay a pension to the widows of workmen killed in the service; (*c*) to maintain the children of workmen killed in the service till they have reached a specified age.

The effect of the law has been that employers, for their own protection and in order to spread their risks over as large an area as possible, have been grouped by law into trade associations termed "Berufsgenossenschaften."

ELECTRIC LIGHTING!

The Thomson-Houston System of Arc Lighting, } GOLD MEDALS AWARDED Both Systems
The Edison-Swan System of Incandescent Lighting, } AT THE INTERNATIONAL INVENTIONS EXHIBITION, 1885.

ESTIMATES FREE ON APPLICATION TO

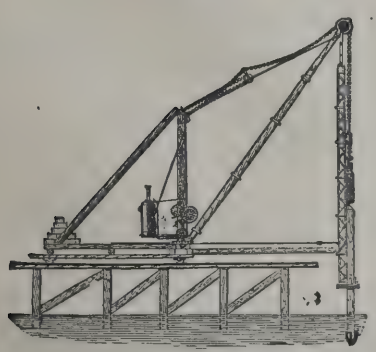
LAING, WHARTON & DOWN,

8 & 9 HOLBORN VIADUCT, and 110 & 111 SAFFRON HILL, LONDON, ENGLAND.

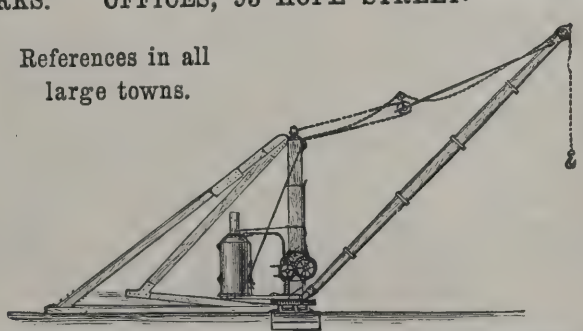
BUTTERS BROTHERS, ENGINEERS, GLASGOW.

PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

References in all large towns.



Crane used for Piling.



SCOTCH BUILDERS' CRANES.

Large Stocks. Send for List.

FOR SALE, HIRE, OR HIRE-PURCHASE.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8 10	0
„ ¾ „	.	9 10	0
„ 1 „	.	10 10	0

VOLUME XXXV. OF THE ARCHITECT.

HANDSOMELY BOUND IN CLOTH, GILT LETTERED. Price 12s. 6d.

OFFICE: 175 STRAND, LONDON, W.C.

The statutes of each such Berufsgenossenschaft must receive the sanction of the Government.

Each branch of trade or industry in which the risks are similar and equal (for instance, the iron and steel trade, chemical industry, textile industry, sugar, or tobacco manufactories, &c., &c.), has been formed by law into a Berufsgenossenschaft for each such branch of industry within a certain geographical district, for the purpose of compensating workmen injured in the service of any employer who belongs to the respective district, and belongs, therefore, by law to the respective association.

Some branches of industry (for instance, the chemical industry, gas and water companies, &c., &c.) have formed only one Berufsgenossenschaft for the whole of Germany. Some other branches (the iron and steel trade, for instance), have formed several Berufsgenossenschaften, each of them for a certain geographical district.

The total number of these Berufsgenossenschaften is at present 62, each having its own administration.

By means of this organisation, if a workman in the iron and steel trade (to take an instance) is injured in the service of his employer, those employers who are banded together in the Eisen und Stahl Berufsgenossenschaft are under legal obligations to pay the compensation for the injury received, and out of the total number of eight "Berufsgenossenschaften" formed for this particular trade, those employers are liable who form that "Berufsgenossenschaft" in whose district the manufactory of the employer concerned is situated.

The funds for compensating injured workmen and the costs of administration are raised yearly from all the employers within the respective districts, in proportion to the wages paid by each employer to his workmen within the year.

The above law (Accidents Insurance Law) was extended by the law of May 28, 1885:—

1. To all workmen employed in the post, telegraph, and railway services.

2. To the trades carried on by the administration of the Army and Navy.

3. To inland navigation, the working of dredges, ferries, and rafts, to the transport of passengers and forwarding of goods, to the loading, unloading, and warehousing of goods, to cellarage, and the like.

The principles of the Unfallversicherungs-Gesetz (Accidents Insurance Law) of July 6, 1884, have been extended to all agricultural and forest labourers by a law of May 5, 1886. The day, however, on which this law will be put into force is not yet fixed.

Such are the main principles of the Accidents Insurance Law of Germany, which are simple enough in themselves, the difficulty and complexity lying in their application and enforcement. The time since the Act came into force (October 1885) has been too short to enable the employers to know how their organisation will work, and utterly insufficient to calculate what will be the expense either of management or of compensation.

The following are the answers to the questions in Lord Rosebery's Commercial Circular of March 30, taken in their order:—

1. The liability of employers comprises—(*a*) All workmen employed in manufactories, mines, quarries, forges, wharves, and in the building trade.

2. All workmen employed as masons, carpenters, tilers, stone-cutters, chimney-sweeps, or in well-digging and pump-making.

3. All workmen employed in a trade in which boilers or machines driven by elementary power (wind, water, steam, gas, hot air, &c.), are used.

4. All persons employed in the industries or trades above-mentioned who are not workmen, properly so called, but functionaries receiving a fixed salary not exceeding 2,000 marks per annum.

All persons included under these four headings are entitled to compensation when injured at their work, or, in other words, they are insured by law (*ipso jure*) against accidents suffered at their work ("Betriebsunfälle").

Only such persons as are employed in offices as clerks, book-keepers, and the like, and who, consequently, have nothing to do with the practical work, are exempted from this law.

N.B.—Officials appointed by the Government (of Germany or of a German State), or by a public community, who receive a fixed salary, and are entitled to a pension from the Government or from a municipality or other public community, are not affected by this law.

Such officials, as far as they are employed in a trade or manufactory ("Betrieb") affected by the Accidents Insurance Law, are entitled to a pension from the Government when they become unfit for service by an accident suffered in such employment, according to the provisions of the "Gesetz betreffend die Fürsorge für Beamte und Personen des Soldatenstandes

BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

infolge von Betriebsunfällen," or law to provide for officials and persons in the military service in case of accidents (March 15, 1886).

2. The only cases in which the employers would be relieved from liability are :—First, when the injury suffered by the workman has no connection at all with the execution of his duty in his practical work, as, for instance, when a workman is injured by a fellow workman in a quarrel; or, secondly, where a workman is convicted of wilfully injuring himself, or of wilfully causing the accident by which he has been injured, and thereby loses all claim for himself or for his family for compensation.

3. It makes no difference whether a fellow workman is in authority over an injured workman or not; but should the accident have been caused by gross and criminal neglect on the part of the employer or of one of his working managers, and should this opinion be confirmed by the verdict of a criminal court, then the compensation is also paid out of the funds of the Trade Association ("Berufsgenossenschaft"), but the incriminated employer or manager, as the case may be, is bound by law to repay to the Berufsgenossenschaft the amount disbursed for the workman injured.

Even in this case it will be seen that the workman has no direct claim against his employer.

4. As far as responsibility is concerned, there is no difference between the liability of employers for the condition of machinery, plant, and permanent appliances of the work, and his liability for specific acts or defaults of his workmen.

5. The employers are obliged by law to settle the claims of an injured workman *ex officio*, without a special notice being given by the workman injured.

If for any reason the employers have omitted to settle such claim, the workman injured is bound to give notice of his claim within two years of the time of receiving his injury, otherwise he would (with some exceptions) lose his claim.

6. Employers individually, and as trade associations ("Berufsgenossenschaften"), are positively forbidden by law to restrict by contract or otherwise the rights and claims given by the law to their workmen.

All stipulations of such a kind would be null and void.

7. The right to compensation is not treated as arising out of the contract between employers and employed, but rather as a right of a public character, arising out of a natural obligation of the employer to compensate workmen injured in his service.

8. The liability of the employer begins from the fourteenth week after the accident. For the first thirteen weeks the injured workman is supported by the funds of the "Krankenkassen" (sick funds).

According to the "Krankenversicherungsgesetz" (June 15, 1885), contributions to sick funds are compulsory. To these funds the employer contributes in the proportion of one-third, the workman of two-thirds.

9. The employed do not contribute in any way or manner, either voluntarily or otherwise, to the funds out of which their insurance against accidents ("Unfallversicherung") is paid, and there in no way to the benefit conferred upon them by the law, except in so far as they are bound by law to contribute, as above stated to the "Krankenkassen" (sick funds), which support them for a period of thirteen weeks after the injury has been received.

In the case of a workman dying in consequence of an accident, his funeral expenses are paid by that "Berufsgenossenschaft" of which his employer is a member, his widow and children receiving a pension in proportion to the wages he was earning when alive.

10. The employer can in no way reduce his liability, but in order to reduce as far as possible the payments which this liability must entail upon him, he is associated by law into a "Berufsgenossenschaft" (trade association) with his fellow-employers who carry on trades allied to his own, and in which the risks are similar to his own.

Such an association and its statutes of organisation must receive the assent of the Government. By means of such associations the number of the employed, subject to the same or similar risks, becoming large (each Berufsgenossenschaft containing on an average from 30,000 to 40,000 men), the risks are spread over a larger basis, and the average of accidents, as compared with the number of the employed, is reduced.

11, 12, 13. As yet there are no legal provisions respecting the liability of shipowners for injuries suffered by sailors in their employ. But a law is being prepared at the present moment in order to extend the principles of the "Unfallversicherungs-Gesetz" to this class.

For the time being shipowners have only to provide for sailors in case of illness for a certain time—three to six months (Seemansordnung, vom December 27, 1872, § 48).

This law applies to sailors of all nationalities in the shipowner's employ.

The above laws hold good for the whole German Empire, and overrule or abrogate special laws in the individual States.

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

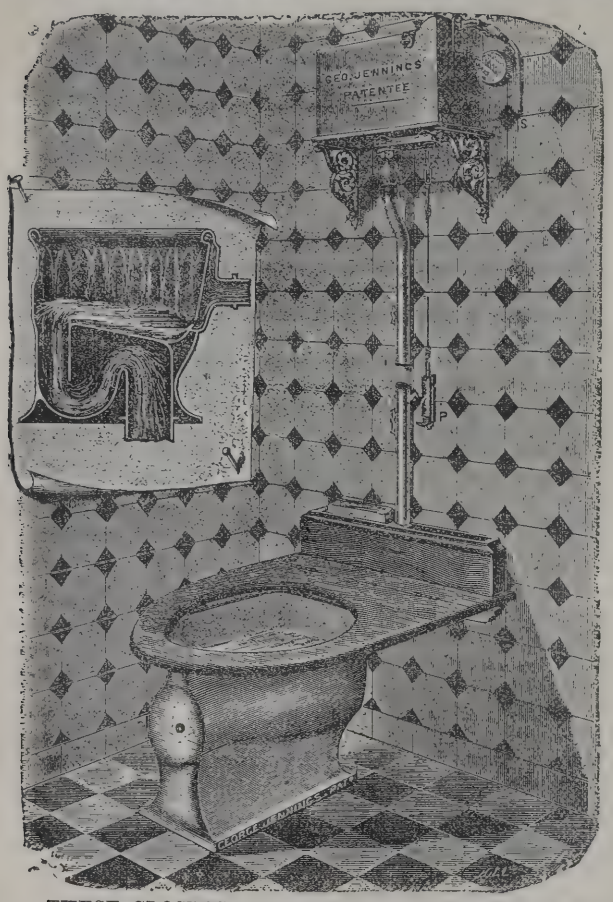
THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

"THE PEDESTAL VASE,"
JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,
SANITARY ENGINEER, STANGATE, LONDON.

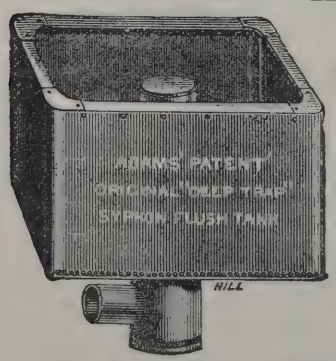
A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



ELECTRIC & PNEUMATIC BELLS.
NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.
MECHANICAL TELEPHONES. Everything for a line complete for £3.
PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

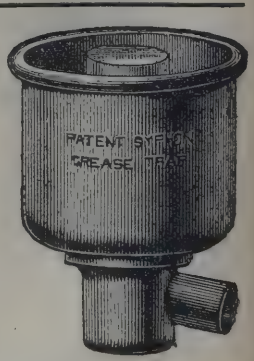


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
„ **FLUSH SYPHONS** for Sewer Flushing.
„ **FLUSH LATRINES** for Barracks, Schools, &c.
„ **FLUSH URINALS** „ „ „
„ **TROUGH CLOSETS** „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, October 8, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, OCTOBER 15, 1886.

THE ARCHITECT AND CONTRACT REPORTER.

ADVERTISEMENT SCALE.

	£	s	d
For Two Lines and under (eight words to the line)	0	2	6
For every Additional Line	0	0	6
For Quarter Page	2	10	0
For Half Page	4	10	0
For a Page	8	8	0
For 1 inch deep by 2½ wide	0	7	6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 *Strand, London, W.C.*

EDITORIAL NOTICES.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested as much as possible to make their communications brief. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

⁂ *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office,* 175 *Strand, London, W.C., not later than* 5 *p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

ELLAND.—Nov. 9.—Plans are invited for the Erection of a Town Hall. Mr. J. L. Garsed, Hon. Secretary, Town Hall Company's Offices, Southgate, Elland.

CONTRACTS OPEN.

ABERGAVENNY.—Oct. 15.—For Building Sulphate House as the Gasworks. Mr. J. T. Rutherford, Town Hall, Abergavenny.

APPERLEY BRIDGE.—Oct. 18.—For Additions to Holybrook Mills. Mr. Jowett Kendall, Architect, Idle, Bradford.

BARNSTAPLE.—Oct. 25.—For Reparation of Roof and other Works, Braunton Church, near Barnstaple. Mr. William White, Architect, 30A Wimpole Street, W.

BATH.—Oct. 20.—For Building Six Cottages. Mr. H. J. Garland, Surveyor, 4 Charles Street, Bath.

BATLEY.—Oct. 25.—For Erection of Stable Buildings, Fence Walling, &c., at Purewell. Mr. Walter Hanstock, Architect, Branch Road, Batley.

BELFAST.—Oct. 22.—For Additions to Warehouse, Clifton Street. Mr. R. Watt, Architect, 77A Victoria Street, Belfast.

BRADFORD.—Oct. 18.—For Building Sunday School and Classrooms, Holme Lane. Mr. S. Robinson, Architect, 55 Tyrrel Street, Bradford.

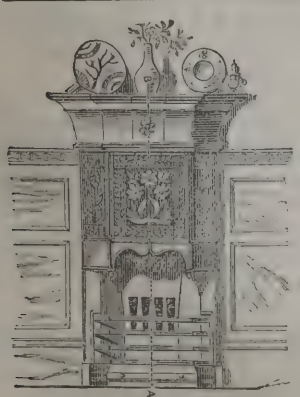
BURNHAM.—Oct. 25.—For Construction of Waterworks, including Water Tower and Pumping Station, Underground Reservoir, Wrought-iron Tank, Girders, Mains, Valves, &c. Mr. A. Stewart, C.E., Burnham, Essex.

BURTON-ON-TRENT.—Oct. 26.—For Building Homestead on Sewage Farm, Eggington. Mr. Richard Waite, Architect, Duffield, Derby.

CHORLTON.—Oct. 15.—For Building Sheds and Stoneyard at the Workhouse at Withington. Messrs. Mangnall & Littlewoods, Architects, 29 Brown Street, Manchester.

DARTFORD.—Oct. 16.—For Building Earth Drying and Storage Shed, Long Reach. Mr. J. W. Peggs, C.E., 21 Queen Anne's Gate, Westminster.

DENBIGH.—Oct. 18.—For Construction of Reservoir, Dis-



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

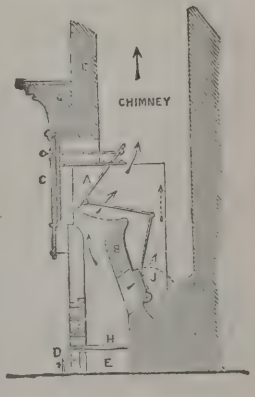
WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.



charge Culvert, Pipe Laying, &c., Tank at Malpas, &c., Vyrnwy Waterworks. Mr. G. J. Atkinson, Town Clerk, Municipal Offices, Liverpool.

DONCASTER.—Oct. 15.—For Cooking Apparatus, for the Union Workhouse. Mr. F. E. Nicholson, Clerk, Union Offices, High Street, Doncaster.

DUBLIN.—Oct. 20.—For Works of Addition at the Ordnance Survey Office, Mountjoy Barracks, Phœnix Park. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

ELGIN.—Oct. 15.—For Building Two Dwelling-houses. Messrs. A. & W. Reid, Architects, Elgin.

EMBLETON.—Oct. 16.—For Alterations and Additions to Houses. Mr. F. R. Wilson, Architect, The Gatehouse, Narrowgate, Alnwick.

FINTRAY.—Oct. 18.—For Additions to House. Messrs. Ellis & Wilson, Architects, Aberdeen.

GOOLE.—Oct. 25.—For Enlarging Board Schools, Alexandra Street, for 510 Children. Mr. William Watson, Architect, Barstow Square, Wakefield.

GORLESTON.—Oct. 22.—For Building Stables for Railway Company. Mr. H. Dudley Arnott, Architect, High Street, Gorleston.

GRANGE-OVER-SANDS.—Oct. 22.—For Alterations and Additions to National Schools. Mr. J. Bentley, Architect, 7 Lowther Street, Kendal.

HIGH HOLBORN.—Oct.—For Alterations at the Western Central District Post Office. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

HULL.—Oct. 20.—For Works in Connection with the Water Supply, Building Engine and Boiler Houses, Chimney, &c. Mr. D. Maxwell, Engineer, Town Hall, Hull.

HULL.—Oct. 25.—For Construction of Swing Bridge across the River Hull, with Quay Walls, Approaches, &c. Mr. A. E. White, Borough Engineer, Town Hall, Hull.

HUNGERFORD.—Oct. 19.—For Sundry Works at the Union Infectious Wards. Mr. J. H. Money, Architect, Newbury.

KENDAL.—For Building Twelve Almshouses and Mission Church. Mr. E. Cox, Architect, Government Offices, Highgate, Kendal.

LEEDS.—Oct. 16.—For Building Block of Six Houses. Mr. Charles D. Swale, Architect, 28 Albion Street, Leeds.

LEEDS.—Oct. 16.—For Building Block of Seven Houses and of Five Houses. Mr. C. F. Wilkinson, Architect, 6 Infirmary Street, Leeds.

LEEDS.—Oct. 16.—For Rearranging and Repairs to Council Chamber. The Borough Engineer, Municipal Offices, Leeds.

LONDON.—Oct. 19.—For Providing and Fixing Lights and Alterations, C Block, Infirmary. Mr. W. Vallance, Clerk to the Guardians, Union Offices, Baker's Row, Whitechapel.

MIDDLESBROUGH.—Oct. 16.—For Alterations to the County Hotel. Mr. Robert Moore, Architect, 7 Albert Road, Middlesbrough.

MOUNTAIN ASH.—Oct. 18.—For Erection of Sewer Ventilating Shafts (twenty-seven). Mr. S. O. Harpur, Surveyor, Workman's Hall, Mountain Ash.

MYTON.—Oct. 20.—For Restoration of Myton Church, Yorkshire. Mr. G. Hodgson Fowler, Architect, Durham.

PENZANCE.—Oct. 22.—For Building Art Museum and Alterations to School of Art. Mr. H. White, Architect, 1 Parade Passage, Penzance.

PORTSMOUTH.—Oct. 19.—For Building Offices and Stores at Entrance Gate to Camber Dock and Construction of Weighbridge. Mr. Alexander Hellard, Town Clerk, Portsmouth.

SEDGEFIELD.—Oct. 21.—For Providing and Laying Cast-iron Water Pipes (2,200 yards). Mr. W. Snowdon, Surveyor, Sedgefield, Durham.

SKELMANTHORPE.—Oct. 28.—For Laying Out Cemetery, Building Chapel, Lodge, Boundary Walls, Entrance Gateways, &c. Messrs. J. Kirk & Sons, Architects, Huddersfield.

SOUTH SHIELDS.—Oct. 21.—For Building Board School for Infants, to accommodate 500 Children. Mr. T. A. Page, Architect, Barrington Street, South Shields.

STOCKPORT.—Oct. 15.—For Alterations and Additions to Congregational Church. Mr. R. Price, Architect, 25 Cross Street, Manchester.

WHITBY.—Oct. 16.—For Alterations to No. 13 Skinner Street. Mr. R. Lennard, Architect, 5 North Terrace, Whitby.

WITHNELL, CHORLEY.—Oct. 20.—For Alterations to St. Paul's Church. Mr. H. Ross, Architect, 5 Birch Street, Accrington.

WORTHING.—Oct. 15.—For Building Coastguard House. The Director of Works Department, Admiralty, 21 Craven Street, Charing Cross, W.C.

HOLDEN & CO.'S PATENT ZINC ROOFING

WITH THEIR

PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,

Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.

Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.

ZINC AND IRON WORKERS AND COPPERSMITHS.

Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.

HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

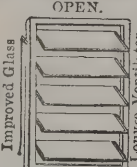
H. W. COOPER & COMPANY, LIMITED,

HEALTH EXHIBITION.



MEDAL AWARDED, 1884.

OPEN.

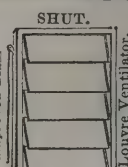


Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

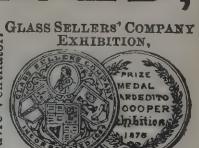
Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.

H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.

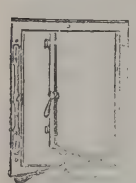
SHUT.



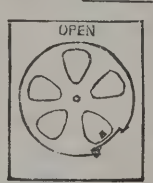
GLASS SELLERS' COMPANY EXHIBITION,



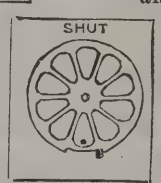
MEDAL AWARDED, 1876.

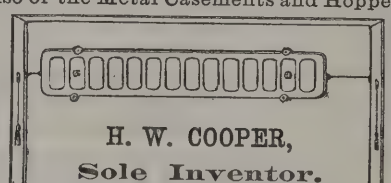


Improved Casement.



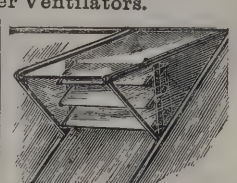
Louvre Glass Revolving Ventilator.



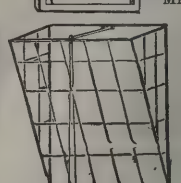


H. W. COOPER,
Sole Inventor.

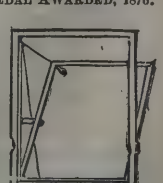
Glass Sliding Ventilator.



Improved Hopper for Skylights.



Hopper Ventilator.



Casement.

Steam Work[illegible] Queen St., Upper George Street [illegible]ware Road, W.

Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.



SPECIALITE MEDIEVAL ECCLESIASTICAL TILES.

CARTER, JOHNSON & CO., Encaustic Tile Manufactory, St. George's Works, WORCESTER.

LONDON DEPOT:
Kinson Wharf,
Albert Embankment,
LAMBETH, S.E.

20 Victoria Buildings,
Victoria Street,
MANCHESTER.

AGENTS:—
STURGEON & SMITH, Cross Lane, Eastcheap, E.C.

TENDERS.

ASHINGTON.

For Building Six Cottages for the Ashington New Pit Co-operative Society. Mr. W. J. CHARLTON, Architect, Ashington, Morpeth.

Field & Richardson, Morpeth	£798 8 0
Waterson, Morpeth	691 13 9
Kirk & Dickinson, Newcastle	646 0 0
Gordon, Choppington	629 13 0
E. Spence, Amble	619 0 0
Lillburn, Blyth	613 0 0
Craig, Sagerston	599 8 0
Carse & Son, Amble	559 0 0
Goldon & Son, Blyth	528 0 0
John Taylor, Earsdon	510 0 0
Hunn, Stakeford	505 0 0
D. M. Spence, Amble	495 0 0

BIRKENHEAD.

For Improvement Works, Silverdale Road, Birkenhead. Mr. T. C. THORBURN, Borough Surveyor, Birkenhead.

W. Maddocks & Co., Birkenhead	£311 14 10
R. B. Ballantine, Liverpool	307 1 2
J. Jones, Birkenhead	299 0 2
W. F. Inglis, Liverpool	294 17 4
J. RIDDEL, Birkenhead (*accepted*)	290 0 0

BROADSTAIRS.

For 5,000 feet of Granite Kerbing, 12 by 6, for the Broadstairs and St. Peter's Local Board. Mr. E. L. ELGAR, M.S.A., Surveyor, Ramsgate.

	Delivered at Broadstairs.	Delivered at Ramsgate.
Mowlem & Co.	£0 1 6	£ —
Treherne & Co.	0 1 5½	—
Blower & Florence	0 1 5	—
Story	0 1 2	—
Tuckett & Sons	—	0 1 1
Manvelle	0 1 1½	—
Chalk	0 1 0½	0 0 11½
Gordon	0 0 11	0 0 11½
WEST OF ENGLAND CO. (*accepted*)	0 0 9½	—

For Beach per yard for the Broadstairs and St. Peter's Local Board. Mr. E. L. ELGAR, M.S.A., Surveyor, Ramsgate.
Whiting, 6*s.* per yard. Reader, 6*s.* per yard.

BRAMLEY.

For Building Two Villas, Hough End, Bramley, for Messrs. George and Edward Wilson. Mr. FREDERICK W. RHODES, Architect, Upper Wortley.

Accepted Tenders.

J. B. Allatt, Heckmondwike, mason	£625 0 0
A. Knapton, Upper Wortley, joiner	249 18 0
W. J. Haddock, Armley, plasterer	70 0 0
J. Atkinson & Son, Leeds, slater	34 8 0

BREASTON.

For Additions to Manor House, Breaston. Mr. W. H. RADFORD, A.R.I.B.A., Architect, Nottingham. Quantities by the Architect.

Hatfield & Frost, Saunder Street Meadows	£535 0 0
F. Wartnaby, Nottingham	525 0 0
J. Coolley, Sandiacre	510 0 0
Poxon & Rice, Long Eaton	485 10 0
W. Haynes, Ilkeston	485 8 0
J. Bromhead, Bagor Street	477 0 0
Wooll Bros., Nottingham	475 10 0
Silas Bradley, Sandiacre	474 0 0
F. Shaw, Ilkeston	461 0 0
J. R. Lawson, Nottingham	457 18 0
C. Starr, Beeston	455 4 0
J. Hutchinson, Nottingham	449 10 0
J. Attenborrow, Nottingham	448 0 0
A. B. Clarke, Blue Bell Hill	440 0 0
G. Billatt, Nottingham	439 0 0
J. Brown, Long Eaton	417 0 0
William Bailey, Sandiacre	399 0 0

HORRABRIDGE.

For Building School at Horrabridge, Whitchurch, for the Whitchurch School Board. Messrs. HENDERSON, Architects, Truro.

R. W. Rowse, Mutley, Plymouth	£1,139 0 0
Moses & Petherick, Whitchurch	1,095 0 0
Petherick & Stephens, Horrabridge	1,056 0 0
Fuge & Foot, Horrabridge	1,010 0 0
J. Dockett, Buckland, Monachoum	972 0 0
Doig & Son, Drakewalls	969 0 0
H. W. Toop, Whitchurch	965 0 0
P. BLOWEY, Plymouth (*accepted*)	825 0 0

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,

Is admitted to be the best ever put before the Public.

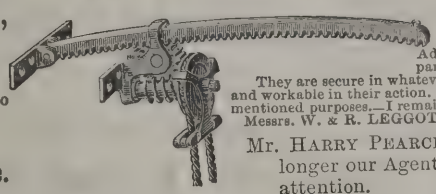
From 5s. each.

Write for REDUCED PRICE LIST and Testimonials to

W. & R. LEGGOTT,

70 Park Road, Bradford, Yorkshire.

N.B.—Size and height of window no object.



TESTIMONIAL.

BANGOR, N. Wales: September 14, 1885.

Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.

Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD.,

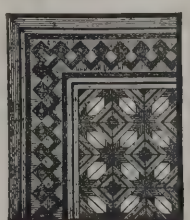
22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.

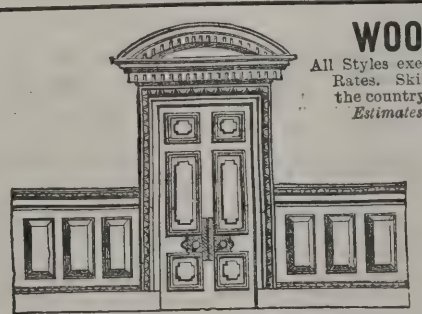
150,000 ft. super. in Stock, ready for Laying.

RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.

Immense Stock always ready for Laying.



THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction



ARTISTIC JOINERY.

WOOD CARVINGS.

All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.

Estimates and Designs on Application.





ORNAMENTAL PARQUET.

DEAL BACKING.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.

Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

DULWICH.

For Semi-detached Houses, Lordship Lane. Mr. J. NIXON HORSFIELD, Surveyor, Ditton Hill, Surbiton, S.W.

Balaam	£1,700 0 0
Prebble	1,495 0 0
Morley	1,443 0 0
Saunders	1,375 0 0
Judd	1,290 0 0

HORSFORTH.

For Construction of Reservoir, for the Horsforth Waterworks Company.

J. Moulson & Sons	£2,316 7 8
A. Bailey & Sons	2,311 8 10
Parker & Sharp	2,256 0 9
B. Roberts	2,161 0 8
M. Hall	2,128 6 8
Shaw & Drake	2,107 18 3
W. Street	1,969 3 6
J. Robinson	1,824 18 2
J. Brigg	1,809 8 9

LEEDS.

For Building Mission Hall, Kirkstall Road. Mr. W. H. BEEVERS, Architect, 22 Bond Street, Leeds.

Accepted Tenders.

P. Stather, Leeds, brick and masonry	£350 0 0
B. Wood, Headingley, joiner	274 13 10
G. Thompson, Leeds, plumber, &c.	69 0 0
W. Holdsworth, Leeds, plasterer	35 11 0
G. Thompson, Leeds, painter	24 0 0
J. Atkinson & Son, Leeds, slater	37 18 0

LONDON.

For Sanitary Alterations and Additions to No. 2 Westbourne Street, Hyde Park Square, for Mrs. Whitter. Mr. C. E. GRITTON, M.S.A., Surveyor, of London, Brighton, and Sidcup.

HOUGHTON & Co., Chelsea, S.W. (*accepted*).

For Cleaning Schoolkeeper's House, Smeed Road Board School.

J. T. Robey	£25 0 0
C. Frost	22 0 0
R. Toole	15 0 0
E. Tait & Co.	13 15 0

LONDON—*continued.*

For Additions to the Congregational Memorial Hall, Farringdon Street, E.C. Mr. W. D. CHURCH, Architect, 12 South Place, Finsbury. Quantities by Mr. C. Stanger, Surveyor, 21 Finsbury Pavement, E.C.

	Total.	Alternative Estimate No. 1.	Alternative Estimate No. 2.
Colls & Sons	£10,500	£375	£1,213
Dove Bros.	10,445	130	1,100
Ashby Bros.	10,250	140	1,025
Patman & Fotheringham	10,140	160	985
Perry & Co.	9,956	115	1,162
Shurmur	9,900	150	950
Hall, Beddall & Co.	9,710	243	1,082
Nightingale	9,700	120	1,060
Higgs & Hill	9,615	82	1,074
Woodward	9,600	70	1,112
T. Holloway	9,500	130	920
Brass & Son	9,333	200	1,050

For Proposed New Fire Brigade Station, Great Marlborough Street, Regent Street, W. Messrs. NIXON & RAVEN, Surveyors.

Higgs & Hill	£9,240 0 0
W. Martin	8,795 0 0
Wall Bros.	8,790 0 0
C. Wall	8,699 0 0
Staynes & Son	8,582 0 0
Howell & Son	8,490 0 0
Mowlem & Co.	7,880 0 0
W. Brass & Sons	7,873 0 0
Johnson	7,815 0 0
Oldrey	7,690 0 0
STIMPSON & Co., 78 Brompton Road, S.W. (*accepted*)	7,660 0 0

For Proposed Alterations and Repairs at No. 13 Leadenhall Street, E.C., for the Australian Mortgage, Land and Finance Company, Limited. Messrs. E. & A. CLIFTON & SON, Architects. Messrs. Williams & Gritten, Surveyors.

Morter	£1,593 0 0
Ashby & Horner	1,573 0 0
Conder	1,555 0 0
Lawrance	1,481 0 0
Ashby Bros.	1,469 0 0
Brass	1,393 0 0

PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

ARCHITECTURAL ASSOCIATION,
9 CONDUIT STREET, W.
The first Ordinary Meeting will be held on Friday, October 22, at 7.30 P.M., when the address will be delivered by the President, and the Prizes distributed.
The dates of the first meeting of the Classes have been arranged as follows :—

Masonry Class	Oct. 26
Graphic Statics	,, 27
Quantity Class	,, 28
Lecture on Construction	,, 29
Elementary Class of Construction	,, 29
Class of Construction	,, 29
Advanced Class of Construction	Nov. 3
Class of Colour Design	,, 10
Lecture on Architecture	,, 12
Elementary Class of Design	,, 12
Class of Design	,, 12

HERBERT D. APPLETON, THOS. EDWARD PRYCE, } Hon. Secs.

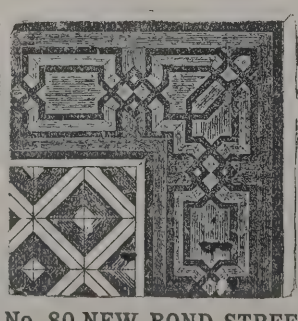
PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

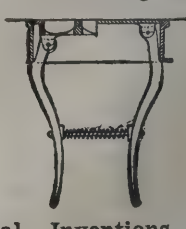
ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

W. F. STANLEY,
Mathematical Instrument Manufacturer
To H.M.'s Government, Council of India, Science and Art Department, Admiralty, &c.
Mathematical, Drawing, and Surveying Instruments of every description, of the highest quality and finish, at the most moderate prices. Price List post free. Engine Divider to the Trade. Address, 4 and 5 Great Turnstile, Holborn, London, W.C. Also New Store, at 6A Victoria Street, Westminster. GOLD MEDAL, Inventions Exhibition, 1885.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c. ?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

E. SCOTT & CO., 166 City Road.—Estab. 1861.
E. SCOTT & CO.,
Sole Manufacturers of the Improved Patent
MICA LETTERS,
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.,
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
166 CITY ROAD, LONDON.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered.
PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT.  NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

LONDON—*continued.*

For New Premises at the Corner of Great Saffron Hill and Cross Street. Mr. F. J. CHAMBERS, Architect. Mr. M. W. KING, Surveyor.

Stubbs	£4,578	0	0
Kirk & Randall	4,438	0	0
Dove Bros.	4,425	0	0
Ashby & Horner	4,344	0	0
Conder	4,299	0	0
Mattock Bros.	4,288	0	0
Brass	4,225	0	0
Greenwood	4,195	0	0
Grover & Son	4,189	0	0
Kilby & Gayford	4,136	0	0

For Building Stabling, Camden Town. Mr. CHARLES R. BAKER KING, Architect, Spring Gardens, S.W. Quantities by Messrs. J. T. Lee & Sons.

Buckeridge	£3,400	0	0
Laing & Son	3,124	0	0
Paine Bros.	3,070	0	0
Castle	2,873	0	0
Manning	2,835	0	0
Dove Bros.	2,795	0	0
Martin	2,793	0	0
Manley	2,767	0	0
Salt	2,757	0	0
Pattinson	2,750	0	0
Robson	2,740	0	0
Evans	2,739	0	0
Roper	2,737	0	0
Toms	2,717	0	0
Battley	2,695	0	0
Dobson	2,595	0	0
Wall Bros., Camden Town	2,574	0	0

MAIDENHEAD.

For Residence with Conservatory and Stables at Maidenhead Court, Maidenhead, for Mr. W. W. Ratcliff. Mr. GEORGE PEARSON, Architect, Warnford Court, E.C.

W. Creed, Maidenhead	£2,009	0	0
C. W. Cox, Maidenhead	1,990	0	0
Snell & Co., Maidenhead	1,990	0	0
W. Woodbridge, Maidenhead	1,960	0	0
LITTLE & SENECAL, London (*accepted*)	1,747	0	0

SURBITON.

For Detached Residence, Surbiton, for Mr. W. H. Hutchinson. Mr. J. NIXON HORSFIELD, Architect, Ditton Hill, Surbiton, S.W.

D. Judd, Kingston	£1,592	0	0
J. Chapman, Hackney	1,526	0	0
TURTLE & APPLETON, Clapham Junction (*accepted*)	1,495	0	0

WEDNESBURY.

For Laying out Public Park, Wednesbury. Mr. E. M. SCOTT, Surveyor.

J. Evans, Birmingham	£2,054	0	0
Barron & Son, Borrowash	1,414	19	6
Currall & Lewis, Birmingham	1,159	0	0
G. LAW, Kidderminster (*accepted*)	1,137	0	0
J. W. Fereday, Wednesbury	1,275	14	0
E. Thomas, Liverpool	1,216	12	0
S. E. Frayne, Kidderminster	746	8	7
Entrance Lodge.			
Currall & Lewis, Birmingham	493	0	0
J. Evans, Birmingham	490	0	0
J. Mallin, West Bromwich	460	0	0
W. TROW & SONS, Wednesbury (*accepted*)	459	0	0
G. Law, Kidderminster	437	0	0
T. Tildesley, Willenhall	430	0	0
S. E. Frayne, Kidderminster	429	6	5
Band Stand.			
J. Evans, Birmingham	216	0	0
Barron & Son, Borrowash	187	9	9
W. Trow & Sons, Wednesbury	181	0	0
Currall & Lewis, Birmingham	119	0	0
C. W. GRAHAM, Wednesbury (*accepted*)	110	0	0

For Wrought-iron Unclimbable Hurdle Fencing and Wicket Gates, Wednesbury, for the Wednesbury Public Park.

T. Parkes, West Bromwich	£490	0	0
H. Pulley & Co., Wednesbury	347	11	7
Miller & Sons, Wolverhampton	305	0	0
Johnson Bros., Walsall	291	0	0
G. Fletcher, Wolverhampton	274	0	0
Rubery Bros., Darlaston	270	0	0
Brookes & Co., Wolverhampton	259	9	7
Hill & Smith, Brierley Hill	255	0	0
E. C. & J. J. KEAY, Birmingham (*accepted*)	247	5	0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
32 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

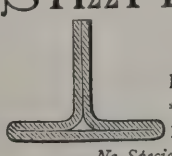
CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper,
Drawing Paper, Sectional Paper,
Mounted Papers,
Continuous Papers, Pencils, Pens, &c.
&c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE FOR WINTER USE.
CORSHAM DOWN, FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., Limited,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.

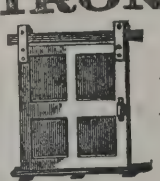
SIMPLEX LEAD GLAZING

For ROOFS, ********
****** SKYLIGHTS &
HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR
ILLUSTRATIONS, TESTIMONIALS & FULL
***** PARTICULARS (SENT POST FREE). *****


Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET,
HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK.
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*
MONK'S PARK
MP.
TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO
ARCHITECTS,
BUILDERS,
AND
OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

WINCHESTER.

For Excavating and Removing Earthwork from behind Cheesehill Brewery, Winchester. Mr. J. ROBINSON, C.E., County Surveyor, Winchester.

Highest tender	£675	6	4
G. C. COULEY, Folkestone (*lowest and accepted*)	327	6	8

Sixteen Tenders received.

YORK.

For Constructing Footpath on the West Side of Bishopthorpe Road. Mr. G. STYAN, City Surveyor, York.

Masonry.

J. Hebden, York	£185	8	0
J. Clark, York	174	17	0
C. & J. KILVINGTON, York (*accepted*)	170	11	0

Asphalting.

E. Bowker, York	115	12	6
J. Stabler, York	104	13	10
J. J. Ingham, Bradford	90	10	4
R. SKIRROW, York (*accepted*)	73	10	4

Whole Work.

A. Spencer, York	261	18	1
J. Marsh, Thorne (*withdrawn*)	222	9	6

TRADE NOTES.

THE Lord Mayor of Dublin started the machinery in the premises which have been set up near Dublin for the manufacture of Portland cement. The managing director said they were able to sell the cement at 5*s.* a ton under English prices.

MESSRS. WILLIAM FALLOWS & Co., in their circular dated Liverpool, October 9, say:—"It is gratifying to be able to report an improved feeling in the trade. This is due in some measure to the restrictions which have lately been placed upon the production of pig iron, and also to the growing impression that a general revival is imminent. The continued improvement reported from America, the higher prices ruling for some staple products, the advance in Indian exchanges, better Board of Trade returns, and other minor indications, give strength to the opinion that trade is improving."

THE thirty-ninth annual dinner of the Builders' Benevolent Institution is announced to take place on Thursday, November 4, at the hall of the Worshipful Company of Carpenters, London Wall. The Society, whose benefits are so well known to the poorer members of the trade, has of late fallen off somewhat from its bounties in consequence of the want of new subscribers, which they solicit. We may mention in favour of this very excellent Institution, that the president this year is Mr. Basil E. Peto, a son of Sir Morton Peto, Bart., who was president of the Society in the year 1853, and who will take the chair at the dinner. The tickets, which can be procured at the door, are 30*s.* each, and they may also be had from the stewards, Mr. George Plucknett, J.P., treasurer, and of the secretary, Major R. A. Brutton, at the offices, 4 Vernon Place, Bloomsbury Square, W.C. We earnestly ask the members of the profession to respond heartily to the call of this benevolent institution by taking tickets, which will greatly facilitate their endeavours during the coming winter.

CONTINENTAL PASSENGER TRAFFIC.—A new steamer for the Great Eastern Railway Company's continental traffic, *viâ* Harwich, was launched on Monday from the yard of Earle's Shipbuilding Company, Hull. This vessel, which is named the *Cambridge*, is a sister ship to the Great Eastern Railway Company's steamers *Norwich* and *Ipswich*, with the exception that she is 20 feet longer. Her length on the water-line is 280 feet, breadth 31 feet, and depth 15 feet, while her engines are compound twin screws. She will be placed on the Harwich-Antwerp station early next year.

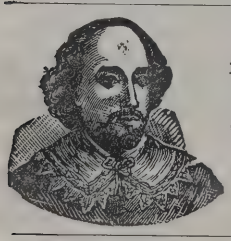
AN ARGUMENT FOR SANITARY PAINTS.

ON Monday an inquest was held at the Greenwich Union Board Room on the body of John Sullivan, a labourer, engaged at Messrs. David Storer & Son's lead stores, Poplar, who died on the 7th inst. Mr. Lakeman, Inspector of Factories, examined all the witnesses on behalf of the Government. Margaret Sullivan, wife of the deceased, stated that her husband had been at Messrs. Storer's for about five weeks, and after the first fortnight he had complained that the white lead made him feel queer. He complained of pains in his stomach and legs, and

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY, RIVERSIDE NINE ELMS.

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLES & MARBLE WORK
OF EVERY DESCRIPTION.
EMLEY & SONS
(Late WALKER & EMLEY),
STEAM SAWING, MOULDING, TURNING, AND POLISHING MILLS,
NEWCASTLE-ON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.



NASH & HULL,
LETTER
MANUFACTURERS,
WRITERS AND ENGRAVERS
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

eventually went into the infirmary under the advice of Dr. Forsyth. He discharged himself thence, being under the impression that they were not doing him any good. Dr. Forsyth attended him again, but he died on Thursday last. James Sullivan, brother of the deceased, said his brother was in very good health before he went into Storer's employ, where witness also worked. The deceased had to shovel white lead in a powdered state into a machine for the purpose of mixing it with linseed oil. In doing this deceased often caused the white lead to fly about the room, and this dust would settle on his clothes, arms, and face. Deceased used to wash his hands before each meal, but this was not enforced by any rules of the firm, nor was any special drink or medicine provided for the men who dealt with the white lead. They were not provided with overalls and respirators, as was the case in factories where the blue lead was converted into white lead. William Bowman said he had been employed at Messrs. Storer's for about a year and nine months, and knew the deceased, who used to work at the white lead pan with witness and another man, each having one week on and two weeks off the white lead work. Deceased had complained to him of feeling sick of a morning. There were no rules as to washing, but the men were allowed five minutes before each meal to wash and clean themselves. In answer to Mr. Lakeman, witness said he had warned deceased to be careful in shovelling the white lead into the machine, because he made such a dust that it covered not only himself but everybody near. He knew that white lead was dangerous, because he himself had been made ill after working at it for five months. Charles Macdonald, foreman at Messrs. Storer's, said it was not a white lead factory but a paint factory. They did not manufacture white lead. There were no special regulations in their works with regard to white lead, but the factory inspectors visited them from time to time. There were no special drinks and no doctor provided, but the men who worked at the white-lead pan were paid an extra shilling a week. Dr. Burnett said the deceased was admitted to the infirmary suffering from lead poisoning; he had cramp in his feet, in the calves of his legs, and in his arms, and he also vomitted blood. He was discharged against witness's wish on October 2; he ought not to have gone out, because his case was a serious one. He had attended a great number of cases of lead poisoning, both male and female, and some patients had gone back to the works after they had recovered, and then returned again ill three or four times. In answer to questions by Mr. Lakeman, witness said powdered lead was the most dangerous form of material in which to work, because it was inhaled by the workmen and absorbed into the system. He thought the regulations regarding overalls, respirators, and other precautions used in lead factories ought also to be enforced in establishments where powdered lead was dealt with. Dr. Forsyth, medical officer of health, said he had made a *post-mortem* examination of the deceased. Death was due to suffocation from disease produced by white lead poisoning. He agreed with the previous witness as to the necessity for regulations being enforced in these works. Mr. Lakeman, in reply to the coroner, stated that regulations were in force in white lead factories—that was to say, works where blue lead was converted into white lead—for the protection of the employés. His opinion was that they ought to be enforced in the white lead stores. The jury returned a verdict in accordance with the medical testimony, expressing a hope that Mr. Lakeman would be able to make representations to the Home Office with reference to the case, to show the necessity for some extra precautions being taken in the interests of people working in mixing factories.

SACCHARINE MORTAR.

The following curious communication from Mr. Thomson Hankey appeared in the *Times* on Wednesday:—

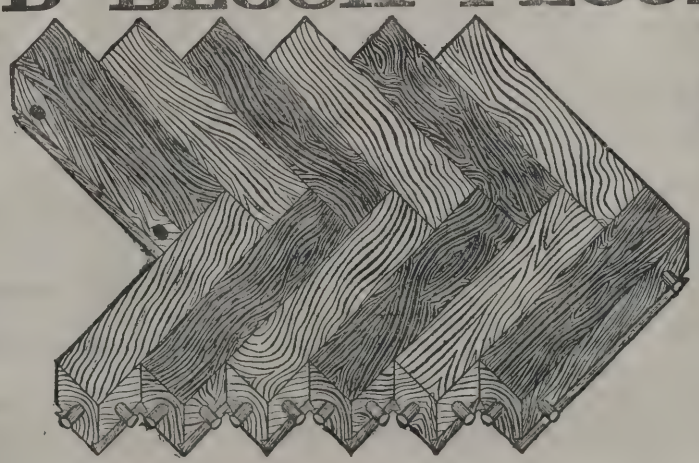
My attention has been called by a gentleman well known in the scientific world to a new use for sugar, which, at the present low price of that article, might be capable of being practically applied.

Experiments have recently been made proving that sugar is a valuable ingredient in mortar and cement, having strong binding qualities. Equal quantities of finely-powdered lime of a very common kind were mixed with an equal quantity of good brown sugar, with the addition of water, and the result was a cement of exceptional strength. This has been tried at Peterborough Cathedral, two large pieces of stone of the broken tracery of a window having been joined firmly together by sugared mortar. The severest test is joining glass, which gives no hold to mortar without the use of sand, and this has been successfully done.

The fact appears to be certain that sugar produces an extraordinary effect on lime when the latter has been allowed to fall into a fine powder and has been thoroughly slaked. Particles of unslaked lime would destroy the result, because

THE ÆOLUS WATERSPRAY
SYSTEM OF
HEATING, COOLING, & VENTILATING
IS THE
CHEAPEST AND BEST.
For Particulars apply to
MANAGER, 235 HIGH HOLBORN, LONDON, W.C.
Applications for Agencies invited.

M. C. DUFFY & SON'S Improved and Perfectly "Immovable Acme" System of
WOOD BLOCK FLOORING
(W. DUFFY'S PATENT)
OBTAINED THE
HIGHEST AWARDS
AT ALL THE
International Exhibitions, 1885.
SUITABLE FOR
Churches, Schools, Warehouses, Basements, Railway Station Booking Offices and Platforms, Mansions, Hospitals, Banks, AND Public Buildings Generally.



PRICES and full PARTICULARS on application to the Manufacturers,
M. C. DUFFY & SON,
At their Chief Office,
66 STORKS ROAD, S.E.
ALSO AT
GLASSHOUSE STREET, Albert Embankment, S.E.
UNION ROAD, Rotherhithe, S.E.;
STATION ROAD, Spa Road, S.E.;
VAUXHALL WALK, S.E.;
AND AT
GREAT YARMOUTH.

of their expansion, which would make the mortar lift. The sugar mortar thus made will be found, I believe, to be as good as Portland cement, and the only question, therefore, would be one of cost; and it is probable that Portland cement itself would be made much stronger by the addition of sugar. Treacle might have the same effect.

It is not necessary to mention in detail the numerous small experiments which have been made. It is a matter which any one can test for himself by joining bricks with Portland cement alone, and by joining others with sugar and water added to the cement.

The fact that cane sugar and lime form a definite chemical compound has long been known. It is used, indeed, for various purposes, and it may be hoped that the suggestion for its use as an ingredient in mortar may be turned to practical account by builders and cement manufacturers. It has been suggested o me that the use of sugar is the secret of the success of the old Roman mortar.

LIGHTHOUSE ILLUMINATION.

FOR many years past Mr. J. R. Wigham, of the firm of Messrs. Edmundson & Co., Dublin, has maintained that great advantage would be derived in lighthouse illumination by the use, in connection with his large gas-burners, of lenses of larger dimensions, and of longer focal distance than those heretofore used. At the suggestion of Mr. Thomas Stevenson, a lens of this kind has been constructed for experimental purposes. The public will be interested in now knowing that the Commissioners of Irish Lights, with the sanction of the Board of Trade, have determined to use eighteen such lenses for the new gas-light at Tory Island lighthouse, in the construction of which Mr. Wigham is now engaged. The lenses will be used in triform—that is, in three tiers, six in each tier. Each lens will be nearly 6 feet square, and will transmit to the mariner twice as much light as he can receive from any lens used at present. One of Mr. Wigham's large gas-burners, with an illuminating power of about three thousand candles, will be placed in the focus of each tier of lenses. The resultant beam will be equivalent to about four million sperm candles, proceeding from an illuminated surface about 18 feet in height and 6 feet in breadth. The adoption of this plan marks an advance in lighthouse illumination of immense importance, and will make the light of Tory Island by far the largest in the world. Mr. Wigham is also ordered by the Commissioners of Irish Lights to erect a powerful gas fog signal at that station, and these improvements which the Commissioners are effecting at Tory Island will be of incalculable benefit to mariners approaching the north coast of Ireland from the westward. The whole work is likely to be completed before the winter of next year.

INSTITUTE OF AUCTIONEERS AND SURVEYORS.

A MEETING was held last week at the City Terminus Hotel, Cannon Street, to form an institute of auctioneers and surveyors. The suggestion emanated from Mr. George Johnson Ottley, who proposed the establishment of the society with the following objects:—To protect the interests of auctioneers, surveyors, estate agents, appraisers, and other members of the profession, to provide certificates for duly qualified members, to apply to the Privy Council for a charter or an incorporation, to form a provident institution for the benefit of members of the profession, and to establish in London a club or hall "wherein social and literary accommodation of every kind will be provided to meet the requirements of provincial members when visiting the metropolis, as well as to meet the wants of London members." Mr. J. M. Klenck having been voted to the chair, and having briefly opened the proceedings, Mr. Ottley observed that they were more or less acquainted with his views of the objects of the proposed institute. In its early existence they must expect a certain amount of opposition. The Chairman said he did not think they need go into the question of opposition until they met it. Mr. Ottley, continuing, said he had sent out between 9,000 and 10,000 circulars, but he did not suppose that he had reached the whole of the auctioneers of the kingdom, though he had done his best with that object. Between 300 and 400 preliminary members had already joined. The Chairman then proposed a resolution to the effect that the society be called the Institute of Auctioneers and Surveyors of the United Kingdom, the details of the objects mentioned to be settled by a committee to be appointed at the meeting, who could report to an adjourned meeting. He had put in the words "of the United Kingdom," as they would thus make themselves the leading centre, and the local institutions to which allusion had been made could be admitted as affiliated members. He had long since felt that there ought to be such a society, and that

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY
ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

A. J. SHAW,
Gower Varnish Works, Sheffield,
MANUFACTURER OF
WOOD STAINS & VARNISHES
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.
Samples and Quotations from the Manufacturer.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
Legal and Commercial Stationery.

HENRY KING
(Late GREEN & KING),
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions.—STEVENS & CO., Ceres Ironworks Kingston-on-Thames.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

BUILDERS' BENEVOLENT INSTITUTION.

The thirty-ninth ANNUAL DINNER will take place at the HALL of the Worshipful Company of Carpenters, London Wall, on THURSDAY, NOVEMBER 4. BASIL E. PETO, Esq., President, in the Chair. The following gentlemen have consented to be stewards:—

Ansell, Mr. C.
Barfield, Mr. A.
Bird, Mr. Stanley G.
Birch, Mr. J. W.
Blyth, Mr. James
Bolding, Mr. J. T.
Burt, Mr. George
Burt, Mr. G., jun.
Bush, Mr. A.
Bussell, Mr. C.
Colls, Mr. H.
Conolly, Mr. H.
Cubitt & Co., Messrs. W.
Dines, Mr. George
Docwra, Mr. J. W. (Messrs. Docwra & Son)
Doulton & Co., Messrs. H.
Dove, Mr. B. D.
Dove, Mr. F. J.
Duffield, Mr. J. W.
Eastwood & Co., Messrs.
Fish, Mr. Charles
Francis & Co., Messrs.
Franklin, Mr. T. F.
Foxley, Mr. F.
Fuller, Messrs. G. A. & A.
Hall, Mr. T. (Messrs. Hall, Beddall & Co.)
Hayward Brothers & Eckstein, Messrs.
Higgs, Mr. W.
Hill, Mr. James
Hobbs, Mr. J. W.
Holland & Hannen, Messrs.
Holloway Brothers, Messrs.
Jones & Son, Messrs.
Jennings, Mr. George
Jenson & Nickolson, Messrs.
Keeble, Mr. F. W.
Kirk & Randall, Messrs.
Lee, Son & Co., Messrs.
Lemon, Mr. G. R.
Lough, Mr. J. (Messrs. Stimpson & Co.)
Lucas Brothers, Messrs.
Manley, Mr. Mark
Mitchell, Mr. W. J.
New, Mr. G. B.
Northcroft, Son & Neighbour, Messrs.
Patrick, Mr. Thomas
Pearson, Messrs. R. H. & J.
Perkins, Mr. Robert
Perry & Co., Messrs.
Peto, Sir S. Morton, Bart.
Phillips, Mr. Stephen
Purkiss, Mr. W. T.
Richardson, Mr. R.
Richardson, Mr. C.
Rider, Mr. T. F.
Ritchie, Mr. A. (Messrs. Steven Bros. & Co.)
Rogers, Mr. W. R.
Ross, Mr. J. M. (Messrs. J. M. Ross & Co.)
Schofield, Mr. J. A.
Scrivener, Mr. W.
Smith, Mr. T. G.
Stephens, Mr. G. (Messrs. Stephens & Bastow)
Stirling, Mr. Thomas
Stoner & Sons, Messrs.
Taylor, Mr. E. T.
Thorn, Mr. A.
Toleman, Mr. J.
Toms, Mr. E.
Trickett, Mr. S.
Thacker, Mr. S. J.
Webster, Mr. William
Watts, Mr. G. N.
Williams, Mr. G.
Woollams & Co., Messrs.

Tickets, 30s. each, payable at the door, unless endorsed by a Steward, to be had of the Stewards: GEORGE PLUCKNETT, Esq., J.P., Treasurer; and of the Secretary, at the Office, 4 Vernon Place, Bloomsbury Square, W.C.

Major R. A. BRUTTON, Secretary.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers Cranes, and all Contractor's Plant, on best terms apply BERRY 6 Great St. Helen's, E.C.

members of the profession ought to have a common place of meeting at which they could assemble at a specified hour. Very often those who required particular properties might thus easily find those who had them for disposal. A very large amount of correspondence would, in that way, be rendered unnecessary. If properly carried out he thought the institution could not fail to be beneficial to the profession. Mr. B. M. Bradbeer (Lowestoft) seconded the motion, which was supported by Mr. Abraham Smith. Mr. Joel proposed an amendment to add the word "Valuers" to the name of the society. The amendment, however, was not seconded, and consequently fell through. Mr. Kemsley referred to the existence of the Surveyors' Institute, which was formed twenty years ago, and had a Royal charter. He thought that that institution embraced all the objects which the proposed society had in view. The Chairman pointed out that the Surveyors' Institute was for surveyors, auctioneers not being admitted to membership unless they were surveyors. The resolution was carried after a short discussion, and subsequently a committee was appointed, with power to add to their number, "to arrange as to the preparation and settlement of the draft of the rules." A further resolution was also passed adjourning the meeting to December next.

THE CONSTITUTIONAL CLUB.

THE chimneypieces, stoves, &c., in the Constitutional Club are specially worthy of a word or two. Designed specially by the architect, Mr. Robert Edis, and carried out by Messrs. Yates, Haywood & Co., Limited, to suit the respective rooms, they are thorough works of art. Those for the coffee-room and morning-room are of pure statuary marble, inlaid variously with antique Sienna onyx and verd antique. Elegantly fluted double columns, with carved capitals, support friezes of garlands in the coloured marbles above described, and some idea of the weight alone of the shelves may be imagined when we mention that it took the combined power of eight men to lift one of them. Messrs. Yates, Haywood & Co. manufactured these beautiful chimney-pieces in their foreign works, partly in Belgium and partly in France. The chimneypieces in the smoking, billiard, card, and other principal rooms were also made from special designs, for the most part in white and yellow marbles. The stoves are, like those for the larger rooms, made by the same firm at their Rotherham foundries, and may be described as of Renaissance style, with canopies of brass and dogs of brass and metal combined. Hand-painted tiles of good design, and of a yellow tone, form the sides. It had evidently been the object of Mr. Edis to keep these chimneypieces and stoves light and bright, with just enough of colour to impart general warmth of effect. Bold in outline and massive yet graceful in detail, they might seem to have been brought from those grand old mansions in and around Whitehall, or from such well-known houses as Chesterfield House. Messrs. Yates, Haywood & Co., Limited, are, we understand, the contractors employed by H.M.'s Board of Works for our palaces, &c.; also by the War Department for barracks, &c., and by the Admiralty.

LOUDOUN HALL, ST. JOHN'S WOOD.

THE well-known house of Gillow & Co., in conjunction with Messrs. Russell, Harvey & Co., a young and rising firm, are about to sell by auction the above fine mansion, which covers about three acres of picturesque ground, together with the magnificent furniture and works of art, amongst which will be found one of T. S. Cooper's best productions, masterpieces by Sir Thomas Lawrence, Tissot, Schayer, Carlo Dolce, Weekes, and others; a suite of furniture for drawing-room, ebonised inlaid gilt and Amboyna wood, covered in splendid turquoise blue and silver brocaded silk, which cost some time back 600 guineas, and about 4,600 oz. of plate. The bronzes, which are very fine, deserve the attention of connoisseurs and lovers of the fine arts.

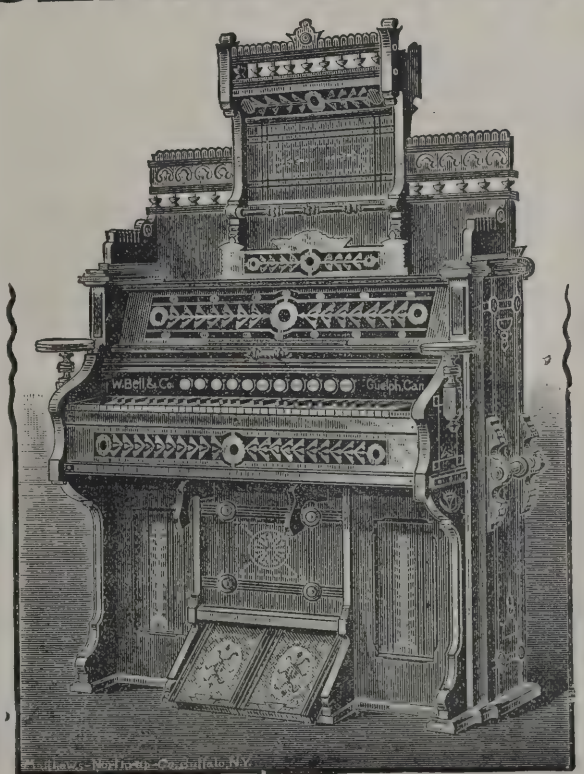
SINGLE-RAIL RAILWAYS.

THE Society of Engineers held its first meeting for the session 1886-7 last week, when a paper was read on "The Lartigue Single-rail Railway," by Mr. F. B. Behr.

The author commenced by observing that a single-rail line was not a new idea, as many patents had been taken out in that direction. Telford had suggested a single-rail line to be the correct principle, and Palmer in 1823 had endeavoured to make one in London but had failed, as had others since. Although narrow-gauge lines had been introduced, they only partially remedied the evil of the expense involved in construction, the works being similar to those of ordinary railways. Cable transport could only be used for short lengths of line, except

W. BELL & CO.
AMERICAN ORGAN MANUFACTURERS,
AT THEIR NEW PREMISES,
58 HOLBORN VIADUCT,

Keep a full line of the
CELEBRATED
"BELL"
ORGANS
And the FAULTLESS
HARDMAN PIANOS
OF
NEW YORK.



ALWAYS ON HAND FOR INSPECTION.

THESE INSTRUMENTS ARE ACKNOWLEDGED LEADERS OF ALL OTHERS.

CATALOGUES
FREE
From above Address.

in very special cases, owing to its heavy cost, and in no case could it be made efficiently available for passenger traffic. The author then went on to describe the Lartigue single-rail system, in which the rail is carried on the top of A-shaped bearers or tressels, generally about 3 feet 3 inches high, but varying in height according to the level of the ground.

The vehicles are hung on the rail by vertical grooved wheels, and on passenger lines they have also horizontal wheels at the bottom on each side, which move along guide-rails fixed on the sides of the tressels, and prevent oscillation. The passengers sit back-to-back, as in an Irish jaunting-car. The experimental lines laid down near Victoria Street, Westminster, were then described by the author. The passenger line is worked by steam, and the special locomotive used was fully described. This line is constructed with very sharp curves and steep gradients, which are easily traversed and mounted, as may be witnessed any day. The author referred to several lines which have been constructed on the Lartigue principle on the Continent, notably one in the Esparto district in Tunis, which is worked by mules, and another in France at the mines of Ria, where electricity is the motive power. He also mentioned the experiments carried out in Russia by the Government for military purposes. The author finally described the Lartigue system as applied to overhead railways, supported on light columns placed in single line in the centre of the roadway in towns, for which purpose he showed it to be specially applicable.

THE ECCLESIASTICAL ART EXHIBITION.

THE Church Congress attracted crowds of clergymen and laymen to Wakefield, and what with the important discussions in the Congress Hall, and the recreative effects of the Ecclesiastical Art Exhibition, they were well entertained. This latter enterprise had for its object the display of church decorative art in its highest form, and although the firms exhibiting were not numerous, they were without exception well known and of good standing. The exhibition was largely patronised by visitors in the town.

Messrs. Jones & Willis, of Birmingham, were conspicuous for a large space filled with well-selected and high-class artistic work. In metal work this firm showed in photos specimens of wrought-iron screens erected at St. Luke's Church, Jersey, and St. Andrew's, Southport, noticeable for elegant design. A photo of a wrought-iron grille, placed in the Guildhall School of Music, was another attraction. The designs in wrought iron are correct in detail, and the workmanship is of superior quality. The lamp department was represented by the firm's patent "Hesperus" lamp, which is claimed to be of 45-candle power. The lamps are well adapted for the lighting of churches, two or three specimens in wrought iron being particularly effective. Pendants, brackets, and general gas-fittings were in large variety, both in brass and wrought iron. The brasswork exhibited upheld the firm's reputation. Eagles and other patterns of lecterns and memorial brasses were excellent in design and finish.

Carved woodwork also comes within the range of Messrs. Jones & Willis's work. This class was represented by a carved eagle and other lecterns, and photos of carved oak screen fitted in Ainstable Church, Carlisle, and carved stalls and pulpit for St. Philip's Church, Birmingham. Evidently the work has been done by a firm understanding the architecture which the decoration is to accord with. We must not omit to mention the art embroidery, which does no less credit to Messrs. Jones & Willis. Perhaps a better collection of ecclesiastical art has never been exhibited, or more thoroughly appreciated.

Messrs. Illingworth, Ingham & Co., of Leeds, exhibited a large variety of school furniture worthy of particular mention. The specimens exhibited are in the most modern and improved forms. It would be correct to say that, generally speaking, the firm excel in genuine improvements. There is "Ward's Improved Patent Reversible Desk"—a most ingenious contrivance, which forms either desk, table, or seat with back. The idea of the table transformation is a happy one—for schools are often used for tea meetings, &c.—and, with this improvement, no additional furniture is required. The ironwork is particularly strong, but the movements are easy. The wood is best pitch pine, well seasoned in the firm's timber yards, with an excellent varnish and finish. The "Leeds Dual Desk" is another speciality, which seems to have found great favour with School Boards, and amongst those adopting it are Bradford, Aston, Keighley, and Eccleshill. These dual desks are made in four different forms to suit requirements. The noticeable feature in the dual is that the seat works on hinges, and drops when unhinged, so as to allow passing in and out of the seats with convenience. A smaller specimen, intended for Kindergarten schools, was also exhibited. Box desks of all descriptions were well represented. The School Board desk is arranged to turn

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

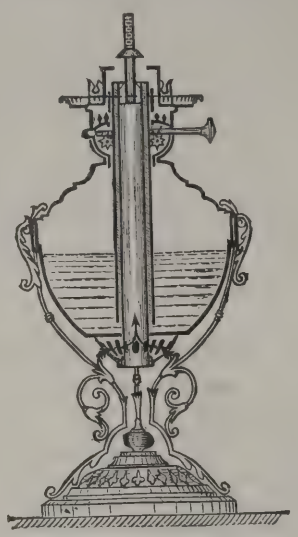
the seat in a perpendicular position. This gives every facility for drilling and marching. In short, every school accessory was shown. The goods are thoroughly well made, and look as suitable for a college as a Board school. We have introduced illustrations, showing the various specimens we have com-



mented upon. The exhibit was a good one, and too much praise cannot be accorded the firm for the quality of the material, the design, and the finish throughout.

Messrs. E. L. Luscombe & Son, of Exeter, were prominent in sculptured woodwork. We might particularise a rood sculptured in oak. The crucifix is ornamented with richly carved crocketing springing from the moulding which runs round its edges. The inscription at the base of the cross is, "Behold the Lamb of God!" and in the carved and traceried screens on either side are canopied and foliated arcades, in the central compartment of which, kneeling on carved corbels, are figures of angels in adoration. The screen on either side terminates with octagonal pedestals, the carved caps supporting sculptured representations of St. Mary and St. John. The whole has a thoroughly ecclesiastical tone, and the work seems to have been done *con amore*, and is correct in detail. There is not too much carving in it, it is elegantly simple, the figures contrasting well with the chaste ornamentation. Roods are still not nearly so largely adopted as they should be, and Messrs. E. L. Luscombe & Son are entitled to praise for their enterprise in making the rood a prominent feature of their exhibit. A prayer-desk, which is part of the series of choir stalls they have made for the church of Monkton Wyld, in Dorset, is a specimen of rich yet delicate carving, thoroughly neat and natural. Lecterns in oak and walnut were also conspicuous, as well as credence tables, carved alms dishes, &c. A series of bosses for the roofs of churches were examples of each period of Gothic architecture. The exhibit was thoroughly worthy of attention, and accorded with the reputation of the firm for high-class work.

The only exhibit entirely of lamps was that of the Defries "Safety" Lamp Company, Limited, conspicuously represented. Safety is the key to this ingenious invention. It was certainly an urgent requirement, for no lamp we have ever heard of has claimed absolute safety before. The main principle of this patent is that the oil is poured into a tubular-created receptacle,



over which a tube fits, thus rendering an overflow of oil impossible. Hence, in case of accident, the lamp being overturned, say, the oil is safe within the two enclosures, and no light can reach it. The fact that insurance companies, Captain Shaw, and Mr. Boverton Redwood recommend it as absolutely safe, give these claims high authority. This speciality is also claimed to give a purer and stronger light than any in use. The construction of the lamp insures combustion at all points of the flame, and may be lowered to any extent without losing its brilliancy. Mr. Boverton Redwood, as chemist to the Petroleum Association, in his report on the Defries Safety Lamp, after an analysis of the burning power, says, "These results are more favourable than any I have hitherto obtained

ASCHERBERG PIANOS,

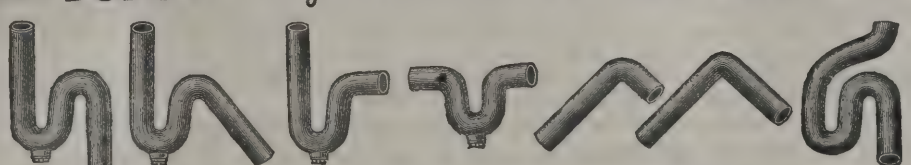
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET, KING'S CROSS, W.C.

with any mineral oil lamps of other forms." A practical test at the exhibition goes far to support this assertion. The style the lamps are made in is of the best description, and their introduction in Wakefield seemed quite a success.

Messrs. Benham & Froud exhibited a handsome collection of lecterns in eagle and other patterns; chandeliers and brackets and general fittings; also a particularly effective variety of embroidered textile work. The name of the firm is well known for the excellence of their work. It is sufficient to add that the exhibits agreed in every respect with it.

Messrs. Mayer & Co., of Bond Street, London, exhibited a reredos representing the Lord's Supper, magnificently sculptured. The work was of the most elaborate character, and correct in detail. The depth of the carving was particularly noticeable. A stained-glass window—indeed, the only conspicuous one in the building, the subject being the Sermon on the Mount—was particularly rich in colour and able in design.

Messrs. Brindley & Foster, of Sheffield, exhibited an admirable organ on their tubular pneumatic system.

NOTES ON NOVELTIES.

Temporary Electric Lighting.—Pollak's self-charging battery, requiring no attention, is a novelty introduced by Messrs. G. Binswanger & Co., of 5 Great St. Thomas Apostle, Mansion House, E.C. This speciality has been devised especially in view of affording an easy means of utilising electric light for domestic purposes, electric light being in regard of health, safety, and comfort so adapted above all other illuminants for the house. But where electric light is required on a small scale for a few lamps, or even for a single lamp alone, dynamo machines are impractical, and recourse must be had to primary batteries. Now, the use of dangerous acids in primary batteries, the trouble of recharging them, cleaning them, &c., may be undertaken by those willing to give the constant attention necessary; but there is no need of being burdened with this trouble, or with employment of these acids, if the Pollak battery is used, for this battery requires no attention whatever for months or years, as the user need not recharge the battery for a long period, or even he could, without being inconvenienced, arrange with the supplier to attend to the recharging at a reasonable cost.

Pollak's self-charging patent battery is not, it is true, constructed to supply a constant light or to supersede gas, but in many cases where an immediate, convenient, safe, and beautiful light is required for short periods it will supply a great want, as for such purposes each charge of the battery can be made to last for years without attention. The arrangements, size, or number of the cells of the battery and the necessary accessories—as lamps, switches, instruments, &c.—can be varied according to the different purposes for which the battery is required. To mention, for example, a few uses:—In private houses, as night light, reading-lamp, temporary illumination of cellars, staircases, offices, stables, gardens, &c., more especially in country houses. For the professions, for physicians, dentists, &c., as a constant source of electricity for light and motive power. For photographers, as a convenient illuminant for dark rooms, and as a source of ventilation and drying. For banks, as an illuminant for strong rooms, &c. For business people, as an illuminant for such rooms in which a naked light is dangerous or inconvenient, such as wool, cotton, gunpowder magazines, lighting show-cases, or as an advertisement. In theatres for safety lamps, and scare against burglars.

To enter now into details, we will describe the electric night light, of which we append a drawing. It consists of six cells (*a*) in a cupboard, (*d*) the switch, (*c*) lamp, (*b*) with bracket and shade, which gives to the light an agreeable subdued tone. This lamp will burn for eight hours, giving the light of about two candles. The battery recharges itself during the day, and the light will be ready the following night for eight hours. In this way the night-light will burn for months without attention. The consumption of materials is extremely small, and consists only of sal ammoniac and zinc, costing about one-sixth of a penny per hour.

In the combined night-light and reading-lamp the number of cells required for the installation depends on the amount of light required. For a 5-candle lamp 18 cells are required. Such a lamp will burn for about six hours, after which time the battery will require rest. The user requires but to attend to the switch; if the light is not required, the switch must turn to R (rest); if the night-light is required, turn to N (night); if the lamp is required, turn to L (lamp). The cost of maintenance of night-light requiring only six cells is one-sixth of a penny per hour.

Temporary automatic light on staircases or in rooms is arranged as follows. The action of opening a door or pressing a knob will illuminate a room or hall for a few minutes, after which the light will be extinguished automatically, in order to

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER SEVEN HUNDRED ENGRAVINGS OF DIFFERENT PERIODS, WITH DESCRIPTIONS.

BY PAUL ROUAIX.

"This large and sumptuous book is issued by the publishers of *L'Art*, a journal which we have frequently referred to as being one of the best publications of its kind in Europe. The French Librairie de l'Art has been known for long in connection with works treating of the fine arts, and *Les Styles* is certainly equal to anything we have ever seen of the kind, and by far superior to the vast majority of similar works issued in this country. There is something about the atmosphere of France which confers refinement of taste in everything relating to designs, and so pronounced is the national aptitude for discovering beauty and symmetry, that the very fact of a book coming from across the straits is generally a sufficient guarantee of the artistic excellence of the contents.

"M. Rouaix treats of many species of decoration, commencing with that in vogue amongst the ancient Egyptians, and proceeding in regular order of date with the Etruscan, Greek, Byzantine, Roman, Gothic, the peculiar ornamentation of the Renaissance, and of the times of Louis XIII., XIV., XV., and XVI. Before each division the author introduces a short historical introduction, and afterwards, by means of a series of beautifully executed prints, illustrates the prevailing fashion of the time. For this purpose he has levied contributions on examples of architecture, carving on wood, suits of armour, bas-reliefs, tapestry and embroidery, mural painting, mosaical work, and a host of other subjects, including caskets and chalices. In fact, anything that can be called artistic and assigned with certainty to a particular era is represented, the result being an exhaustive and exceedingly pretty production."—Book Lore.

NEW EDITION. Price, Single Number, 5*s.*; Complete Series, 12 Numbers (by Subscription), £2 8*s.*

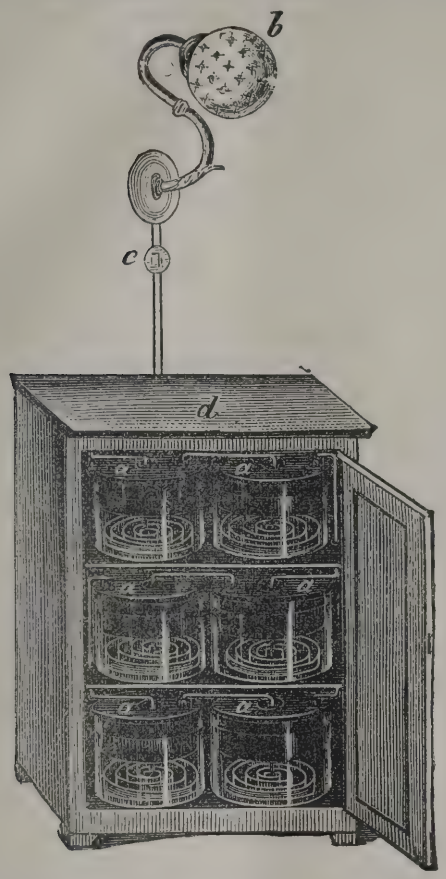
BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

LONDON: GILBERT WOOD & CO., 175 STRAND.

insure against loss of battery power, which would happen if the turning of the switch were forgotten. This is accomplished by means of a door trigger, specially patented for this purpose,



which can be placed out of use during the day by a lever. This arrangement can be extended to act all through the house by means of a central combined apparatus and the necessary electric wire circuits, which have been especially manufactured and patented for this purpose.

The advantages of the Pollak battery over other batteries already mentioned, render it perhaps the only battery by which a temporary light can be obtained without inconvenience and at a small cost; but it is also suited for telegraphy, telephony, signalling, and similar uses.

For closed circuits, Daniell cells are mostly used, but Pollak's Self-charging Battery must be much cheaper, as it takes its depolariser from the oxygen of the air.

For open circuit, especially for telephony and signalling, the battery most in use for this purpose is the Leclanché, in which there is waste of zinc to a large extent; the depolarising electrode (whether in porous pot or agglomerate) is useless after some time, and the creeping of the salts is a great inconvenience. The Pollak cell suffers from none of these disadvantages. The zinc, being wholly immersed in the fluid, is entirely used up, the carbons are lasting, and the exciting fluid only requires renewing.

Each cell in the Pollak battery consists of a glass jar, at the bottom of which is the zinc electrode; the other electrode is carbon, made by Pollak's patent process, which insures great porosity, a large surface, and at the same time good conductivity. The lower part of the carbon is plated with copper, or in some cases a small piece of copper wire is suspended in the fluid and connected to the carbon. The zinc of the cells for lighting purposes is covered with sand, and the exciting solution is sal ammoniac dissolved in water. When thus charged the action of the battery is twofold. First, there will be set up a local action between the carbon and copper, which causes the reduction of part of the charging fluid and produces combinations of copper; for instance, in case of sal ammoniac, chloride of copper is produced, colouring fluid blue and forming the depolariser of the battery. Now, when the outer circuit is closed the action is that of a carbon, zinc, sal ammoniac battery, the nascent hydrogen reduces the copper chloride to copper, which is again tranformed into copper chloride. Thus the battery constantly forms its own depolariser, *i.e.*, it recharges itself, and therefore such a battery is one of the most constant known. As will be readily understood this battery depends largely on gravity, both to prevent local action on the zinc and capillary attraction; it is therefore essential that the quantity of copper solution should be regulated, and also that the cells be not moved or shaken. The Pollak battery is now in practical use in Germany and Holland, and

Equitable

FINANCIAL POSITION.	Fire Co.	Accident Co.
Capital Subscribed	£263,335 —	£142,175
Capital Paid Up	52,667 —	28,435
Annual Income	88,943 —	21,264
Funds and Investments	98,969 —	36,528

HEAD OFFICE: 11 & 13, ST. ANN ST., MANCHESTER.

BRANCHES:

LONDON - - - 69, Lombard Street, E.C.
GLASGOW - - - - 101, St. Vincent Street.
BIRMINGHAM - Midland Bdgs., 2, New St.
LIVERPOOL - - - - 11, Tithebarn Street.
NEWCASTLE - 1, St. Nicholas Buildings.
BELFAST - - - - - - 6, Royal Avenue.
DUBLIN - - - - - - - - 18, Dame Street.

Fire & Accident Offices

Special Feature.

ONE PREMIUM RETURNED every FIFTH YEAR to those who have made no Claim.

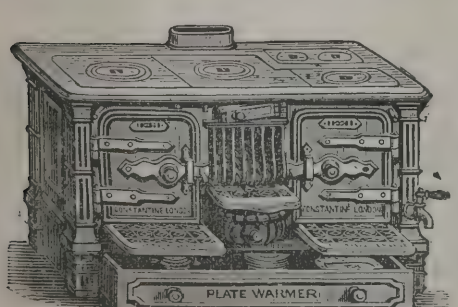
AGENTS APPOINTED.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S

PATENT "TREASURE"

COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

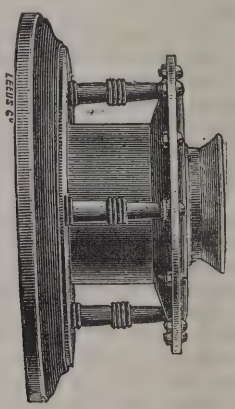
A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

has quite achieved the success which was expected during its trial state, and been very favourably received.

The Atlas Telephone.—Mr. James Fraser, of the Atlas Works, Tenter Lane, Leeds, has introduced a novelty in telephone apparatus, which will considerably simplify matters as to cost, and enhance the sound carrying power in telephony. The idea suggested itself to Mr. Fraser, the inventor, that if the musical sounds produced by a brass band can be heard five or six times as far as those produced by a string band, that a telephone made of metal would be five or six times more sensitive than one of wood. On this theory an instrument has been constructed by Mr. James Fraser, of brass, which, after many experiments, has developed into "The Atlas Telephone," one of the most sensitive and ornamental instruments of the kind which has yet been offered to the public.

The illustration represents an elevation of the Atlas Patent Telephone. It is worked entirely on acoustic principles, and



has been constructed with a view to meet the great demand for a cheap and reliable method of communication between places where the distance is too small for an electrical telephone, and to entirely supersede the old-fashioned speaking-tube. A diaphragm, or web of fibrous material, is bolted between two concave metallic plates. To the front plate is fitted a neat bell-shaped mouthpiece. At the back is fitted a circular sounding box, which, with the diaphragm case, is fitted to a large ebonised wood plate by means of three metallic legs. In fixing a set of telephones a steel wire is attached to the centre of the diaphragm by means of a metallic button, behind which is a steel distributing plate to relieve the strain on the diaphragm itself. The line wire is then taken along special spring insulators round the various angles and corners, and attached to the centre of the distant instrument. Care must be taken that the wire touches nothing but its insulators from one end to the other. Attention is attracted by tapping the diaphragm, or in certain cases when specially required by means of an electro-magneto-bell. This tap or bell can be heard a considerable distance away from the distant telephone. On receiving a reply, conversation can be carried on at once. All the metallic parts are plated with nickel silver, and the diaphragms are coated with either red or blue enamel. The inventor is now bringing out a smaller telephone for domestic purposes, to take the place of ordinary bells, thereby effecting a saving of time and labour to the domestics. This small instrument aids communication between the dining-room, drawing-room, and bedrooms and the servants' hall, so that messages can be passed to the servants in such a manner as to obviate trouble and loss of time involved in unnecessary journeys up and down stairs. The larger instruments are adapted up to distances of three miles; of these several are working and giving great satisfaction. A short account of a long and short-distance telephone will give the reader some idea of the satisfactory way in which they work.

A long-distance telephone can now be seen working at Mr. Richard Nichols', Hill Top, Bramley, near Leeds, a distance of one mile. The line is from his farm to his house, and is carried along on seventeen poles placed at equal distances apart, and the wire is carried along these on special fixings attached to the poles.

A short-distance telephone can be seen working at Messrs. Hollands & Co., machine brokers, Kirkstall Road, Leeds, a distance of about 70 yards, from their office to their show-room. The line is carried from the office along the outside wall and across the yard, into the show-room, where it is carried along the ceiling perpendicularly down to the other instrument, which is fixed upon a wooden pillar in the show-room.

Mr. Fraser claims that the "Atlas" is an improvement on the ordinary telephone, and that he has kept especially in view the requirements of architects. The instrument has been under our inspection, and we can certainly recommend it as combining every improvement with high finish and workmanship.

Telegraphic Address: "ELECTRICITY," *LONDON.* *Telephone No. 1887.*

THE GENERAL ELECTRIC APPARATUS CO.

ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE

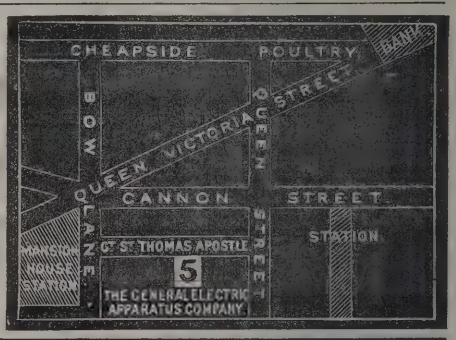
Works: BOW and SOUTH HACKNEY. (*Back of the Mansion House Station*), E.C.

ELECTRIC BELLS.

Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.

The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.

Electric Light Instruments, Fittings and Glassware.



ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustration which has appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing:—

The Bard.

FACSIMILE OF CARTOON BY PROFESSOR MAILLART.

Size, Thirty-six Inches by Twenty-two Inches.

Price One Shilling; free by post, carefully packed inside patent roller, One Shilling and Threepence.

May be obtained from all Newsagents or Booksellers, or from the

Publishers, GILBERT WOOD & CO., 175 Strand, London, W.C.



Registered Trade Mark.

TO ARCHITECTS, CONTRACTORS, AND BUILDERS.

SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using

KALLKOLITH.

IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for Smoky Ceilings and for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering.

Price per Case of Eight Tins of 14 lbs. each, 40*s.*, packing included. Sample Tins, 6*s.* each.

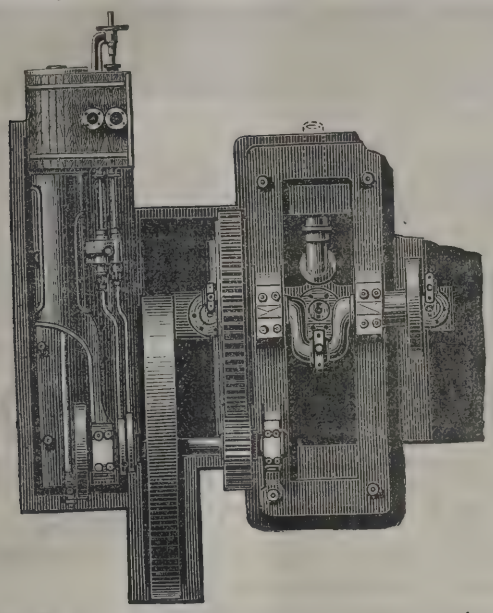
H. RANSOM & CO., 11 Queen Victoria Street, LONDON, E.C.

Agents wanted in every Town in the United Kingdom and Colonies.

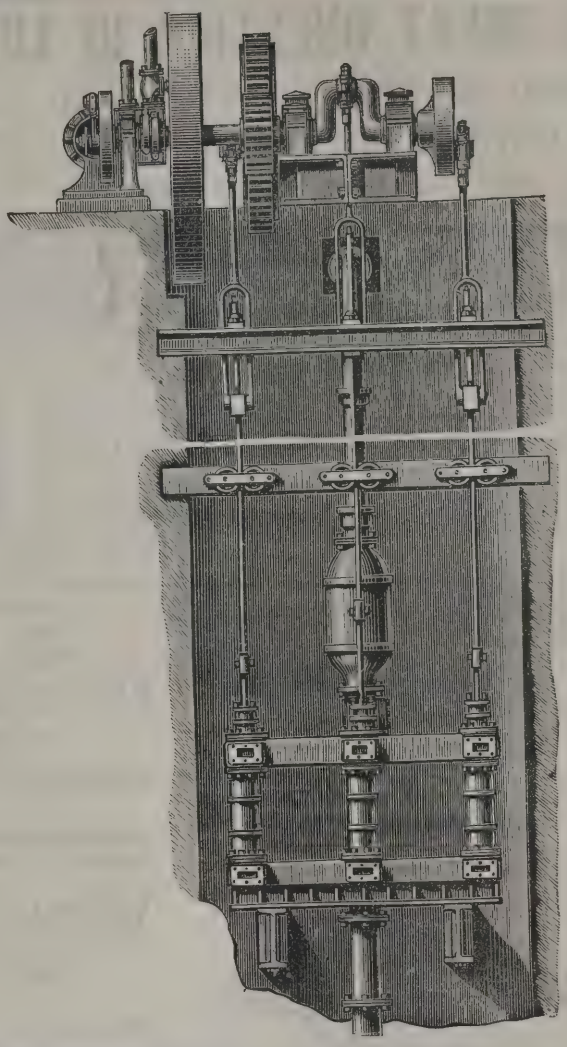
Registered Trade Mark.



The designing and construction of pumping machinery for deep wells demands no small care and experience if the work is to be not only effective, but durable. The arrangement ought to be adapted to the circumstances of the height of lift and work to be done, and the leading firms in this line of engineering are careful not to fall into the error of tying themselves to one design for all situations. We are able to illustrate an arrangement designed and constructed by Messrs. Hayward, Tyler & Co., of Whitecross Street, London, for performing



heavy duty at one of the Government military stations. The design of the pumps and driving gear is a very good type, the result of much experience in this special line of work for which this firm has long been well known. A very similar arrangement has been successfully used by them for exceptionally heavy work with very large pumps. The pumps in the present case are driven by one of their tube-girder engines with variable expansion gear, occupying little space, and very economical in steam. Our illustrations will show the action of the pumping machinery.



BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.

Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.

Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

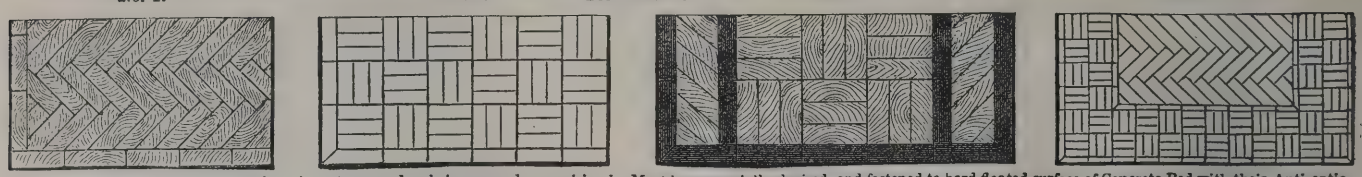
SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

No. 1. No. 2. PATTERNS. No. 3. No. 4.



Blocks prepared and treated through various stages under heir personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

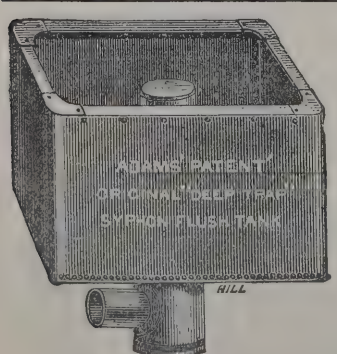
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL	**St. Philip's Marsh.**	**READING**	**Caversham Road.**
EXETER	**Basin Head.**	**DUBLIN**	**14 St. Andrew's Street.**
SOUTHSEA	**Beaufort Road.**	**MANCHESTER**	**20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

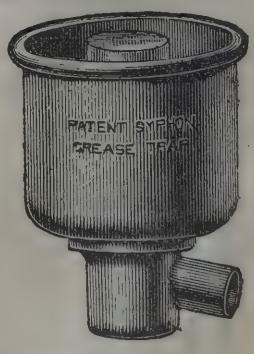


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
„ FLUSH SYPHONS for Sewer Flushing.
„ FLUSH LATRINES for Barracks, Schools, &c.
„ FLUSH URINALS „ „ „
„ TROUGH CLOSETS „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, October 15, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, OCTOBER 22, 1886.

THE ARCHITECT AND CONTRACT REPORTER.

ADVERTISEMENT SCALE.

	£	s	d
For Two Lines and under (eight words to the line)	0	2	6
For every Additional Line	0	0	6
For Quarter Page	2	10	0
For Half Page	4	10	0
For a Page	8	8	0
For 1 inch deep by 2½ wide	0	7	6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 *Strand, London, W.C.*

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

ELLAND.—Nov. 9.—Plans are invited for the Erection of a Town Hall. Mr. J. L. Garsed, Hon. Secretary, Town Hall Company's Offices, Southgate, Elland.

CONTRACTS OPEN.

ACCRINGTON.—Oct. 28.—For Building Residence, Burnley Road. Messrs. W. Waddington & Son, Architects, 5 Grimshaw Street, Burnley.

BALLYNESS.—Nov. 1c.—For Building Coastguard Station. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

BARNSTAPLE.—Oct. 25.—For Reparation of Roof and other Works, Braunton Church, near Barnstaple. Mr. William White, Architect, 30A Wimpole Street, W.

BATLEY.—Oct. 25.—For Erection of Stable Buildings, Fence Walling, &c., at Purewell. Mr. Walter Hanstock, Architect, Branch Road, Batley.

BELFAST.—Oct. 22.—For Additions to Warehouse, Clifton Street. Mr. R. Watt, Architect, 77A Victoria Street, Belfast.

BIRKENHEAD.—Nov. 12.—For Erection of Retort Benches and Stove Shed. Mr. T. O. Paterson, Engineer, Gasworks, Thomas Street, Birkenhead.

BLACKBURN.—For Building Twenty Dwelling-houses. Mr. J. W. Bullock, Architect, 9 New Market Street, Blackburn.

BOLTON.—Oct. 26.—For Additional Arch under Lever Street. The Engineer, Hunt's Bank, Manchester.

BRADFORD.—Oct. 22.—For Building Meeting-room. Messrs. W. C. Atkinson & Son, Architects, 40 Marlborough Road, Bradford.

BURNHAM.—Oct. 25.—For Construction of Waterworks, including Water Tower and Pumping Station, Underground Reservoir, Wrought-iron Tank, Girders, Mains, Valves, &c. Mr. A. Stewart, C.E., Burnham, Essex.

BURNLEY.—Oct. 26.—For Building Stables. Plans at the Engineer's Office, Hunt's Bank, Manchester.

BURNLEY.—Oct. 30.—For Building Livingstone Mill. Mr. S. Keighley, Architect, Nicholas Street, Burnley.

BURTON-ON-TRENT.—Oct. 26.—For Building Homestead on Sewage Farm, Eggington. Mr. Richard Waite, Architect, Duffield, Derby.

CHATTAFIN, EXBOURNE.—Oct. 30.—For Erection of Bullock-sheds. Plans at the Office of Messrs. Packham, Croote & Stewart, Exeter.

DUBLIN.—For Building House, Lord Edward Street. Mr. J. L. Robinson, Architect, 198 Great Brunswick Street, Dublin.

DUBLIN.—Oct. 26.—For Refacing, &c., Façade of Municipal Buildings. Mr. D. J. Freeman, City Architect, Dublin.

GLEASTON.—Nov. 2.—For Building Congregational Church School. Mr. J. Johnson, Verandah Buildings, Dalton-in-Furness.

GOOLE.—Oct. 25.—For Enlarging Board Schools, Alexandra Street, for 510 Children. Mr. William Watson, Architect, Barstow Square, Wakefield.

GORLESTON.—Oct. 22.—For Building Stables for Railway Company. Mr. H. Dudley Arnott, Architect, High Street, Gorleston.

GRANGE-OVER-SANDS.—Oct. 22.—For Alterations and Additions to National Schools. Mr. J. Bentley, Architect, 7 Lowther Street, Kendal.

GREASBRO'.—Oct. 25.—For Constructing Small Filter Tank, Making Drainage Connections to Cottages, &c. Messrs. Brundell, Simmons & Brundell, C.E., Princess Street, Doncaster.

HULL.—Oct. 25.—For Construction of Swing Bridge across the River Hull, with Quay Walls, Approaches, &c. Mr. A. E. White, Borough Engineer, Town Hall, Hull.

KIDDERMINSTER.—Nov. 3.—For Rebuilding Pike Mills. Mr. J. T. Meredith, Architect, Bank Buildings, Kidderminster.

KING'S CROSS, HALIFAX.—Oct. 29.—For Building Ten Dwelling-houses, Queen's Road. Messrs. Abbey & Hanson, Architects, 20 Ramsden Street, Huddersfield.

KIRKHAM.—Oct. 27.—For Building Railway Station. Engineer's Office, Hunt's Bank, Manchester.

LONDON.—Oct. 27.—For Board Schools, Playgrounds, &c., Surrey Side. The Architect's Department, Victoria Embankment, W.C.

NEWCASTLE-ON-TYNE.—For Altering Chapel at St. Peter's May into Church Institute (Reading Rooms, &c.). Mr. Arthur B. Plummer, A.R.I.B.A., Architect, 46 Cloth Market, Newcastle-on-Tyne.

OLDHAM.—Oct. 27.—For Building Fire Brigade Station, Weights and Measures Office, Stables, &c. Messrs. Potts, Pickup & Dixon, Architects, Clegg Street, Oldham.

OLDHAM.—Oct. 27.—For Building Sixteen Cottages. Messrs. Potts, Pickup & Dixon, Architects, Clegg Street, Oldham.

PENZANCE.—Oct. 22.—For Building Art Museum and Alterations to School of Art. Mr. H. White, Architect, 1 Parade Passage, Penzance.

SKELMANTHORPE.—Oct. 28.—For Laying Out Cemetery, Building Chapel, Lodge, Boundary Walls, Entrance Gateways, &c. Messrs. J. Kirk & Sons, Architects, Huddersfield.

STOCKTON-ON-TEES.—Oct. 30.—For Removal of Stone Bridge over the Tees. Mr. M. B. Dodds, Clerk to the Local Board, Stockton-on-Tees.

TENDERS.

BRIGHTON.

For Sanitary Alterations, Improvements, and Additions to No. 61 Montpelier Road, for the Rev. A. D. Wagner. Mr. CHARLES E. GRITTON, M.S.A., Surveyor, Brighton, London, and Sidcup.

GEORGE ROSE, Sussex Terrace, Brighton (*accepted*).

BUDLEIGH SALTERTON.

For Greenhouse at 9 Cliff Terrace, Budleigh Salterton, Devon, for Mr. W. Pidsley. Messrs. WILKINSON & WARREN, Architects and Surveyors, Post Office Chambers, Exeter.

W. B. LAWRENCE, Broad Clyst (*accepted*).

For New Shop, Dwelling-house, and Premises at Fore Street, Budleigh Salterton, for Mr. J. Walters. Messrs. WILKINSON & WARREN, Architects and Surveyors, Post Office Chambers, Exeter.

J. G. STEPHENS, Exeter (*accepted*).

CROOK.

For Slaughter-house for the Crook Co-operative Society.

J. Hare, Crook	£325 0 0
T. Walton, Crook	310 0 0
T. Hilton, jun., Crook	298 0 0
G. LISTER & SON, Crook (*accepted*)	297 5 0

CHESTERFIELD.

For Erection of Stable, Coach-house, &c., at Fairfield Road, Chesterfield, for Mr. A. Payton. Mr. GEO. ROPER, Architect, Chesterfield. Quantities supplied.

S. Stones, Staveley	£159 0 0
C. ROLLINSON, Chesterfield (*accepted*)	149 0 0

EDINBURGH.

For Building Offices for the Edinburgh School Board.

W. & D. Macgregor, mason	£5,500 0 0
John Walker, joiner	2,100 0 0
P. F. Cavanagh, plasterer	537 0 0
D. Purves & Co., plumber	359 19 0
Alexander Mather & Son, ironfounder	252 0 0
T. Lamb & Sons, slater	77 19 0

EXETER.

For New Class-room at 34 East Southernhay, Exeter, for Mr. H. J. Tucker. Messrs. WILKINSON & WARREN, Architects and Surveyors, Post Office Chamber, Exeter.

H. PHILLIPS, Exeter (*accepted*).

EXETER—*continued.*

For Alterations to Boiler-house, and sundry Repairs, &c., to Boiler at the City Workhouse. Messrs. WILKINSON & WARREN, Architects and Surveyors to the Corporation of Guardians, Post Office Chambers, Exeter.

MERRIFIELD, Exeter (*accepted conditionally.*)

For Sundry Repairs and Alterations to No. 24 Gandy Street, Exeter, for Messrs. Thompson & Co., Auctioneers and Estate Agents. Messrs. WILKINSON & WARREN, Architects and Surveyors, Post Office Chambers, Exeter.

G. DIGGINES, Exeter (*accepted*).

HUCKNALL TORKARD.

For Drainage Work to Cemetery, Hucknall Torkard, Notts, for the Hucknall Torkard Burial Board. Mr. A. H. GOODALL, Architect & Surveyor, Nottingham.

Thos. Smart, Nottingham	£1,319 10 0
Dore, Gelsthorpe & Holmes, Hucknall	713 12
Wm. Cordon, Burton Joyce	710 0 0
Thos. Simmonds, Skegness	538 0 0
John Lane, Skegby	490 0 0
Stainforth Bros., Hucknall	450 0 0
JOHN HAWLEY, Ilkeston (*accepted*)	426 0 0

LEEDS.

For Alterations to General Assurance Buildings, East Parade, Leeds, for the Sun Fire and Life Offices. Mr. T. BUTLER WILSON, Architect, Leeds and Harrogate.

BANKS MAWSON (*accepted*).

LEAMINGTON.

For Repairs and Alterations at Mineral-water Bathing Establishment at the Pump-room, for the Leamington Corporation. Mr. W. DE NORMANVILLE, Borough Engineer, Town Hall.

J. & F. May, Holborn, London	£1,357 0 0
Smeaton & Co., London	1,298 16 6
Hassall & Singleton, Birmingham	1,083 0 0
JENKINS, Leamington Spa (*accepted*)	948 12 8

Boiler, Drying Closet, &c., Laundry Appliances, Heating and Water Pipes, Bath Fittings, &c.

T. H. Jones, Leamington Spa	779 0 0
T. Bailey, Leamington Spa	715 0 0
G. F. Smith, Milverton, Leamington Spa	695 0 0
JENKINS BROS., Leamington Spa (*accepted*)	607 10 3

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

IPSWICH.

For Gardener's Cottage, Henley Road, Ipswich. Mr. Frank Brown, Architect, 9 Thoroughfare, Ipswich.

R. Girling	£242 0 0
T. Turner	225 0 0
F. Bennett	222 10 0
W. Grayston (*accepted*)	197 10 0

LIVERPOOL.

For Completion of Cedar Grove, for the Toxteth Park Local Board. (Contract No. 14.) Quantities by the Engineer, Mr. John Price, Assoc.M.Inst.C.E.

Anderton & Co., Liverpool	£292 0 0
Wm. Hayes, Bolton	282 5 9
Walkden & Co., Bootle	251 13 1
L. Marr, Toxteth Park	248 5 4
J. Evans, Parkgate	242 5 7
R. Lomax, Toxteth Park	240 6 0
Catterall & Co., Liverpool	234 16 1
Ireland & Hurley, Liverpool	227 13 8
McCabe & Co.. Kirkdale	214 6 2
S. E. Frayne, Kidderminster	206 9 7
W. F. Inglis, Liverpool	199 0 1
A. W. Peen, Seacombe (*accepted*)	179 15 4
Engineer's estimate	230 0 0

For Completion of Orange Grove, for the Toxteth Park Local Board. (Contract No. 16.) Quantities by the Engineer, Mr. John Price, Assoc.M.Inst.C.E.

W. Hayes, Bolton	£225 1 6
S. E. Frayne, Kidderminster	193 5 3
Anderton & Co., Liverpool	182 12 0
McCabe & Co., Kirkdale	174 0 0
Walkden & Co., Bootle	166 16 4
Catterall & Co., Liverpool	158 9 2
J. Evans, Parkgate	154 9 5
J. Garnett, Toxteth Park	151 10 4
L. Marr, Toxteth Park	148 14 2
W. F. Inglis, Liverpool	144 14 0
Ireland & Hurley, Liverpool	142 7 5
R. Lomax, Toxteth Park	128 16 0
A. W. Peen, Seacombe (*accepted*)	122 5 4
Engineer's estimate	150 0 0

LIVERPOOL—*continued.*

For Completion of Aspen Grove, for the Toxteth Park Local Board. (Contract No. 15.) Quantities by the Engineer, Mr. John Price, Assoc.M.Inst.C.E.

Anderton & Co., Liverpool	£325 15 9
Wm. Hayes, Bolton	316 7 3
Walkden & Co., Bootle	280 9 1
L. Marr, Toxteth Park	274 4 4
J. Evans, Parkgate	272 3 0
Catterall & Co., Liverpool	263 11 7
Ireland & Hurley, Liverpool	262 7 6
R. Lomax, Toxteth Park	260 6 4
McCabe & Co., Kirkdale	249 18 1
W. F. Inglis, Liverpool	225 14 10
S. E. Frayne, Kidderminster	217 19 11
A. W. Peen, Seacombe (*accepted*)	202 5 6

For Completion of Sandringham Drive, for the Toxteth Park Local Board. (Contract No. 18.) Quantities by the Engineer, Mr. John Price, Assoc.M.Inst.C.E.

W. Hayes, Bolton	£1,101 8 6
S. E. Frayne, Kidderminster	985 4 11
McCabe & Co., Kirkdale	916 0 0
Anderton & Co., Liverpool	904 0 0
J. Garnett, Liverpool	821 3 8
J. Evans, Parkgate	815 7 11
Catterall & Co., Liverpool	791 10 11
Walkden & Co., Liverpool	785 10 8
L. Marr, Toxteth Park	749 4 1
R. Lomax, Toxteth Park (*accepted*)	711 8 7
W. F. Inglis, Liverpool	687 5 10
A. W. Peen, Seacombe (several errors)	623 14 2

For Completion of Ivanhoe Road, for the Toxteth Park Local Board. (Contract No. 17.) Quantities by the Engineer, Mr. John Price, Assoc.M.Inst.C.E.

William Hayes, Bolton	£492 0 0
S. E. Frayne, Kidderminster	460 7 7
Anderton & Co., Liverpool	412 0 0
Catterall & Co., Liverpool	403 5 6
Walkden & Co., Bootle	392 15 0
J. Evans, Parkgate	391 0 0
J. Garnett, Toxteth Park	390 11 0
McCabe & Co., Kirkdale	363 9 4
L. Marr, Toxteth Park.	346 12 1
R. Lomax, Toxteth Park (*accepted*)	328 12 10
O. W. Peen, Seacombe	307 10 9

ELECTRIC LIGHTING!

The Thomson-Houston System of Arc Lighting, } GOLD MEDALS AWARDED Both Systems
The Edison-Swan System of Incandescent Lighting, } AT THE INTERNATIONAL INVENTIONS EXHIBITION, 1885.

ESTIMATES FREE ON APPLICATION TO

LAING, WHARTON & DOWN,

8 & 9 HOLBORN VIADUCT, and 110 & 111 SAFFRON HILL, LONDON, ENGLAND.

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.
Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid.
Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.

LIVERPOOL—*continued.*

For Completion of Buckland Street, for the Toxteth Park Local Board. (Contract No. 19.) Quantities by the Engineer, Mr. JOHN PRICE, Assoc.M.Inst.C.E.

William Hayes, Bolton	£685 18 6
S. E. Frayne, Kidderminster	590 3 1
McCabe & Co., Kirkdale	510 0 0
Anderton & Co., Liverpool	498 19 3
Walkden & Co., Bootle	480 0 3
J. Evans, Parkgate	453 17 3
J. Garnett, Toxteth Park	449 7 0
Catterall & Co., Liverpool	435 19 9
A. W. Peen, Seacombe	416 15 6
R. Lomax, Toxteth Park	413 9 9
L. MARR, Toxteth Park (*accepted*)	404 11 2
W. F. Inglis, Liverpool	389 13 0
Engineer's estimate	430 0 0

For Completion of Lime Grove, for the Toxteth Park Local Board. (Contract No. 13.) Quantities by the Engineer, Mr. JOHN PRICE, Assoc.M.Inst.C.E.

Anderton & Co., Edgehill, Liverpool	£294 0 0
W. Hayes, Bolton	285 16 9
Walkden & Co., Bootle	253 14 3
L. Marr, Toxteth Park	251 7 1
J. Evans, Parkgate	244 0 5
Catterall & Co., Liverpool	234 6 11
Ireland & Hurley, Liverpool	228 6 9
McCabe & Co., Kirkdale	213 0 0
R. Lomax, Toxteth Park	212 0 0
S. E. Frayne, Churchill, Kidderminster	209 8 4
W. F. INGLIS, Liverpool (*accepted*)	201 9 1
A. W. Peen, Seacombe *	154 13 10
Engineer's estimate	235 0 0

* Errors in this tender.

LOCKERLEY.

For Additions and Alterations to the Rectory House, Lockerley, near Romsey. Messrs. JOHN HARDING & SON, Architects, 51 Canal, Salisbury.

A. J. S. Curtis, Salisbury	£452 10 0
E. Hale, Salisbury	445 0 0
Jerrard & Stevens, Salisbury	445 0 0
C. Mitchell, Woodfalls, Salisbury	436 0 0
F. DIBBEN, Salisbury (*accepted*)	430 0 0
S. Collins, Awbridge, Romsey	328 0 0

LITTLEHAMPTON.

For Construction of Outfall, Littlehampton.

A. Burrell	£141 0 0
J. A. Snewin	135 0 0
J. LINFIELD (*accepted*)	122 4 0

LONDON.

For Erection and Completion of the London Central Fish Market, for the Corporation of the City of London. Sir HORACE JONES, Architect. Quantities by Messrs. William Beddall & Son.

Cook & Co., Battersea, S.W.	£32,634 0 0
Webster, Goldhawk Road, W.	29,900 0 0
Boyce, Hackney	28,990 0 0
Nixon, Southgate Road	28,790 0 0
Bywaters, Golden Square	28,620 0 0
Hall, Beddall & Co., Lambeth	28,330 0 0
Holliday & Greenwood, Loughborough Junction	28,300 0 0
Conder, Kingsland Road	28,160 0 0
Morter, Forest Lane, E.	28,000 0 0
Colls & Sons, Moorgate Street, E.C.	27,960 0 0
Perry & Co., Bow,	27,868 0 0
Holland & Hannen, Duke Street, W.C.	26,933 0 0
Chappell & Co., Lupus Street	26,822 0 0
Mowlem & Co., Grosvenor Road, S.W.	26,698 0 0
Hart, South Lambeth	26,210 0 0
Nightingale, Albert Embankment	25,946 0 0
Killby & Gayford, Worship Street	25,830 0 0
Gentry, Wormwood Street, E.C.	24,875 0 0

For Construction of Sewers and Alterations to Existing Sewers, Holborn. Mr. LEWIS H. ISAACS, Surveyor.

Marshall, Brighton	£2,000 0 0
Mowlem & Co.	1,980 0 0
Harris	1,750 0 0
Neave	1,695 0 0
Wilson	1,640 0 0
KILLINGBACK, Camden Town (*accepted*)	1,593 0 0

For Building Infirmary for the Turnham Green Union.

J. F. COLLINSON, Teddington (*accepted*)	£5,193 0 0

For Alterations and Fixing Lights in C Block of Infirmary, Baker's Row, Whitechapel Union. Mr. W. A. LONGMORE, Architect, Great Alie Street, E.

JOHN GILBEY, 222 Whitechapel Road (*accepted*)	£79 2 6

Engravings on Wood, Lithographs, &c.,
At Prices lower than those charged elsewhere.
TO INVENTORS CAN BE OFFERED ADVANTAGES OF COMPETENT ASSISTANCE IN WORKING OUT THEIR IDEAS PRACTICALLY, INCLUDING MODEL MAKING
All work executed promptly and in strict confidence.
L. GEORGE & CO.,
Mansion House Chambers, 11 Queen Victoria St., E.C.
Also solicit the command of CIVIL and MECHANICAL ENGINEERS, ARCHITECTS, PATENTEES, &c., for the preparation of
DRAWINGS AND TRACINGS.
Special attention given to Printing of TRADE CIRCULARS, PRICE LISTS, CARDS, ETC. ESTIMATES FREE.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

FIREPROOF FIXING BLOCKS
FOR WALLS AND FLOORS
(Wright's Patent). Wood Joint Pieces, Plugs, Fixing Fillets, Grounds, &c., successfully superseded without extra cost. Extensively used by Leading Architects and Contractors for several years past; H.M. War Department, &c.
NOTE.—These Fixings take and RETAIN nails equal to wood They never burn, decay, shrink, or become loose, and will carry any weight that can be put upon them in a building.
Colonel W. J. STUART, Commanding Royal Engineers, Chatham, writes:—"The frames are most strongly fixed, and the blocks did not split with the 5½ in. screws that were used."
Write for new catalogue, containing full particulars and references post free.
"Highly Commended" at the Firemen's Exhibition, May 1886.
WRIGHT & CO. { No. 3 Westminster Chambers, Victoria Street, London, S.W.
Manufactories:—Gosport, Hants, and at Carnforth, Lancs.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c.?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
☞ **MICA,** Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.
Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

VOLUME XXXV. OF THE ARCHITECT,
Handsomely Bound in Cloth, Gilt Lettered, price 12s. 6d.
Office: 175 Strand, London, W.C.

GRUNDY'S PATENT
WARM-AIR
VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"To Mr. John Grundy." "R. S. LANDER, F.R.I.B.A.
From James Garry, Esq., Architect, West Hartlepool, July 1884.
"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

LONDON—*continued.*

For Alterations, Additions, and Repairs to 290, 292, and 294 Kingsland Road, and Erection of Four Houses in rear of same, for Mr. J. A. Manger. Mr. J. C. BOYS, Architect. Mr. W. E. Matthews, Surveyor.

Conder	£4,623 0 0
Larter	4,310 0 0
Toms	4,063 0 0
Pocock	3,450 0 0

For Construction of Concrete River Wall, Dumb Dock, Flushing Chamber, &c., at Lombard Road Wharf, Battersea.

Howard	£2,173 0 0
Marshall	1,560 0 0
G. Neal	1,494 0 0
Batchellor	1,460 0 0
King	1,450 0 0
Richens & Mount	1,449 0 0
H. K. Trehearne & Co.	1,440 0 0
B. Cooke & Co.	1,380 0 0
Torkington	1,160 0 0
Dickenson	1,100 0 0
Cunliffe	870 0 0
Surveyor's estimate	1,450 0 0

For Works to Carriage-way on Portion of Southwark Bridge Road.

JACOB BRIGGS, Birmingham (*accepted*)	£3,180 13 0

For Enlargement of Board School for Infants and new Lavatories, Wolverley Street. Mr. T. J. BAILEY, Architect.

H. M. Miller	£982 0 0
J. Jarvis & Son	873 0 0
J. F. Sargeant	840 0 0
H. L. Holloway	828 0 0
Atherton & Latta	795 0 0
S. J. Jerrard	792 0 0
C. Cox	777 0 0
J. R. Earsdon	773 11 4
Godfrey & Son	755 0 0
J. Hollond	740 0 0
W. Johnson	680 0 0
Norris & Luke	644 0 0

For Wrought-iron Plate and Standard, Risinghill Street School.

Hart, Son, Peard & Co.	£9 15 0
R. H. & J. Pearson	7 18 6
Newton & Co.	5 0 0

LONDON—*continued.*

For Enlargement of present Infants' School and a new Junior Mixed School, Regent Street Board School, Deptford. Mr. T. J. BAILEY, Architect.

T. L. Green	£6,160 0 0
F. Johnson	6,030 0 0
Wall Bros.	5,944 0 0
C. Wall	5,930 0 0
Atherton & Latta	5,900 0 0
Stimpson & Co.	5,880 0 0
S. J. Jerrard	5,668 0 0
H. L. Holloway	5,577 0 0
W. Johnson	5,550 0 0

MAIDSTONE.

For Altering Hospital at Workhouse, Coxheath, for the Maidstone Board of Guardians.

Henry Munn, Maidstone	£145 0 0
Thos. Barden, Maidstone	143 0 0
E. Wilkins, Maidstone	139 0 0
WOOD & SONS, Boughton Monchelsea (*accepted*)	135 0 0

MOUNTAIN ASH.

For Sewer Ventilating Shafts (Twenty-seven), Mountain Ash. Mr. S. O. HARPUR, Surveyor, Mountain Ash.

J. John, Mountain Ash	£64 16 0
T. Davies, Penrhicweiber	60 14 6
M. Edmunds, Mountain Ash	54 13 6
T. MORRIS, Mountain Ash (*accepted*)	51 12 9

NORTH SHIELDS.

For Building Market, North Shields, for the Tynemouth Corporation. Mr. C. T. GOMOSZYNSKI, Borough Engineer, North Shields.

Exclusive of Glazing.

Charles Jackson, Newcastle	£2,814 19 4
J. & W. Simpson, North Shields	2,781 16 8
T. Forrest, North Shields	2,584 7 5
Broomhead & Keswick, Newcastle	2,584 0 0
J. Hutchinson, Tynemouth	2,494 14 6
Reay and Leighton, North Shields	2,403 17 0
Johnson & Son, North Shields	2,288 1 7
Shotton Bros., North Shields	2,239 10 10
F. MACKAY, South Shields (*accepted*)	2,082 12 5

The Corporation have decided to defer the consideration of the Tenders for Glazing.

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE FOR WINTER USE.
CORSHAM DOWN, FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., Limited,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.

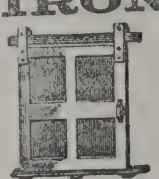
SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).


Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET, HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.

WRITE FOR WINSTONE'S BUILDERS' IRONMONGERY CATALOGUE 1000 ILLUSTRATIONS POST FREE
39 CHISWELL ST. LONDON, E.C.

I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:— NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

HENRY KING
(Late GREEN & KING).
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.

NEW BROMPTON.

For Building Bible Christian Chapel, New Brompton, Kent. Messrs. MARGETTS & SON, Architects, Chatham. Quantities by the Architects.

Nye Bros., Rochester	£2,167	0	0
Naylar & Son, Rochester	2,090	0	0
Alloway, Chatham	2,050	10	0
G. Kenion, Chatham (*accepted*)	1,985	0	0
Architect's estimate	2,177	0	0

NOTTINGHAM.

For Alterations to House, Gregory Boulevard, Nottingham. Mr. A. H. GOODALL, Architect, Nottingham.

Baynes & Dawson, Nottingham	£164	0	0
Thomas Cuthbert, Nottingham	147	0	0
R. FISHER, Nottingham (*accepted*)	139	0	0

For Building House, Shop, Stables, &c., Birkin Avenue, Nottingham. Mr. A. H. GOODALL, Architect, Nottingham.

H. Vickers, Nottingham	£590	0	0
T. Illingworth, Nottingham	580	0	0
Henry Scott, Nottingham	580	0	0
Taylor & Knight, Nottingham	575	6	0
Ireson, Wade & Gray, Nottingham	575	0	0
James Lee, Nottingham	560	15	1
W. Savage, Nottingham	550	0	0
A. B. Clarke, Nottingham	547	0	0
James J. Adams, Nottingham	547	0	0
Thomas Cuthbert, Nottingham	539	0	0
John Cooper, Nottingham	526	0	0
J. W. Priestley, Nottingham	517	0	0
G. Brownsell, Nottingham	514	0	0
Joseph Rolley, Nottingham	509	6	9
Evans & Woodcock, Nottingham	495	0	0
Baynes & Dawson, Nottingham	491	0	0
S. Ingham & Sons, Nottingham	473	0	0
T. H. Attewell, Nottingham	462	11	0
Gilbert & Gabbitass, Nottingham	459	0	0
Luke Scattergood, Nottingham	455	0	0
ARTHUR PRIESTLEY, Radford (*accepted*)	438	0	0

PETERHEAD.

For Building Convict Prison, Peterhead.
D. MACANDREW & Co., Aberdeen (*accepted*).
Cost between £30,000 and £40,000.

PAISLEY.

For Building Board School, Camphill, Paisley. Mr. DAVISON, Architect, Terrace Buildings, Paisley.

Accepted Tenders.

Joiner Work (17 *offers*).

R. & A. Girdwood, Paisley	£4,374	7	7

General Iron Work, such as Beams, &c. (9 *offers*).

W. Christie, Paisley	1,738	11	3

Plumber Work (10 *offers*).

Wallace & Connel, Paisley	604	18	2

Glazing (7 *offers*).

W. Meikle & Sons, Glasgow	510	0	0

Stair Railing (3 *offers*).

W. King & Sons, Glasgow	385	18	3

Tiling (4 *offers*).

Galbraith & Winton, Glasgow	340	0	0

Concrete Work (6 *offers*).

T. Kilpatrick, Paisley	290	13	6

Heating (5 *offers*).

G. Robertson, Paisley	282	12	4

Gasfitting (9 *offers*).

G. Robertson, Paisley	246	3	10

Slater Work (5 *offers*).

J. Gillespie, Paisley	150	18	8

Outer Railings and Iron Gates (7 *offers*).

T. Murdoch & Co., Glasgow	134	11	2

Carving Work.

W. Robin, Paisley	98	17	6

Plaster Work to be considered.

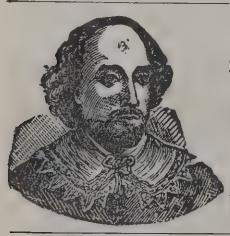
RAMSGATE.

For Erection of Six Dwelling-houses at Southwood, Ramsgate, for Mr. C. Buckley. Mr. E. L. ELGAR, Architect and Surveyor, Ramsgate, St. Peters, and Broadstairs.

F. Pilcher & Co., Fardwich	£1,830	0	0
G. M. Dawson, Broadstairs	1,144	0	0
H. Miller, Ramsgate	1,060	0	0
T. Elgar, Ramsgate	960	0	0
Chas. Collins, Ramsgate	950	0	0
J. Newby, Ramsgate	936	0	0
J. Olive, St. Peters	888	0	0
Newby Bros., Ramsgate	858	0	0
H. Bowman, Ramsgate	840	0	0
W. W. Martin, Beechwood, Dane Park	780	0	0

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



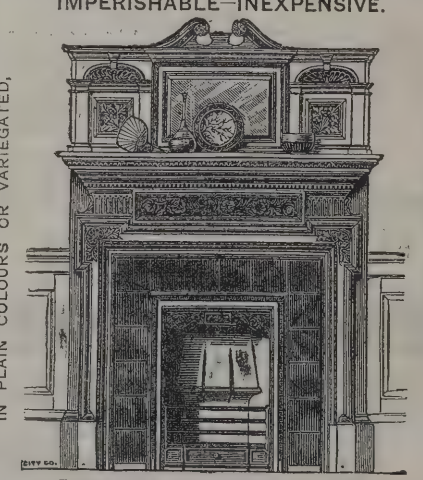
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.



IN PLAIN COLOURS OR VARIEGATED, AND MADE IN VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO,
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

RISCA.

For Alterations and Additions to the Risca Town Schools for the Risca School Board. Mr. GEO. ROSSER, Architect, Newport, Mon. Quantities by the Architect.

CHAS. F. MORGAN, Newbridge, Mon. (*accepted*)	£255 10 0

For the Erection of Ten Cottages at Risca, Mon. Mr. GEO. ROSSER, Architect, Newport, Mon.

THOS. NISBECK, Risca (*accepted*)	£1,170 0 0

SCARBOROUGH.

For Construction of Sea Wall and Promenade (1,200 yards in length) on the North Sands, Scarborough. Mr. WHATELY ELLIOT, Engineer, Town Hall, Scarborough.

J. Jackson, Westminster	£35,179 2 3
J. Lane, South Shields	32,247 0 0
C. Baker & Sons, Bradford	31,036 0 10
G. Foggitt, Yeadon	29,800 0 0
G. Marshall, Darlington	27,457 4 2
G. B. Godfrey, Westminster	26,508 8 0
W. Gradwell's Exors., Barrow-in-Furness	26,355 11 9
J. Kyle, Barnard Castle	26,336 0 0
T. A. Matthews, Hartlepool	25,326 2 6
G. Lawson, Glasgow	24,827 2 8
J. Keswick, York	24,080 0 0
R. H. & H. Hodgson, Workington	23,912 15 5
Naylor Bros., Huddersfield	23,608 13 9
T. B. Mather, Hull	23,380 0 0
J. Dickson, St. Albans	22,132 0 0
Foster & Barry, Radcliffe-on-Trent	22,026 0 0
Scott Bros., Masborough	21,729 0 0
Parker & Sharp, Batley	21,702 14 7
Whitaker Bros., Horsforth, Leeds	21,655 14 9
J. Jaram, Scarborough	21,346 16 0
J. Waddell & Sons, Edinburgh	20,465 16 9
Ross & Liddelow, Carlisle	20,400 0 0
W. C. Atkinson, Stockton-on-Tees	19,384 4 4
Petch & Fox, Scarborough	18,895 9 9
A. F. James, Cleethorpes	18,728 0 0
Kirk Bros., Battersea	18,700 0 0
Geen & Parker, Cardiff	18,198 11 11
Read Bros., Burnley	17,340 15 0
W. C. MALTON, Scarborough (*accepted*)	17,160 0 0
Pickthall & Son, Merthyr Tydvil	17,078 13 11
Engineer's estimate	23,992 1 2

TOBERCURRY.

For Building Medical Officer's Residence, Tobercurry Union.

Courtney	£895 0 0
D. M. Lynn, Sligo	785 0 0

WHITBY.

For Alterations, No. 13 Skinner Street. Mr. R. LENNARD, Architect, 5 North Terrace, Whitby.

J. Russell	£494 0 0
J. Gladstone	450 0 0
T. W. Clarkson	447 0 0
J. Brain	419 0 0
J. White	394 16 6

WILLINGTON QUAY.

For Building Infant School, Willington Quay, for the Wallsend School Board. Mr. WILLIAM HOPE, Architect, North Shields.

Bolton, North Shields	£2,121 0 0
Fishburn Bros., North Shields	2,114 10 0
Broomhead & Keswick, Newcastle	2,091 0 0
Kennedy, Jarrow	2,061 0 0
Shotton Bros., North Shields	2,052 16 5
Mackay, South Shields	2,026 0 0
Millar, Heaton	2,026 0 0
A. Smith, Willington Quay	2,025 3 0
Tyrie & Graham, Gateshead	2,013 16 5
J. Robson, North Shields	1,994 0 0
J. Elliot, North Shields	1,985 0 0
Weir & Williams, Howdon	1,952 17 0
Fortune, Sunderland	1,926 7 0
Hutchinson, Gateshead	1,910 2 6
Simpson, North Shields	1,895 15 0
W. Leighton, North Shields	1,882 17 5
Stephens, Willington Quay	1,845 19 5
Allison, Whitburn	1,812 4 0
TURNER & GREEN, Wallsend (*accepted*)	1,787 14 3
A. Pringle, Gateshead	1,774 10 0
Blackett, Bishop Auckland	1,730 0 0
Forrest, North Shields	1,724 4 4
Johnson & Son, North Shields	1,670 18 3

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co's
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST,
BENTLEY PRIORY, ROYAL, LANGHAM,
GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S,
BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

WIMBLEDON.

For Bookcases at Wimbledon Free Library. Messrs. POTTS, SULMAN & HEMMINGS, Architects, 11 Furnival's Inn.

Sage & Co., Gray's Inn Road	£258 0 0
Clegg, Camden Town	251 0 0
N.E. School Furnishing Co.	228 16 0
Shoolbred & Co., Tottenham Court Road	220 0 0
Dyster & Clunn, London	212 6 2
Smith & Son, Norwood	193 0 0
Mower, Hackney	189 0 0
Walker & Son, London	188 19 0
Baldchin & Shopland, Sutton	188 0 0
Johnson, Wimbledon	180 0 0
Bright & Co., London	170 0 0
Lascelles & Co., Bunhill Row	163 0 0

YARMOUTH.

For Building High and Low Lighthouse (Lights and Foundations exclusive) at the Harbour, Yarmouth.

	High Light.	Low Light.
Bly & Sill	£927 0 0	244 0 0
BRAY*	694 0 0	139 0 0
Leggett	537 10 0	235 10 0

* Accepted for Low Lighthouse.

TRADE NOTES.

THE bells used at the Leeds Triennial Musical Festival, which have received so much praise from Sir A. Sullivan and others, were produced at the foundry of Messrs. Warner & Son, of London.

WE are informed that a gold medal has been awarded at the Liverpool Exhibition to Messrs. M. C. Duffy & Son, of Storks Road, Bermondsey, S.E., for their patent Immovable Acme Wood-Block Flooring.

MR. JOHN GRUNDY, of Duncan Terrace, Islington, has just received a commission to heat Truro and Derry cathedrals.

MESSRS. T. LAWRENCE & SON, of Bracknell, supplied the bricks for the Roman Catholic Church, High Road, Chiswick, which, from their colour and quality, impart distinction to the building.

THE Mayor of Sheffield opened a Mechanical and General Trades Exhibition, on Tuesday, the object of which is to stimulate local industries by bringing together in an attractive way the various productions of the district.

OFFERS will be selected at the meeting of the Commission of Supply next week, at Inverary, for the erection of a Court House in Oban. Mr. D. C. Macintosh, of Oban, is the architect.

A NEW annual, to be called the "Architect and Contractor's Compendium," will be issued early in January next by Messrs. Sears & Sons. The prospectus states:—"Its design is to combine in a convenient form legal and general information, tables, and memoranda of every kind, relating to the theory and practice of architecture." It is likely to be a very useful work to architects and builders.

A REPORT on the forests of Bosnia, published in the *Moniteur Officiel du Commerce*, calls attention to the facility with which manufacturers of wooden articles may procure magnificent timber from this new province of Austria at a very small expense. The difficulties of transport, though still considerable, are decreasing year by year, and this expense is already more than counterbalanced by the extreme cheapness of the wood on the spot. Most of the Bosnian forests appear to be owned by the Austrian Government.

THE season is now approaching when damp walls begin to prevail, and consequently it becomes necessary to take preventive measures. An effective remedy is damp wall paint. It is non-poisonous, free from smell, and perfectly harmless, and is guaranteed to dry in a few hours after its application. This wall paint, which is impervious to damp, is of a chocolate colour, and can be papered over, or any lighter colours can be painted over it. The proprietors, Messrs. H. Thompson & Co., of 242 Old Street, London, also manufacture magnetic oxide of iron paint, for preserving iron, wood, stone, brickwork, or, in fact, any substance, for exterior or interior construction and ornamentation.

THE Swedish *Göteborgs Handelstidning*, of September 14, complains of a steady decline in the demand for Swedish iron in the English market. For Swedish cast iron of the finer quality there is no longer any chance in England. It declares that hardwares exported to that country are returned unsold, even though offered at the very lowest prices. The East Indian market is almost as completely closed against Sweden, and such sales as have been made there have been effected at a ruinous loss.

Equitable Fire & Accident Offices

FINANCIAL POSITION.

	Fire Co.	Accident Co.
Capital Subscribed	£263,335 —	£142,175
Capital Paid Up	52,667 —	28,435
Annual Income	88,943 —	21,264
Funds and Investments	98,969 —	36,528

HEAD OFFICE: 11 & 13, ST. ANN ST., MANCHESTER.

BRANCHES:
LONDON - - - 69, Lombard Street, E.C.
GLASGOW - - - - 101, St. Vincent Street.
BIRMINGHAM - Midland Bdgs., 2, New St.
LIVERPOOL - - - - 11, Tithebarn Street.
NEWCASTLE - 1, St. Nicholas Buildings.
BELFAST - - - - - - - 6, Royal Avenue.
DUBLIN - - - - - - - - 18, Dame Street.

Special Feature.

ONE PREMIUM RETURNED every FIFTH YEAR to those who have made no Claim.

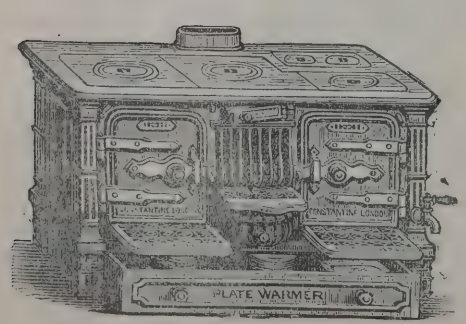
AGENTS APPOINTED.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S

PATENT "TREASURE"

COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

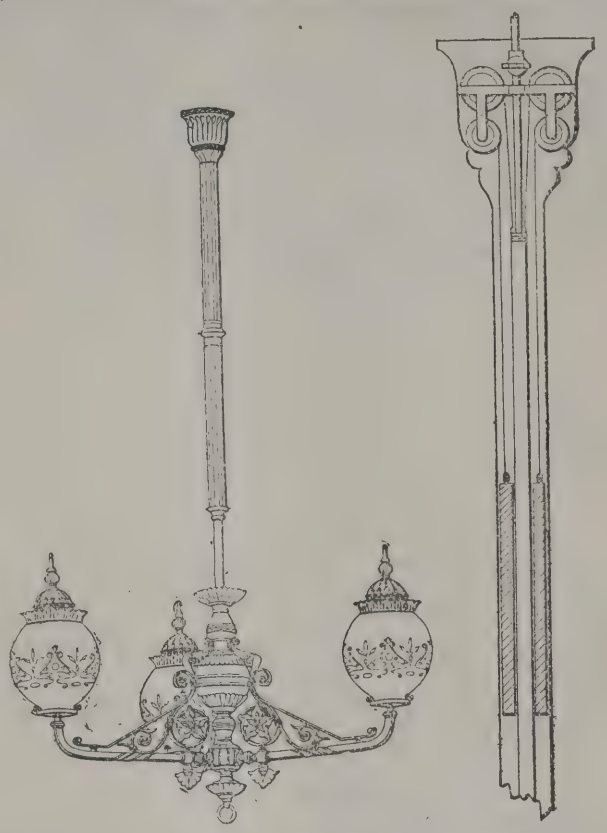
N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

Mr. Thomas writes to us from Exeter :—I am pleased to see that Government and many other large firms are adopting the principle of dividing their contracts to the various branches of the building trade. No doubt it would show a large saving if railway companies were to adopt this system, with their maintenance especially.

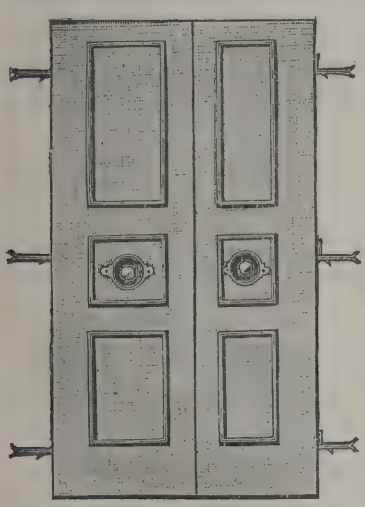
In giving out the contracts for the Birmingham Cable Tramway between Colmore Road and Hockley, a peculiar incident occurred, because the contractors, the Tramway Company, found the price of steel rails of German manufacture was about 500*l.* less per 1,000 tons than those of English manufacture. The Tramway Company, in desiring to forward the wishes of the Public Works Committee to use materials of home production, have arranged terms with the Barrow Hematite Steel Company for supplying the rails. The contract, which has been placed with the Barrow Company, represents the first of the three sections into which the tenders were divided, and comprises the ordinary girder section rails, and the necessary fish-plates. The schedule of prices, as sent in by Messrs. Tangye Brothers, Soho, has been accepted for the supply of the ironwork, comprising over 250 tons of the iron yokes for cable tube, wrought-iron tie-bars, bolts and nuts, washers, angle and tee iron, rolled iron girders, malleable iron pulleys and frames, inspection hatches and frames, side entrance doors and frames, crucible steel points for tramway and slot rails, crossings, &c. The contract for laying the lines is taken by Mr. Jacob Biggs, of Handsworth.

NOTES ON NOVELTIES.

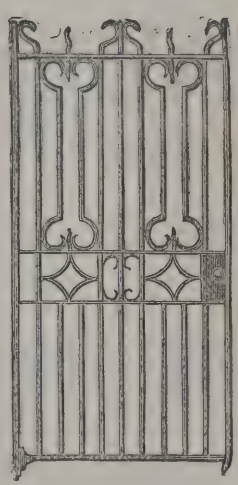
Stanley's Patent Secret-Balance Chandeliers. — This patent is an immense improvement on the clumsy apparatus so long in use for raising and lowering chandeliers. It is distinctly an advantage to be able to dispense with the unsightly and no doubt often dangerous paraphernalia of weights and chains, &c., of the too conspicuous pulley arrangement. In the Stanley patent secret-balance chandeliers, as may be divined from the name, the usual ugly balance-weights are entirely dispensed with, the balance-weight being, in this improvement, a leaden tubular weight which just slides softly over the inner or ordinary hydraulic tube. This tubular weight, and all chains, machinery, &c., connected with it, are covered by an outer tube or casing, which is made of ornamental design to suit the chandelier, or for æsthetic surroundings it may be draped in plush, or other material in any style to fancy. The covering tube prevents all vibration and noise present in movement with weights, and secures the weight and chandelier from accidentally falling ; it also guides the inner tube so as to permit of a



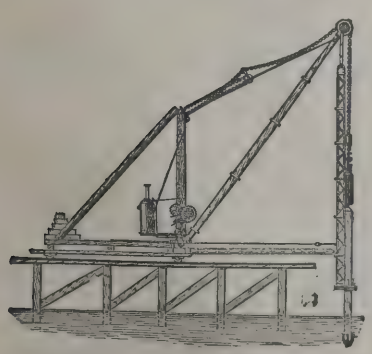
stuffing-box being used, instead of the ordinary hydraulic arrangement (which is a constant source of annoyance), with perfect security against escape of gas. The tubes in this case are rendered non-corrosive by nickel-plating. As loose swing-



WALTER JONES,
MAGNET WHARF, BOW BRIDGE, E.,
MANUFACTURES EVERY DESCRIPTION OF
WROUGHT-IRON FIRE-PROOF DOORS, FLOORS,
GALVANISED SHEETED DOORS,
WROUGHT-IRON GATES, SASH RAILING AND HEAVY FORGINGS.
APPLY FOR PRICES.

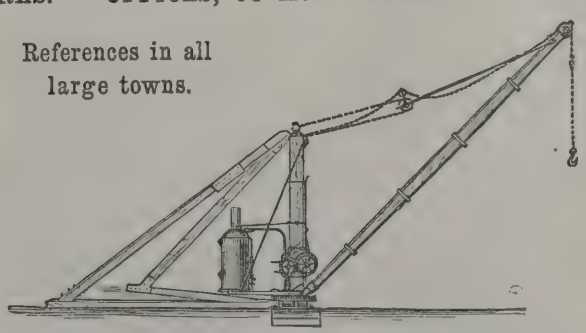


BUTTERS BROTHERS, ENGINEERS, GLASGOW.
PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

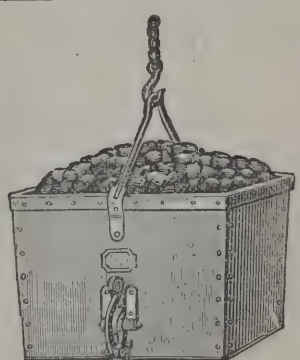


Crane used for Piling.

References in all large towns.



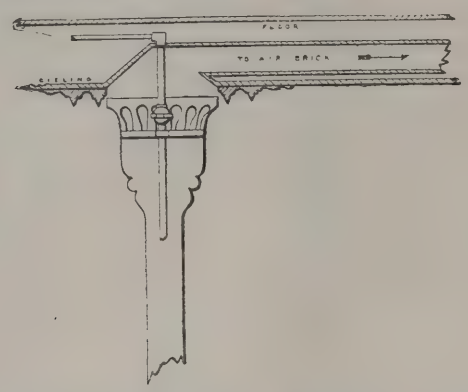
SCOTCH BUILDERS' CRANES.
Large Stocks. Send for List.
FOR SALE HIRE OR HIRE-PURCHASE.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8	10 0
„ ¾ „	.	9	10 0
„ 1 „	.	10	10 0

ing weights and chains, which are always liable to twist, are dispensed with, the stems of these chandeliers may be made of any length for lofty halls and public rooms, and in such cases would permit the chandelier to be pulled down nearly to the floor to light, or dust and clean the globes. The covering of metal-work over the wheels, which is of ornamental design, forms, by openings pierced through it, convenient and elegant means of ventilation. By a patented arrangement these chandeliers can also be perfectly adapted for electric lighting, candles, or oil lamps, and can be fitted to any chandelier in place of the ordinary weights, &c. Among other purposes, the



patent is also admirably suited for billiard lights. The accompanying illustrations will explain themselves. The new style of chandelier is seen slightly lowered. The interior construction is shown in another, and a third shows the arrangement for ventilation. Mr. H. T. Tallack, of 28 Hatton Garden, E.C., is the sole agent for the patent. The chandeliers may be had of any gas engineer, and the patent may be fitted to chandeliers already in use.

SACCHARINE MORTAR.

SOME further correspondence on this subject has appeared. Surgeon-General Cornish says:—In India the practice of mixing "jaggery," or unrefined sugar, with mortar in certain proportions is a very ancient one. In the latter part of the last century, when Hyder Ali's horse threatened the settlement of Madras, the townspeople were called upon to build up a wall to keep the intruders at bay. This wall existed until 1859, when Sir Charles Trevelyan, the then Governor, had it removed with the view of bettering the sanitation of the town, and providing for its extension. But so firmly was the brickwork held together that the greatest difficulty was found in the demolition of the town wall, and the separation of the bricks from the mortar was quite impracticable. In examining some old records about fourteen years ago I came across the original specification of the Government for the composition of the mortar with which the town wall was to be built, and the specification included a certain proportion of "jaggery" to be mixed with the shell lime and river sand. I sent the recipe to the *Madras Mail* newspaper, in which it was published, I think, in 1873. The polished "chunam" walls, for which Madras is famous, are prepared with cement made with unrefined sugar. Mr. Nathaniel Stevenson says:—From personal experience I can confirm the statement that sugar has a wonderfully hardening influence if mixed with lime. I have used about an ounce of brown sugar to a half-pint of the water used in making plaster-of-Paris models. These models are certainly smoother and much harder, and therefore far less liable to damage than others. I find this is of special advantage in working vulcanite, &c.

ENGLISH COMPETITION ABROAD.

THE English Consul-General at Frankfort-on-Main in his last report, says:—

I feel it my duty to bring a fact before the notice of British manufacturers, with which I was just acquainted by a friend of mine, an English resident of this city, well informed of the state of commerce at home. A few years ago an important gas company in this district, after issuing tenders for a telescopic gas-holder 90 feet in diameter and 25 feet in depth, received twelve tenders, of which seven were from English and five from German firms. The prices of these latter firms exceeded by far those of the English competitors, and the gas-holder was ultimately supplied and erected by one of the English firms, whose tender, though they had to pay 350*l.* for duty and freight, was still 440*l.* lower than the cheapest German offer. The importance of such a fact cannot be over-estimated, as it leads to the conclusion that if English manufacturers would but do their utmost to make themselves known in foreign

ASCHERBERG PIANOS,

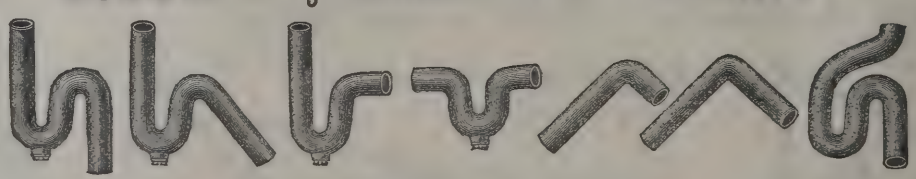
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot:—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works:—15 BRITANNIA STREET, KING'S CROSS, W.C.

countries, either by travellers thoroughly acquainted with the language of the country they visit, or by means of advertisements in the special papers devoted to each industry, they might easily open up new channels to their industries, and successfully struggle against and overcome the depression of trade and commerce.

A WARNING TO BUILDERS.

At the Wandsworth Police Court on Tuesday, Mr. John Miller, a builder, of Clapham, was summoned for using armorial bearings, and keeping a man servant without licenses. Mr. G. F. Bell appeared for the defendant, and said he would plead guilty in the case of the armorial bearings, but not in the other. An excise officer said he saw the defendant driving a trap which had a crest and motto upon it. The defendant told him that he purchased the trap with the crest upon it, and that he employed the man as groom and to work in the garden. Mr. Bennett, a magistrate, observed that it had been held that a man cleaning boots and shoes came within the Act. Mr. Bell said the man was employed as odd man in the buildings. He called the man, who said he was employed to look after the trap and to make up his time in the buildings. Mr. Bennett said the defendant had rendered himself liable to 40*l.*, being 20*l.* for each offence, and until recently there was no power to reduce the penalty. In the case of the man servant he imposed a fine of 3*l.*, with 2*s.* costs, and in the other 20*s.*, with costs.

A NEW PETROLEUM ENGINE.

On Monday afternoon a number of gentlemen visited the works of Messrs. Priestman Brothers, Holderness Foundry, Hull, to attend the trial of a patent engine, the motive power of which is obtained from the use of common petroleum. These engines are made under Messrs. Eteve & Hume's patent and are extremely simple in their internal arrangements. The petroleum is stored in a small tank containing one to two days' supply, as the case may be. A small pressure of air is put into this tank and the petroleum is forced out of it into a vessel in a vaporised condition, in which it is then drawn into the cylinder by the outstroke of the piston, and having been compressed on the instroke the charge is ignited by means of a small electric spark. This immediately explodes the contents in the cylinder, and the piston is driven forward. The engine, in which the highly-refined petroleum is used, is very similar to that in which the common petroleum is employed, the only difference being that in the latter engine the oil is taken into the cylinder in a heated condition. The cost of the oil is estimated at a halfpenny to three farthings per indicated horse-power per hour. Four horizontal engines were at work, two with benzoline and two with common petroleum. One of about three and a half indicated horse-power, supplied with benzoline, was driving easily four blasts at which chain-makers were at work, besides a punching and a shearing machine. A vertical engine of about four horse-power was driving a tram car, and doing work with ease. The tests were considered most satisfactory.—The *Times*, October 13.

THE FATAL ACCIDENT IN KILDARE.

It will be remembered that on the 5th inst., the Very Rev. J. B. Kavanagh, D.D., was killed on the steps of the altar of the church by the fall of a figure of an angel. The following evidence given at the inquest by Mr. W. Hague, architect, is interesting, and may serve as a warning to the erection of similar figures :—

Mr. Hague said : I am an architect by profession, and was employed by Dr. Kavanagh for various works, the house in which the Christian Brothers live, the school and works in connection with the church, except the altar in question. I was not the architect or designer of either of the three altars erected in the church. But, previous to Dr. Kavanagh making the contract for these altars, I had supplied him with several designs for altars in accordance with the style of the church. For the designs that I supplied him with, I obtained tenders in the usual way from parties in the trade. Dr. Kavanagh considered these estimates all ran too high. The lowest, as far as my memory serves me, was 900*l.* ; that was a sum far beyond his ideas. As far as I was concerned I heard no more about the altars for a considerable time, it may be a year. It was certainly several months. One day Dr. Kavanagh came into my office, and appeared to be in very good humour, and said that he had succeeded in obtaining a tender for 600*l.* for three altars and the communion rail, all in marble. I asked him upon what basis or data he obtained the

W. BELL & CO.

AMERICAN ORGAN MANUFACTURERS,

AT THEIR NEW PREMISES,

58 HOLBORN VIADUCT,

Keep a full line of the

CELEBRATED

"BELL"

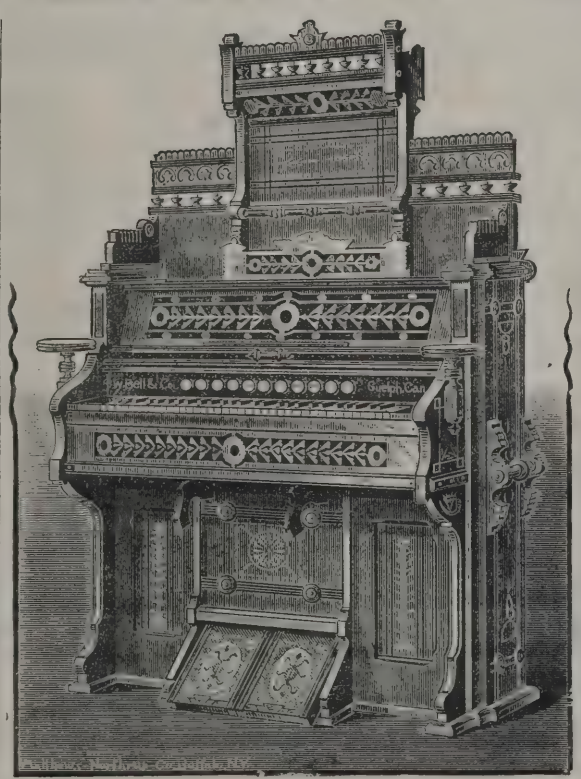
ORGANS

And the FAULTLESS

HARDMAN PIANOS

OF

NEW YORK.



ALWAYS ON HAND FOR INSPECTION.

THESE INSTRUMENTS ARE ACKNOWLEDGED LEADERS OF ALL OTHERS.

CATALOGUES FREE

From above Address.

tenders, as I had not supplied him with any designs from the ones formerly supplied, and which he rejected on account of expense. He immediately replied :—"I have been going all through the city churches looking where I could find altars that pleased me, and at last I found them in St. Joseph's, Berkeley Street." I immediately said, "But St. Joseph's, in Berkeley Street, is a very ornate Gothic structure, and the altars are not in keeping, and it will be totally out of place in your church, as it is a totally different church." He laughed, and said, "I am not bound by any architectural rules, and the chances are I will go to America some day, collect funds, and build a church to suit the altars." I then asked him who was the party he had dealt with for them, and he immediately replied, "Mr. Ryan, of Dominick Street ; and Mr. Ryan," he said, "is here, and I will ask him to come in and see you." The meaning of that was that we should have a general conversation upon it, I being in the position merely of having a friendly chat with Dr. Kavanagh, having no professional connection with the matter. I asked Dr. Kavanagh, "Has Mr. Ryan got the class of men to do that class of carving?" because there are certain houses known to us where, when we give an order, we know the thing will be done by experts. I asked the question, and Mr. Ryan expressed a wish to employ such men as I knew could do that particular class of carving—that is, the carving of the panels. I heard no more until one day I was passing Mr. Ryan's place, and I turned in and asked him what he was doing for Dr. Kavanagh. He said, "I am getting on very well," and he showed me a couple of panels. I said they were very nice. I was down here superintending the Carmelite Church for Father Staples, and on one or two occasions I walked across to Father Kavanagh, who was an intimate personal friend of mine. He put his arm in mine and said, "Come over to the church and see Ryan's work." At that time as much of the structure was erected as goes to the altar table. He asked me if I thought a certain joint was not too open on the side of the altar on the Epistle side. I said, "Anything of that kind will be cured on the pointing." I did not see the altars until the archbishops consecrated them on October 11.

The Coroner : So far your evidence only goes to satisfy us that you are not responsible for the accident. Now we will come to the point about the falling of the statue, how is it likely that that statue fell ?

Witness : I examined the portion left, the base on which the pillar stood that supported the statue. There is a little pillar superimposed upon the base, that pillar becomes a pillar by having a cap upon it upon which the statue stood. From what I have observed I am of opinion that this column must have received an injury at some time or other, either when the canvas cover was being put on or being taken off, or by some inadvertence it got a little blow, and the part of the column that rested on the base became fractured—that is, the plaster-of-Paris became fractured—leaving an air space, and when the atmosphere became heavy and condensation took place rapidly, it accumulated on the hard surface, ran down, and, finding a vacancy, softened the plaster, and gave the statue a tendency to fall over.

Are you of opinion that that could have been obviated by a skilful tradesman in the erection of that statue ?—It might have been obviated by putting a longer dowel in ; but there is an objection to that, because if you perforate the column and put the dowel through it, and it got a blow, it would split it down. It is considered that to dowel the part is sufficient, as long as the equilibrium is maintained.

A Juror : Do you believe the dowel was too short ?—The dowel would last all time if there was not a blow.

Are the dowels in this altar the usual length ?

Witness said he thought the dowel in the statue that had fallen was long enough. He thought the dowels in some of the other statues were rather short.

To Mr. Heffernan : The dowel is 5-16th of an inch.

Mr. Heffernan : Is it usual in putting together work of that nature to dowel it with iron ?—Sometimes it is.

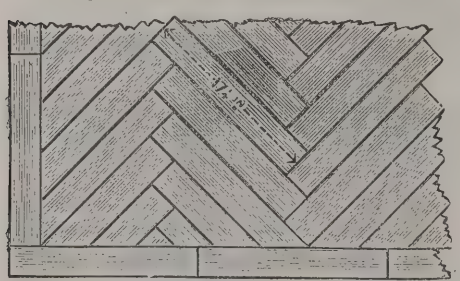
Is it not understood in the profession that iron should not be used with marble because rust will discolour it, and may have an injurious effect on the plaster-of-Paris ?—There is no doubt that iron oxydises, but when it is kept from the possibility of contact with exterior air, and surrounded with plaster-of-Paris, it does not.

Suppose there was evidence that the men who were carrying out that work were not a steady class of men, would you then say that it was not owing to subsequent circumstances the accident occurred ?—The probability would then be in favour of the accident having been caused by the men themselves.

The Coroner : Are you of opinion that the dowels were perfect or imperfect to discharge the functions which devolved upon them ?—Some of them, in my opinion, were shorter than they might be.

Mr. Heffernan : If you were superintending that work and saw that portion of it placed together as you have seen it

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices :—½×4½ Dry Wainscot Oak, 54s. 9d. per square ; 1×4½ ditto, 45s. ; 1½×4 Pitch Pine, 26s. 6d. ; 1×4 ditto, 22s 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office :—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills :—537 King's Road, Chelsea, S.W.
Branch Yard :—65 Poland Street, Oxford Street, W.
Telephone 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

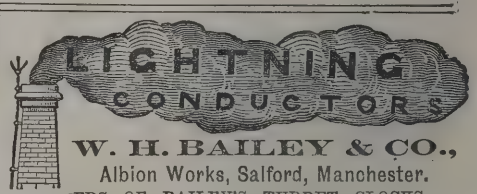
BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions. — STEVENS & CO., Ceres Ironworks, Kingston-on-Thames.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices ; WELL-SEASONED DRAWING PAPERS, mounted and unmounted ; best English Mathematical Drawing and Surveying Instruments ; Colours, &c., at the usual professional discount.
Legal and Commercial Stationery.

NASH & HULL,
LETTER
MANUFACTURERS,
WRITERS AND ENGRAVERS.
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.

To Cement Manufacturers and Others.
TO be SOLD, a CEMENT WORKS, in Sunderland, containing two 17-feet Kilns.
Further particulars and permission to view on application of R. & J. DEMPSTER, Newton Heath, Manchester.



W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

BUILDERS' BENEVOLENT INSTITUTION.
The thirty-ninth ANNUAL DINNER will take place at the HALL of the Worshipful Company of Carpenters, London Wall, on THURSDAY, NOVEMBER 4. BASIL E. PETO, Esq., President, in the Chair. The following gentlemen have consented to be stewards :—

Ansell, Mr. C.
Barfield, Mr. A.
Bird, Mr. Stanley G.
Bird, Mr. J. W.
Blyth, Mr. James
Bolding, Mr. J. T.
Burt, Mr. George
Burt, Mr. G., jun.
Bush, Mr. A.
Russell, Mr. C.
Colls, Mr. H.
Conolly, Mr. H.
Cubitt & Co., Messrs. W.
Dines, Mr. George
Docwra, Mr. J. W. (Messrs. Docwra & Son)
Doulton & Co., Messrs. H.
Dove, Mr. B. D.
Dove, Mr. F. J.
Duffield, Mr. J. W.
Eastwood & Co., Messrs.
Fish, Mr. Charles
Francis & Co., Messrs.
Franklin, Mr. T. F.
Foxley, Mr. F.
Fuller, Messrs. G. A. & A.
Hall, Mr. T. (Messrs. Hall, Beddall & Co.)
Hayward Brothers & Eckstein, Messrs.
Higgs, Mr. W.
Hill, Mr. James
Hobbs, Mr. J. W.
Holland & Hannen, Messrs.
Holloway Brothers, Messrs.
Janes & Son, Messrs.
Jennings, Mr. George
Jenson & Nickolson, Messrs.
Keeble, Mr. F. W.
Kirk & Randall, Messrs.
Lee, Son & Co., Messrs.
Lemon, Mr. G. R.
Lough, Mr. J. (Messrs. Stimpson & Co.)
Lucas Brothers, Messrs.
Manley, Mr. Mark
Mitchell, Mr. W. J.
New, Mr. G. B.
Northcroft, Son & Neighbour, Messrs.
Patrick, Mr. Thomas
Pearson, Messrs. R. H. & J.
Perkins, Mr. Robert
Perry & Co., Messrs.
Peto, Sir S. Morton, Bart.
Phillips, Mr. Stephen
Purkiss, Mr. W. P.
Richardson, Mr. R.
Richardson, Mr. C.
Rider, Mr. T. F.
Ritchie, Mr. A. (Messrs. Steven Bros. & Co.)
Rogers, Mr. W. R.
Ross, Mr. J. M. (Messrs. J. M. Ross & Co.)
Schofield, Mr. J. A.
Scrivener, Mr. W.
Smith, Mr. T. G.
Stephens, Mr. G. (Messrs. Stephens & Bastow)
Stirling, Mr. Thomas
Stoner & Sons, Messrs.
Taylor, Mr. E. T.
Thorn, Mr. A.
Toleman, Mr. J.
Toms, Mr. E.
Trickett, Mr. S.
Thacker, Mr. S. J.
Webster, Mr. William
Watts, Mr. G. N.
Williams, Mr. G.
Woollams & Co., Messrs.

Tickets, 30s. each, payable at the door, unless endorsed by a Steward, to be had of the Stewards : GEORGE PLUCKNETT, Esq., J.P., Treasurer ; and of the Secretary, at the Office, 4 Vernon Place, Bloomsbury Square, W.C.
Major R. A. BRUTTON, Secretary.

TO BUILDERS and CONTRACTORS.—For Bricks, Timber, Slates, Ironmongery, Engines, Boilers Cranes, and all Contractor's Plant, on best terms apply BEAZ 6 Great St. Helen's, E.C.

since, would you have passed it?—I would have a larger dowel put in.

Coroner: Are you of opinion that if those dowels had been longer the accident would not so easily have occured?—If my theory is correct with regard to its having sustained a blow which shook it, I don't think that the fact of the dowels being another inch longer would operate unless they were of great length.

Mr. Heffernan: Would you say this dowel is simply a piece of copper wire doubled?—It is either copper or iron wire doubled.

Have you examined other portions of the altar?—I examined portion off which I took some ornaments myself; by the express wish of some of the clergymen, I took off the finials.

Were these different portions sufficiently secured?—I think they would have stood there.

Did you find there was any deception in the work?—You will have to instance it.

Did you find that the marble was all what it was supposed to be—marble?—There was one exception.

What was that?—A small finial on the back of the top canopy, and when I took it off I noticed it was not the same colour as the rest; it was a piece of stone.

The cross that you removed from the top of the altar, had you any difficulty in taking it off?

The Coroner said that inquiry had nothing to do with the cause of Father Kavanagh's death.

Mr. Heffernan said he wished to ascertain whether the workmanship of the altar was perfect or imperfect.

The witness said that in the parts he had examined it was capital plaster-of-Paris—could not be better; but whether the accident occurred through carelessness, neglect, or design, or any other cause, the result, in his opinion, was the same. He was convinced that the pillar itself never moved until the statue fell on account of the circles of thick dust which he found undisturbed around the base. The statue, he thought, fell backward owing to the weight of the wings. It struck the inclined plane of the canopy, displacing one of the finials, and then tilted out and got a direction forward, which made it strike Dr. Kavanagh as it fell. Unless there was something to strike it, dowel or no dowel, it would have maintained its position. Taking the work as a whole thing, it was very well done.

The Coroner: Was there anything in this accident that ordinary human foresight could have guarded against?—No. I don't think there was any precaution other than an unusual device that would have prevented the possibility of the angel falling.

Mr. Heffernan said it was the desire of the jury to thank Mr. Hague for the clear, full, and satisfactory evidence he had given.

THE RECLAMATION OF THE SAND-WASTES OF GASCONY.*

If you will take the map of France and look at that portion of the coast which skirts the Bay of Biscay, you will notice that two great rivers flow into the sea along this coast. One, the most northerly, is the Gironde, a stream which has upon its banks the great commercial city of Bordeaux; the other river is the Adour, the mouth of which is 150 miles south of the mouth of the Gironde.

Between the mouths of these two rivers the shore of the Bay of Biscay is formed absolutely and entirely of sand, and for a considerable distance inland from the coast the soil of France is composed of sand. It is to this great sandy district, covering nearly two millions and a half of acres, and known in France as the Landes or Moorlands, that I wish to direct your attention.

These moorlands have been the despair of agriculturists for centuries, and have been universally regarded as among the dreariest and most unwholesome districts in Europe. Sand has not the reputation of being a very profitable soil to the agriculturist, and, in addition to the natural poverty of the soil, the farmer in this region has had to contend with the impossibility of efficient drainage. The Landes formerly produced nothing except a scant herbage sufficient to support a few miserable sheep, tended by shepherds as ill-favoured as their flocks, who generally suffered from one or other of the many diseases prevalent in the country; for disease was about the only crop which the Landes formerly brought forth abundantly.

Indeed, you will find that plains which are unproductive are generally unhealthy. The Campagna round Rome is a very hot-bed of malarious and other diseases, and the sandy plains

* An address by Dr. G. V. Poore, delivered at the meeting of the Sanitary Institute.

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall. at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

of Holland and our own Lincolnshire enjoyed a similar evil repute before efficient drainage was brought about by skilful engineers, and the cultivation of the soil became possible. Husbandry and disease are sworn foes, and the pursuit of agriculture is generally the pursuit of health, and a healthy man is generally contented. Here is an argument for "small holdings," for "three acres and a cow," and for "allotments," which I freely give to those who find pleasure in political contention.

The drainage of the Landes presented special difficulties, and difficulties which no engineering skill and no expenditure of money in the direction of bricks, mortar, and machinery seemed likely to overcome, and for the following reasons :—

The reputation of the Bay of Biscay is familiar to every Englishman. It is there, if anywhere, that the force of wind asserts itself, and the winds are generally westerly in direction, and blow with fearful violence from the sea over the land.

The shore of that part of the bay with which I am dealing is composed, as I have said, of unmitigated sand. The effect of the wind upon sand is familiar to all of us, for the sand is borne upon the wings of the wind and travels considerable distances.

Now, in the Bay of Biscay the rise and fall of the tide is considerable, so that the sand washed up by the sea is left high and dry to the extent of many feet at low water.

Again, in the latitude of the Bay of Biscay the sun is far more powerful than here, so that in the interval between the times of high water the sand is greatly heated by the sun, and is so thoroughly dried that the particles no longer tend to stick together, glued by natural moisture, but are easily driven before the furious blast which comes roaring from the sea. When the wind is not very strong it blows the sand into heaps along the shore. These heaps or hills may reach an elevation of from 60 to 300 feet, with an inclination of about 30 degrees towards the sea. These heaps of sand are called "dunes," a word having the same origin probably as the English "down," and formerly the whole foreshore of the Bay of Biscay, between the Gironde and the Adour, presented an undulating appearance, as though a portion of the swelling, rolling sea had been turned to sand and become stationary. If these sand-hills had been really stationary they would have formed a natural rampart against wind and waves, and it might have been possible to drain and cultivate the land behind them. But this was not the case. The scanty herbage of grass and reed which grew upon the dunes was not enough to fix them. It only required a gale of moderate force to completely alter the face of the country ;—hills became flat, valleys were filled up, the lakes which formed behind the dunes became dry land, the water which the lakes contained was forced in some new direction, and what happened to the lakes also happened to the watercourses, with the result that the whole country was waterlogged, and fields and gardens which had been painfully and industriously cultivated were submerged by the drifting sand. It is even stated that villages disappeared completely in this way, and that the enterprising agriculturist in digging his estate was liable to the surprise of finding just beneath the surface the brazen weathercock on the steeple of some long-forgotten parish church. It is a great labour, even at the present day, to keep the mouths of the Gironde and the Adour free from drifting sand, and it is certain that a century or so ago the course of the Adour was completely changed, owing to the channel getting dammed by sand blown into it. If an accident such as this could happen to a mighty stream like the Adour, one may judge of the great uncertainty which attended the course of smaller streams, and the absolute impossibility of draining the land.

A few feet below the average level of the surface of the district there is an impermeable stratum, locally known as *allios*, which keeps the water from flowing away, and beneath the impermeable stratum was more sand sodden with undrinkable water.

The result of this condition of things naturally was that the district of the Landes during the wet season was a swamp, and during the dry season a pestilential morass. The district was uncultivated, and produced nothing but scanty herbage, which served as pasture for a few wretched sheep, tended by shepherds doomed to spend their lives upon stilts, for the country was such that it was impossible to walk far in any one direction without sinking to the waist or shoulders. The country produced no corn and the population was the scantiest in proportion to acreage of any district in France. The population was kept down also by disease. Fevers of all kinds—and especially those of a malarious type—were exceedingly common. And, in addition, there was a disease peculiar to this and a few other districts in Europe, known as Pellagra—a terrible disease which disfigured and slowly killed, the patient dying with the aspect of a mummy and the mind of an imbecile.

The Landes had remained for centuries as a hideous blemish on the fair face of France, and all attempts to reclaim and cultivate them had signally failed. The Emperor Charle-

Telegraphic Address: "ELECTRICITY," *LONDON.* *Telephone No. 1887.*

THE GENERAL ELECTRIC APPARATUS CO.

ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE

Works: BOW and SOUTH HACKNEY. *(Back of the Mansion House Station)*, E.C.

ELECTRIC BELLS.

Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.

The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.

Electric Light Instruments, Fittings and Glassware.



VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.

OFFICE: 175 STRAND, LONDON, W.C.

IMPORTANT.—To Specialists, Manufacturers, and Others.

Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.

THE ARCHITECT AND CONTRACTOR'S COMPENDIUM

And Specialist's Directory for 1887.

EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.

An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with Legal and General Information, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, **the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory.** Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this **at a cost less than half that of sending out one circular.**

The minimum **guaranteed circulation** of the **Compendium** is 3,000 copies, but the actual circulation will probably reach a much higher figure.

Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent **Ink-Photo** process, specimens of which are to be seen weekly in *The Architect*. The **Compendium** will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, **without block**, from **any** drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.

An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.

Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridg Street, London, E.C.

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

magne, it is said, employed his troops in the intervals of his Spanish campaigns in an attempt to reclaim the Landes, but the forces of nature laughed at the puny opposition of the greatest magnate of the world, and at once resumed their sway as soon as the imperial soldiers had ceased to dig ditch and throw up bank.

I have no fear of being contradicted, when I say that it is of no use to attempt to fight with nature. We may oppose her for a time, but only for a time; but in the end she asserts her sway, and man sees too late how his labour has been in vain.

Dwellers in these islands do not need to be reminded of the awful and irresistible power of wind and wave, against which the mere dead weight of cyclopean breakwaters, constructed at gigantic cost and maintained by constant periodic expenditure, is at times laughably impotent. I need not say that the wind and waves of the Bay of Biscay are the roughest and rudest in the world, and that if the maintenance of dead breakwaters is an endless and almost hopeless task on our coasts, on the stretch of coast which I am considering their construction and maintenance would be alike impossible. Thus it was that until the latter end of the last century the condition of the Landes, a tract of two millions and a half of acres, seemed hopeless, and they seemed doomed to be open to the fury of sand storms for ever, and to remain a pestilential, unprofitable, undrained swamp to all eternity.

But, happily for France, and especially for the dwellers between the Gironde and the Adour, there was born in 1738 Nicolas Theodore (or Thomas?) Bremontier. It is said that the world knows nothing of its greatest men. Certain it is that Bremontier was one of the greatest benefactors to humanity that the world has ever known.

Bremontier recognised the fact that the only way to grapple with the forces of nature is not to fight blindly with them, but to try to make use of them. Nature is always working for our benefit, and although it seems as though at times in a fit of anger, as it were (the real object of which we may fail to comprehend), she destroys much of her own work, still, in the long run, those who endeavour to turn the forces of Nature to account will find the balance enormously in their favour.

It is well known, and has been long recognised, that the best protection for a bank or rampart against the fury of the elements is to plant it. A loose heap of earth is liable (no matter how huge it may be) to be washed and blown away in times of tempest. If, however, the bank be planted, the roots of the trees and plants hold the elements of the soil together, and the spreading branches and leaves form at the same time a protection from the fury of wind and water. It is true that even planted hills and banks may suffer severely in times of exceptional storm, but the storm once passed, the silent forces of nature commence at once the work of reconstruction; the damaged roots send forth fresh rootlets, the damaged branches soon push again with buds of promise, and possibly before the advent of the next exceptional gale the storm rampart is stronger than before. These silent forces of nature are truly beneficent; they merely ask for fair play, they work for us without wage, and one great principle of success in all work in this world, be it legislative, be it sanitary, or be it of any other kind, is to go with them, not to fight against them, to learn if we can what is nature's inexorable law, and lay to our hearts the fact that nature brooks neither stubbornness nor disobedience.

Bremontier recognised the fact that the only way to fix the drifting sand-dunes was to plant them: but how and with what? These were the questions he had to solve. Sand is not regarded as a promising soil by agriculturists in general, and sea-sand along the shore is the least promising of all. And yet sand must contain in its interstices a good deal of organic matter left by the seaward-tending rivers, and the fact that the sandy estuaries of rivers are very liable to breed malaria may be taken as evidence that organic matter must exist in quantity and in fine division among the minute particles of sand. This spring I was astonished at finding, close to Biarritz, and within a few yards of the sea, a very flourishing crop of peas which had been sown in the sand without, apparently, the admixture of any manurial body. They were protected from the sea winds by hurdling made of gorse, and enjoyed an ample exposure to the sun, and thus bid fair to yield a good return in due time. The pea is a plant that sends its roots very deeply, and the roots doubtless found moisture and nourishment at a great depth below the surface. For fixing dunes, however, something more permanent than peas is necessary, and Bremontier resolved to try the *Pinus maritima*, a species of pine tree which was known to flourish in sandy soils near the coast. The *Pinus maritima* is a species of Pinaster, and in habit and size it very much resembles the common Scotch fir, with which you are all familiar. Bremontier made his first sowings of the seeds of *Pinus maritima* in the year 1789, and I will state shortly his perfected manner of procedure by which he overcame the obvious difficulties of his task.

(*To be continued.*)

BRYANT, POWIS & BRYANT LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.

Telephone: No. 586. Telegraphic Address: "Stadacona," London.

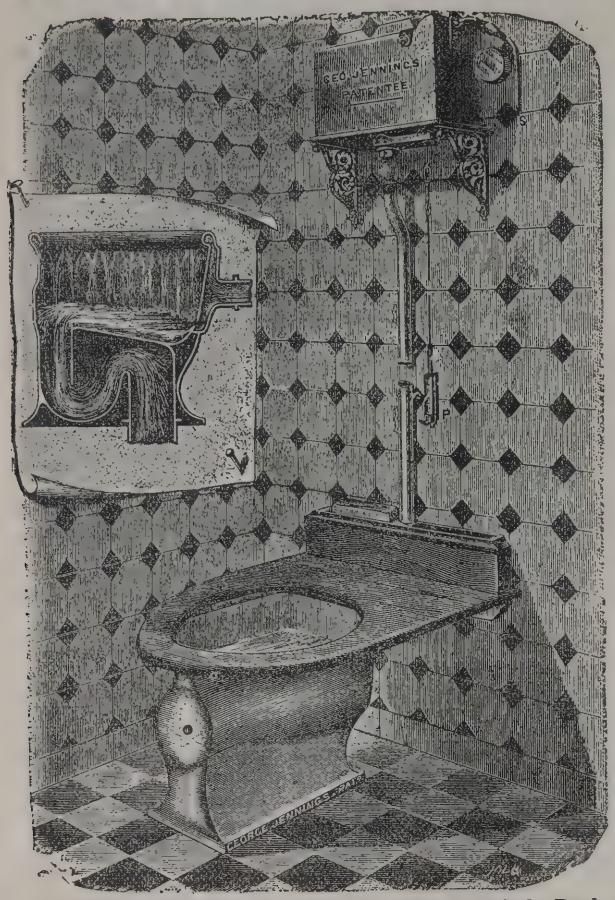
AND 15 CANADA DOCK, LIVERPOOL.

Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT LIMITED,

"THE PEDESTAL VASE,"
JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,
SANITARY ENGINEER, STANGATE, LONDON.

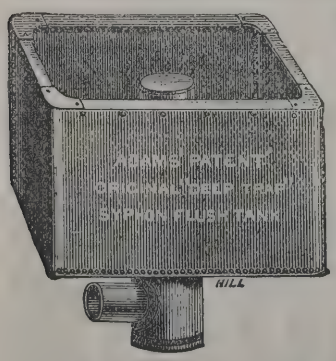
A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



ELECTRIC & PNEUMATIC BELLS.
NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.
MECHANICAL TELEPHONES. Everything for a line complete for £3.
PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

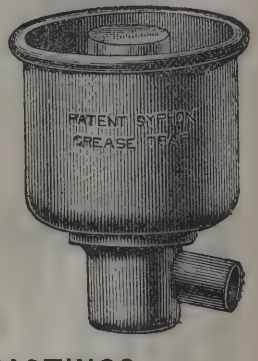


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
„ **FLUSH SYPHONS** for Sewer Flushing.
„ **FLUSH LATRINES** for Barracks, Schools, &c.
„ **FLUSH URINALS** „ „ „
„ **TROUGH CLOSETS** „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, October 22, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, OCTOBER 29, 1886.

L'ART,

Price Two Shillings, can be ordered from all newsagents, and at any railway bookstall; or through the publishers for Great Britain, Messrs. GILBERT WOOD & Co., 175 Strand, W.C.

The scale of charges for Advertisements is as follows, and Advertisements intended for insertion in the following Number must reach the Office not later than the 24th or 8th of the month:—

ADVERTISEMENT SCALE.

For Two Lines and under (nine words to the line)	£0	5	0
For every additional Line	0	1	6
Per Quarter Page	6	0	0
Per Half Page	11	0	0
For a Page	21	0	0

Special arrangements may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 Strand, London, W.C.

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

ELLAND.—Nov. 9.—Plans are invited for the Erection of a Town Hall. Mr. J. L. Garsed, Hon. Secretary, Town Hall Company's Offices, Southgate, Elland.

CONTRACTS OPEN.

BALLYNESS.—Nov. 10.—For Building Coastguard Station. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

BANGOR.—Nov. 1.—For Additions to Marborough Vaults and Menai Bridge Inn. Mr. R. Davies, Architect, Bangor.

BIRKENHEAD.—Nov. 12.—For Erection of Retort Benches and Stove Shed. Mr. T. O. Paterson, Engineer, Gasworks, Thomas Street, Birkenhead.

BLACKPOOL.—Nov. 9.—For Additions, Talbot Square. Messrs. Garlick & Sykes, Architects, 6 Talbot Square, Blackpool.

BRADFORD.—For Nine Houses (Masonry), West Bowling. Mr. M. Brayshaw, Architect, Bowling Old Lane, Bradford.

BRAUNSTON.—Nov. 5.—For Repairs to Wheatsheaf. Messrs. J. Ingham & Son, Architects, Hazlewood Road, Northampton.

BRIGHOUSE.—Nov. 2.—For Fittings for Public Offices. Mr. J. Parkinson, Clerk to the Local Board, Gas Offices, Brighouse.

BURNLEY.—Oct. 30.—For Building Livingstone Mill. Mr. S. Keighley, Architect, Nicholas Street, Burnley.

BURY.—Nov. 2.—For Building School, &c. Mr. T. Nuttall, Architect, Broad Street, Bury.

CHATTAFIN, EXBOURNE.—Oct. 30.—For Erection of Bullock-sheds. Plans at the Office of Messrs. Packham, Croote & Stewart, Exeter.

CROMER.—Nov. 8.—For Stoneware and Iron-pipe Sewers, with Manholes, Ventilators, &c. Mr. J. C. Mellis, C.E., 232 Gresham House, Old Broad Street, E.C.

DARENTH.—Nov. 15.—For Painting and other Works at the Asylum for Imbeciles. Messrs. A. & C. Harston, Architects, 15 Leadenhall Street, E.C.

EAST MOULSEY.—For Restaurant and Boat-house. Mr. Burnell, Architect, 22 Surrey Street, Strand, W.C.

GLEASTON.—Nov. 2.—For Building Congregational Church School. Mr. J. Johnson, Verandah Buildings, Dalton-in-Furness.

GOOLE.—Nov. 3.—For Converting Two Houses into One. Mr. W. Binnington, Architect, 3 Sotheron Street, Goole.

GORLESTON.—Nov. 3.—For Building Five Houses. Mr. C. G. Baker, Architect, St. George's Plain, Yarmouth.

HUCKNALL TORKARD.—For Horizontal Condensing Engine, Pumps, Valves, &c., for the Waterworks. Messrs. G. W. Stevenson & Son, C.E., 38 Parliament Street, Westminster.

KIDDERMINSTER.—Nov. 3.—For Rebuilding Pike Mills. Mr. J. T. Meredith, Architect, Bank Buildings, Kidderminster.

KING'S CROSS, HALIFAX.—Oct. 29.—For Building Ten Dwelling-houses, Queen's Road. Messrs. Abbey & Hanson Architects, 20 Ramsden Street, Huddersfield.

LOUGHBOROUGH.—Nov. 13.—For Cast-iron Pipes (5¼ miles) and Special Castings, Construction of Intake Works, Laying Pipes, &c. Mr. H. Walker, C.E., Nottingham; Mr. G. Hodson, C.E., Loughborough.



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

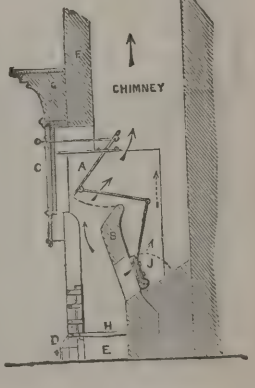
These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Rivoted Windows for Cleaning from the inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.



E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.

LOUGH SHINNY.—Nov. 10.—For Pier, Boat Slip and Platform, &c. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

MILLOM.—For Water-closets and Porch, Queen Street School. Messrs. Settle & Farmer, Architects, Ulverston.

NEWCASTLE-UNDER-LYME.—For Building Public-house, Shop, Seven Houses, and Two Cottages. Messrs. Thomas Lewis and Son, Architects, Newcastle-under-Lyme.

POPLAR.—Nov. 26.—For Building Engine and Boiler Houses, Chimney Shaft, Workshop, Store Sheds, &c. The Engineer to the Metropolitan Board of Works, Spring Gardens, S.W.

PLYMOUTH.—Nov. 1.—For Filter Beds, Pure Water Tank, Gauge Tank, &c. Messrs. T. & C. Hawksley, C.E., 30 Great George Street, Westminster, S.W.

ROCHESTER.—Nov. 8.—For Small Landing Stage, Blue Boar Hard. The City Surveyor, Guildhall, Rochester.

SEVENOAKS.—Nov. 9.—For the Works in Connection with the Sewerage, Tanks, Laying out Land, Pumping Machinery, Gas Mains, &c., Edenbridge. Mr. J. G. Hall, C.E., 8 St. Margaret Street, Canterbury.

STOCKTON-ON-TEES.—Oct. 30.—For Removal of Stone Bridge over the Tees. Mr. M. B. Dodds, Clerk to the Local Board, Stockton-on-Tees.

SUNDERLAND.—Nov. 3.—For Building High School for Girls. Messrs. J. & T. Tiltman, Architects, 5 Bridge Street, Sunderland.

TOTTENHAM.—Nov. 16.—For Construction of Engine House, Engine Foundations, Boiler House, Chimney Shaft, Flues, Setting of Boilers, Water Tower, &c., Longwater Pumping Station. Mr. De Pape, C.E., Coombes Croft House, Tottenham.

WALTHAMSTOW.—Nov. 9.—For Building Board School for Boys. Mr. W. A. Longmore, Architect, 7 Great Alie Street, Whitechapel.

WALTHAMSTOW.—Nov. 9.—For Two Classrooms to Board School for Girls. Mr. W. A. Longmore, Architect, 7 Great Alie Street, Whitechapel.

WHITBY.—Oct. 29.—For Stone Enclosing Wall, with Wrought-iron Unclimbable Railing, at Workhouse Garden. Mr. E. H. Smales, Architect, 1 Brunswick Street, Whitby.

TENDERS.

APPERLEY BRIDGE.

For Additions to Holybrook Mills, Apperley Bridge. Mr. JOWETT KENDALL, Architect, Idle, near Bradford. Quantities by the Architect.

Jeptha Thornton, Idle, mason	£210 0 0
Thornton & Crebbin, Bradford, ironfounder	172 15 4
J. E. Scott, Eccleshill, joiner	120 0 0
Thomas Norton, Eccleshill, plumber and painter	90 18 0
Oswald Lister, Ilkley, concreter	68 0 0
T. & S. Thornton, Eccleshill, slater	59 16 0
Magerison Lee, Eccleshill, plasterer	20 4 0
	£741 13 4

BASINGSTOKE.

For Painting and Decorating Interior of Town Hall, Basingstoke.

Glover & Milsom	£228 7 0

BIRMINGHAM.

For Building Workhouse Infirmary for the Birmingham Guardians. Mr. H. WARD, Architect, Paradise Street, Birmingham.

Highest Tender	£88,500 0 0
WM. BISSETT & SON, Sheffield (*accepted*)	59,850 0 0
Wm. Robinson, Birmingham (*lowest*)	59,353 0 0

BOURNEMOUTH.

For Making Roads on the Canford Cliffs Estate, West Bournemouth, for the Proprietors. Messrs. KEMP-WELCH & PINDER, Surveyors, Bournemouth.

Mann & Griffiths	£817 4 9
Saunders & White	696 12 0
J. Kingswell	536 0 0
G. TROKE (*accepted*)	528 8 2
W. Gay	520 16 0
R. Watton	371 14 0

COVENTRY.

For Repair of Cornish Boiler at the Coventry Waterworks.

Goodfellow & Matthews, Hyde, Manchester	£315 0 0

HOLDEN & CO.'S PATENT ZINC ROOFING

WITH THEIR

PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,

Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.

Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.

ZINC AND IRON WORKERS AND COPPERSMITHS.

Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.

HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

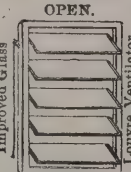
H. W. COOPER & COMPANY, LIMITED,

HEALTH EXHIBITION,



MEDAL AWARDED, 1884.

OPEN.



Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.

H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.

SHUT.



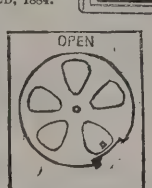
GLASS SELLERS' COMPANY EXHIBITION,



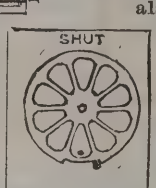
MEDAL AWARDED, 1876.

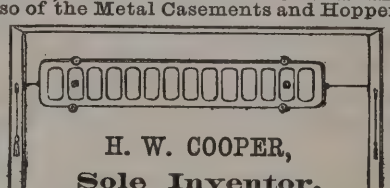


Improved Casement.

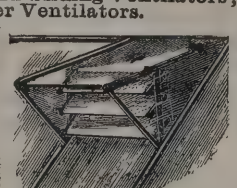


Circular Glass Revolving Ventilator.

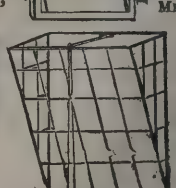




Glass Sliding Ventilator.



Improved Hopper for Skylights.



Hopper Ventilator.



Casement.

Steam Works: Little Queen St., Upper George Street, Edgware Road, W.

Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.



SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.

CARTER, JOHNSON & CO., Encaustic Tile Manufactory, St. George's Works, WORCESTER.

LONDON DEPOT:
Kinson Wharf,
Albert Embankment,
LAMBETH, S.E.

20 Victoria Buildings,
Victoria Street,
MANCHESTER.

AGENTS:—
STURGEON & SMITH, Cross Lane, Eastcheap, E.C.

DARENTH.

For Internal Painting and other Work, at the Imbecile School for Children, Darenth, near Dartford, Kent, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. HARSTON, Architects, 15 Leadenhall Street, E.C. Quantities not supplied.

H. S. Stephens	£1,917 0 0
R. Proctor	1,598 0 0
Dicksee & Dicksee	1,255 0 0
A. G. Allard	1,250 0 0
G. Veale	1,193 0 0
A. Whelch	1,136 0 0
W. Hadlow	1,097 0 0
T. A. Bone	1,096 0 0
Church & Co.	1,080 2 6
T. Bendon	975 0 0
Vigor & Co.	965 0 0
W. G. Lilley	959 0 0
J. J. Robson	868 7 0
C. Willmott	834 0 0
W. Wythe	789 10 0
Leabrook & Son	707 0 0
W. ANDREWS, East Margate (*accepted*)	656 10 0

EGHAM.

For new Wing to Mansion, Milton Park, Egham, for Baron De Worms, including the Materials on Site. Mr. D. R. DALE, F.R.I.B.A., Architect, Union Court, Old Broad Street, E.C.

J. HOARE & SON, London (*accepted*) . . £4,500 0 0
No competition.

FLEETWOOD.

For Section 2 of the new Promenade opposite the Mount, Fleetwood (1,151 feet by 63 feet 6 inches), the Carriage Drive and Footwalk to be of Asphalte and Macadam, and the Sea Fence of Limestone Pitching, as per Plans and Specifications, &c., prepared by the Surveyor, Mr. M. S. GAULTER. Estimated cost £2,378 14*s.* 10*d.*

GARNETT & WARHURST (*accepted*). . . £2,250 0 0

GLOUCESTER.

For River Wall (Red Forest of Dean Stone) at the Quay, Gloucester.

E. CLUTTERBUCK (*accepted*) £3,146 0 0

HALIFAX.

For Stable, Cart Shed, and Approach, Moorfield, Wainstalls, near Halifax. Mr. T. L. PATCHETT, Architect, Halifax.

ROWLAND GAUKROGER, Warley, near Halifax (*accepted*).

Loose Box and Stall Fittings.

Musgrave & Co., Belfast.

HUNGERFORD.

For Works at Hungerford Union Workhouse. Plans and Specification by Mr. JAMES H. MONEY, Architect, Newbury.

J. WOOLDRIDGE & SON, Hungerford (*accepted*).

ISLEWORTH.

For Infirmary and Probation Wards at Brentford District Schools, Isleworth. Mr. EDWARD MONSON, jun., A.R.I.B.A., Architect.

No. 1.—*Infirmary.*

Addis, Hounslow	£3,600 0 0
Bray, Acton	3,476 0 0
Smith & Bulled, Croydon	3,406 0 0
Tozer, Notting Hill	3,395 2 6
Knight, Northfleet	3,367 16 2
Newton & Idle, Clapham	3,091 0 0
Lansdowne, Richmond	3,065 0 0
Brown, Southall	3,054 0 0
Dorey, Brentford	2,999 9 3
Veale, Green Lanes, W.	2,987 0 0
Green, Holborn	2,963 0 0
Wiggins & Co., Kilburn	2,958 0 0
Sabey & Son, Islington	2,924 0 0
Oldrey & Co., Carlton Bridge	2,922 0 0
Lyford, Uxbridge Road, W.	2,917 0 0
Turtle & Appleton, St. John's Hill, S.W.	2,914 0 0
Howell & Son, Lambeth	2,880 0 0
Martin, Willesden	2,823 0 0
Pryor, Brondesbury	2,800 0 0
Maton, Kew	2,800 0 0
Kingerlee, Oxford	2,795 0 0
C. Wall, Chelsea	2,788 11 7
Kirk & Randall, Woolwich	2,780 0 0
Haynes, Alperton	2,730 0 0
Stephenson, City	2,701 0 0
Evans, Peckham	2,599 0 0
COLLINSON, Teddington (*accepted*)	2,491 0 0
Church & Co., Coleman Street, E.C.	2,280 0 0

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,

Is admitted to be the best ever put before the Public.

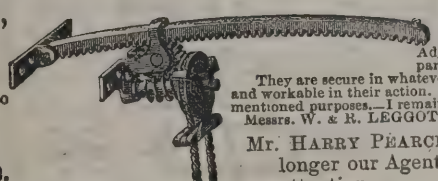
From 5s. each.

Write for REDUCED PRICE LIST and Testimonials to

W. & R. LEGGOTT,

70 Park Road, Bradford, Yorkshire.

N.B.—Size and height of window no object.



TESTIMONIAL.

BANGOR, N. Wales: September 14, 1885.

Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.

Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention.

W. & R. L.

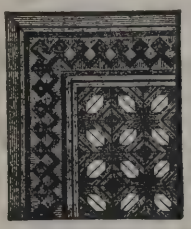
TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD., 22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.

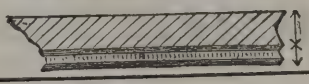
150,000 ft. super. in Stock, ready for Laying.

RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.

Immense Stock always ready for Laying.

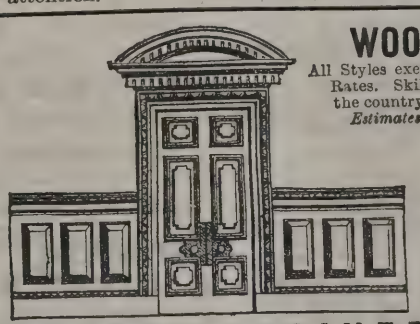


THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction.



ORNAMENTAL PARQUET.

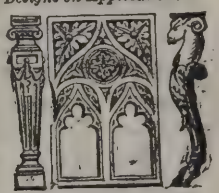
DEAL BACKING.



WOOD CARVINGS.

All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.

Estimates and Designs on Application.



ARTISTIC JOINERY.

THE

LONDON & EDINBURGH IRON BUILDINGS CO.,

PATENTEES,

IRON MERCHANTS & FACTORS.

Every Class of IRON BUILDINGS Designed and Erected in all parts of the United Kingdom.

Plans and Estimates prepared and illustrated. Catalogues forwarded free of charge. All kinds of Galvanised Iron Goods supplied at Birmingham prices, carriage paid. Special Plans prepared to meet the requirements of our Customers.

Chief Office: 19 & 20 St. Margaret's Offices, Victoria Street, Westminster, London, S.W., near the Army & Navy Stores.

ISLEWORTH—*continued.*

No. 2.—Probation Wards.

Addis, Hounslow	£2,560	0	0
Pryor, Brondesbury	2,500	0	0
Knight, Northfleet	2,349	4	4
Bray, Acton	2,254	0	0
Smith & Bulled, Croydon	2,114	0	0
Tozer, Notting Hill	2,060	12	6
Dorey, Brentford	1,971	17	11
Lansdowne, Richmond	1,930	0	0
Brown, Southall	1,949	0	0
Sabey & Son, Islington	1,898	0	0
Newton & Idle, Clapham	1,884	0	0
Green, Holborn	1,862	0	0
Kingerlee, Oxford	1,845	0	0
Lyford, Uxbridge Road, W.	1,784	0	0
Oldrey & Co., Carlton Bridge	1,781	0	0
Wiggins & Co., Kilburn	1,780	0	0
Kirk & Randall, Woolwich	1,756	0	0
Veale, Green Lanes, W.	1,747	0	0
Stephenson, City	1,736	0	0
Turtle & Appleton, St. John's Hill, S.W.	1,704	0	0
Howell & Son, Lambeth	1,700	0	0
Martin, Willesden	1,691	0	0
Maton, Kew	1,688	0	0
C. Wall, Chelsea	1,634	13	8
COLLINSON, Teddington (*accepted*)	1,628	0	0
Haynes, Alperton	1,618	0	0
Evans, Peckham	1,591	0	0
Church & Co., Coleman Street, E.C.	1,448	0	0

LLANGADOCK.

For Rebuilding Glansawdde Manor House, for Mr. Herbert Thomas. Mr. D. JENKINS, M.S.A., Architect, Gorlas, Llandebie.

Thomas & John Brown, Llanelly	£1,473	0	0
William Evans, Carmarthen	1,460	0	0
Thomas Bros., Llandilo	1,450	0	0
David Morgan, Swansea	1,268	0	0
John Williams, Knighton	1,197	14	0
John Lewis, Gowerton	1,182	0	0
ALFRED MEREDITH, Newbridge-on-Wye (*accepted*)	895	0	0
Samuel Jenkins, Brynaman	685	0	0
" " (corrected)	845	0	0

ISLEWORTH—*continued.*

No. 3.—Playgrounds.

Newton & Idle, Clapham	£1,538	0	0
Tozer, Notting Hill	1,484	2	0
Knight, Northfleet	1,386	18	1
Howell & Son, Lambeth	1,350	0	0
Smith & Bulled, Croydon	1,327	0	0
Green, Holborn	1,316	0	0
Oldrey & Co., Carlton Bridge	1,297	0	0
Sabey & Son, Islington	1,276	0	0
Lansdowne, Richmond	1,268	0	0
Dorey, Brentford	1,261	18	4
Kingerlee, Oxford	1,255	0	0
Martin, Willesden	1,253	0	0
Wiggins & Co., Kilburn	1,243	0	0
Pryor, Brondesbury	1,225	0	0
C. Wall, Chelsea	1,211	14	9
Turtle & Appleton, St. John's Hill, S.W.	1,202	0	0
Lyford, Uxbridge Road, W.	1,187	0	0
Stephenson, City	1,174	0	0
Bray, Acton	1,167	0	0
Brown, Southall	1,167	0	0
Veale, Green Lanes, W.	1,160	0	0
Addis, Hounslow	1,150	0	0
Haynes, Alperton	1,140	0	0
Kirk & Randall, Woolwich	1,100	0	0
Maton, Kew	1,080	0	0
COLLINSON, Teddington (*accepted*)	1,074	0	0
Evans, Peckham	1,063	0	0
Church & Co., Coleman Street, E.C.	1,046	0	0

LIVERPOOL.

For Construction of Parc Uchaf Reservoir, Vyrnwy Waterworks.

Thos. Flavin, Manchester	£12,923	3	0

For Reservoir at Malpas, Vyrnwy Waterworks.

James Dyson, Ellesmere	2,950	7	2

LLANDRINDOD WELLS.

For Building Four Houses and Shops, Llandrindod Wells. Mr. DEAKIN, Architect, Shrewsbury.

Davies & Bethell, Llandrindod	£2,012	0	0
John Gethin, Shrewsbury	1,979	0	0
Wm. Bowers & Co., Hereford	1,832	0	0

LLANWDDYN.

For Building Church and Vicarage, Llanwddyn.

Hughes & Owen, Wrexham	£5,741	2	2

PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

A. J. SHAW,
Gower Varnish Works, Sheffield,
MANUFACTURER OF
WOOD STAINS & VARNISHES
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.
Samples and Quotations from the Manufacturer.

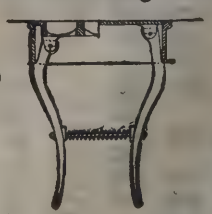
HENRY KING
(Late GREEN & KING),
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c.?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered.
PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT. NO. 4,125.

International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

LONDON.

For Erection of the Ship Tavern, Upper Marylebone Street, and the House adjoining, No. 23 Saville Street, W., for Mr. James Pryer. Mr. ALFRED G. HOPKINS, Architect, 27 Mortimer Street, W. Quantities by the Architect.

Ashwell	£4,457 0 0
J. T. Chappell	4,238 0 0
Mattock Bros.	4,159 0 0
Scott	4,147 0 0
Fairchild & Co.	4,089 0 0
Adams	3,997 0 0
Toms	3,939 0 0
Marks	3,870 0 0
Beale	3,450 0 0

For Rebuilding the Rose and Crown Public-house, Collingwood Street, Blackfriars, S.E., for Mr. E. W. Cathie. Mr. W. W. GWYTHER, Architect, 43 Lincoln's Inn Fields, W.C. Quantities by Mr. J. W. STEVENS, 21 New Bridge Street, E.C.

Ashby & Horner	£2,794 0 0
Mark Patrick	2,668 0 0
Nightingale	2,580 0 0
A. B. Clarke	2,480 0 0
Worsley	2,410 0 0
Prestige & Co.	2,342 0 0
Kilby & Gayford	2,340 0 0
Oldrey & Co.	2,097 0 0

For Works in connection with the Reconstruction and Additions to the Warming Apparatus, New Boiler, &c., at the Workhouse Infirmary for the Guardians of the Parish of Kensington. Mr. H. H. BRIDGMAN, Architect.

BERRY & SON, Pimlico (*accepted*).

For Shop Fittings to Business Premises, Nos. 16 and 18 King's Road, Chelsea, S.W., for Messrs. Lester & Co. Mr. J. W. STEVENS, Architect and Surveyor, 21 New Bridge Street, E.C.

Sage & Co.	£380 0 0
Drew & Cadman	377 0 0
Yardley & Son	309 0 0
W. SALTER (*accepted*)	259 0 0

For Extension of Smoking-room at No. 7 Queen Victoria Street, for the Pure Bread Company. Mr. JAMES WEBSTER, A.R.I.B.A., Architect, 27 Doughty Street, W.C.

S. MORBY (*accepted*).

LONDON—*continued.*

For Works, &c., for the London School Board.

Lombard Wall School.

J. H. Lyon	£35 10 0
T. Hammond	28 0 0
W. Holding & Son	22 10 0
J. W. Roy	22 0 0
H. L. Holloway	15 15 0

Clyde Street School.

T. Hammond	21 0 0
G. B. Ash	18 14 0
S. J. Jerrard	16 17 0
H. L. Holloway	16 15 0
W. Pearce	15 18 6

Creek Road School.

T. Hammond	99 15 0
H. L. Holloway	97 0 0
S. J. Jerrard	79 10 0
F. Johnson	75 0 0

St. Clement's Road School.

E. H. Sargeant	12 5 0
Davis Bros.	11 18 0
T. Cruwys	11 10 0
F. J. Hughes	11 0 0
Troughton & Co.	10 10 0
H. & F. Vincent	10 0 0

Mitthias Road School.

C. Dearing & Son	13 0 0
S. S. Pritchard	12 6 0
E. Green	12 0 0
Tait & Co.	12 0 0
McCormick & Son	11 0 0
Stevens Bros.	10 15 0

Wandsworth Road School.

H. Walkley	£68 3 0
W. Johnson	46 0 0
Richens & Mount	43 0 0
A. Boon	38 2 0
J. Holloway	38 0 0
Newton & Idle	34 0 0

Pocock Street School.

H. Walkley	41 18 6
W. & H. Castle	28 0 0
J. W. Roy	28 0 0
T. Dowling	23 0 0
Tait & Co.	16 15 0
Davis Bros.	16 10 0

Alton Street School.

S. Limm	21 0 0
J. J. Robson	14 0 0
J. T. Robey	13 10 0
Atherton & Latta	13 0 0
G. Driscoll	11 10 0

Melvin Road School.

W. Tullett	14 16 0
J. Bodker	13 5 0
G. Jones	13 0 0
T. Dowling	11 3 0
H. J. Williams	11 0 0

Jessop Road School.

E. H. Sargeant	15 10 6
W. Pearce	15 2 6
J. Bodker	12 15 0
F. Higgs	10 15 0
J. B. Ash	10 5 0

For Alterations to Business Premises, Nos. 16 and 18 King's Road, Chelsea, S.W., for Messrs. Lester & Co. Mr. J. W. STEVENS, Architect and Surveyor, 21 New Bridge Street E.C.

Burton & Son	£882 0 0
Downs	765 0 0
Yardley & Son	722 0 0
Prestige & Co.	689 0 0
BRAID & Co. (*accepted*)	640 0 0

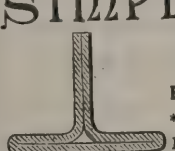
SPRAGUE & CO.
Lithographers, Engravers, and Printers,
23 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream.
SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper,
Drawing Paper, Sectional Paper,
Mounted Papers,
Continuous Papers, Pencils, Pens, &c.
&c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES
WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
CORSHAM DOWN } SUMMER DRIED.
FARLEIGH DOWN }
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.

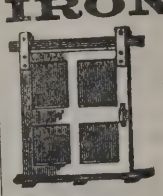
SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).


Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET,
HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*
MONK'S PARK
MP.
TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

LONDON—*continued.*

For Proposed Works to Cedar Mews, West Kensington, for the London Road Car Company. Mr. P. DOLLAR, Architect.

Smith	£2,989 0 0
Conder	2,881 0 0
Chafen	2,837 0 0
Toms	2,719 0 0
Walker	2,676 0 0
Croaker	2,539 0 0
Flew	2,390 0 0

For Sanitary Alterations and Additions to No. 5 Wharton Terrace, West Kensington Park, W., for Mr. E. W. Measor. Mr. CHAS. E. GRITTON, M.S.A., Surveyor, London, Brighton, and Sidcup.

HOUGHTON & CO., 21 Sloane Terrace, Chelsea, S. W. (*accepted*).

For Erection of Premises in Fenchurch Street and Gracechurch Street. Mr. J. S. EDMESTON, Architect.

Patman & Fotheringham	£31,159 0 0
Patrick & Son	30,819 0 0
Colls & Sons	30,695 0 0
Boyce	30,660 0 0
Higgs & Hill	29,800 0 0
Holland & Hannen	29,607 0 0
Conder	29,540 0 0
Mowlem	29,479 0 0
Peto Bros.	29,305 0 0
Nightingale	28,919 0 0
Kinnock	28,735 0 0
Howell & Son	28,569 0 0
Woodward	28,479 0 0
Lawrance	28,302 0 0
Chappell	28,140 0 0
Bywaters	27,873 0 0
Sheppard	27,465 0 0

For Alterations, Nos. 1 and 3 Dorrell Place and Exchange Buildings, Brixton Road, for Mr. A. Philps. Mr. J. W. STEVENS, Architect and Surveyor, No. 21 New Bridge Street, E.C.

Shop Front.

W. SALTER (*accepted*) £110 0 0

New Corridor.

HILL BROS., Streatham (*accepted*) 44 0 0

PLYMOUTH.

For Shop Front, Window Fittings, &c., 53 Bedford Street, Plymouth, for Mr. George Bronse. Mr. JAMES HARVEY, Architect, Plymouth. Quantities by the Architect.

Palk & Partridge, Plymouth	£293 0 0
Thomas H. Horley, Plymouth	290 0 0
John Reed, Plymouth	285 0 0
Lapthorn & Good, Plymouth	263 10 0

For Shop Front and other Alterations to 47 Richmond Street, Plymouth, for Mrs. Kenrhole. Mr. J. HARVEY, Architect, Plymouth. Quantities by the Architect.

Thomas King, Plymouth	£78 10 0
A. N. Coles, Plymouth	76 0 0
Samuel Harvey, Plymouth	75 0 0
Botterell & Turpin, Plymouth	73 0 0
BLOCKELL & SHEPHERD, Plymouth (*accepted*)	68 18 0

For Boundary Walls, &c., York Street, Plymouth, for Mr. Spear.

A. N. Coles, Plymouth	£19 10 0
Blockell & Shepherd, Plymouth	19 10 0
S. HARVEY (*accepted*)	17 3 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application.
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

TRADE NOTES.

MESSRS. MERRYWEATHER & SONS, the well-known fire-engine manufacturers, of Greenwich and Long Acre, W.C., have received the gold medal for their fire-engines at the Liverpool Exhibition.

MESSRS. JEFFREY & CO., of Essex Road, Islington, have received the gold medal of the Liverpool Exhibition for the excellence of their artistic wall papers, this, we understand, being the highest reward given for such productions in the exhibition. The same firm have received the gold medal at the Edinburgh Exhibition for "excellence of design and manufacture of paper-hangings."

THE floors of the dining-hall of the Mitcham Workhouse, just erected from the designs of Messrs. Saxon Snell & Son, have been laid with the patent wood-block flooring of Mr. Roger L. Lowe, of Farnworth, Bolton.

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.
THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

J. W. CALDICOTT,
MANUFACTURER OF INDIA
RUBBER STAMPS,
WALSALL.

W. F. STANLEY,
Mathematical Instrument Manufacturer
To H.M.'s Government, Council of India, Science and Art Department, Admiralty, &c.
Mathematical, Drawing, and Surveying Instruments of every description, of the highest quality and finish, at the most moderate prices. Price List post free. Engine Divider to the Trade.
Address, 4 and 5 Great Turnstile, Holborn, London, W.C.
Also New Store, at 6A Victoria Street, Westminster.
GOLD MEDAL, Inventions Exhibition, 1885.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88–92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

NASH & HULL,
LETTER
MANUFACTURERS,
WRITERS AND ENGRAVERS.
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.

Messrs. E. JACKSON & CO.,
Auctioneers, Surveyors, and Valuers,
LAND, ESTATE, & HOUSE AGENTS.
CHIEF OFFICES:
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices—762 Holloway Road, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

BUILDERS' BENEVOLENT INSTITUTION.

The thirty-ninth ANNUAL DINNER will take place at the HALL of the Worshipful Company of Carpenters, London Wall, on THURSDAY, NOVEMBER 4. BASIL E. PETO, Esq., President, in the Chair. The following gentlemen have consented to be stewards:—

Ansell, Mr. C.
Barfield, Mr. A.
Bird, Mr. Stanley G.
Bird, Mr. J. W.
Blyth, Mr. James
Bolding, Mr. J. T.
Burt, Mr. George
Burt, Mr. G., jun.
Bush, Mr. A.
Bussell, Mr. C.
Colls, Mr. H.
Conolly, Mr. H.
Cubitt & Co., Messrs. W.
Dines, Mr. George
Docwra, Mr. J. W. (Messrs. Docwra & Son)
Doulton & Co., Messrs. H.
Dove, Mr. B. D.
Dove, Mr. F. J.
Duffield, Mr. J. W.
Eastwood & Co., Messrs.
Fish, Mr. Charles
Francis & Co., Messrs.
Franklin, Mr. T. F.
Foxley, Mr. F.
Fuller, Messrs. G. A. & A.
Hall, Mr. T. (Messrs. Hall, Beddall & Co.)
Hayward Brothers & Eckstein, Messrs.
Higgs, Mr. W.
Hill, Mr. James
Hobbs, Mr. J. W.
Holland & Hannen, Messrs.
Holloway Brothers, Messrs.
Janes & Son, Messrs.
Jennings, Mr. George
Jenson & Nickolson, Messrs.
Keeble, Mr. F. W.
Kirk & Randall, Messrs.
Lee, Son & Co., Messrs.
Lemon, Mr. G. R.
Lough, Mr. J. (Messrs. Stimpson & Co.)
Lucas Brothers, Messrs.
Manley, Mr. Mark
Mitchell, Mr. W. J.
New, Mr. G. B.
Northcroft, Son & Neighbour, Messrs.
Patrick, Mr. Thomas
Pearson, Messrs. R. H. & J.
Perkins, Mr. Robert
Perry & Co., Messrs.
Peto, Sir S. Morton, Bart.
Phillips, Mr. Stephen
Purkiss, Mr. W. T.
Richardson, Mr. R.
Richardson, Mr. C.
Rider, Mr. T. F.
Ritchie, Mr. A. (Messrs. Steven Bros. & Co.)
Rogers, Mr. W. R.
Ross, Mr. J. M. (Messrs. J. M. Ross & Co.)
Schofield, Mr. J. A.
Scrivener, Mr. W.
Smith, Mr. T. G.
Stephens, Mr. G. (Messrs. Stephens & Bastow)
Stirling, Mr. Thomas
Stoner & Sons, Messrs.
Taylor, Mr. E. T.
Thorn, Mr. A.
Toleman, Mr. J.
Toms, Mr. E.
Trickett, Mr. S.
Thacker, Mr. S. J.
Webster, Mr. William
Watts, Mr. G. N.
Williams, Mr. G.
Woollams & Co., Messrs.

Tickets, 30s. each, payable at the door, unless endorsed by a Steward, to be had of the Stewards: GEORGE PLUCKNETT, Esq., J.P., Treasurer; and of the Secretary, at the Office, 4 Vernon Place, Bloomsbury Square, W.C.

Major R. A. BRUTTON, Secretary.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions.—STEVENS & CO., Ceres Ironworks, Kingston-on-Thames.

Messrs. Goodman & Co., of 72 Bishopsgate Street, E.C., the well-known firm of merchants in bricks, &c., have undertaken the agency for Titus & Henksman's patent sewer-gas trap. Under such influential auspices, and the article itself being a great improvement, success should be insured.

An interesting and important detail in connection with the Constitutional Club recently opened is the arrangement of locks for the room-doors, executed by Messrs. Hobbs, Hart & Co., under a mastership for floors, and a grand master-key controlling all locks throughout the building. All the modern hotels, including the Métropole, the Grand, the First Avenue, have adopted this system of Messrs. Hobbs, Hart & Co., and the public will be interested in knowing that this important consideration has not been overlooked in a building wherein modern appliances have been so carefully worked out and adopted by the architect.

A new style of Christmas-card is being introduced by Messrs. Billing & Co., of 144 High Holborn. They are an imitation of repoussé work, and therefore they possess more endurance than the ordinary cards. Some have been designed by architects and some by an authority on heraldry, and they have more of the antique character than is seen in the ordinary ones.

Messrs. Shand, Mason & Co., of London, have been specially awarded two gold medals for the excellence in design and workmanship of the fire-engines exhibited by them, and lent for use in case of fire, at the Edinburgh Exhibition. Two patterns of steam fire-engines are included in the first award—the celebrated "Equilibrium," as used in Glasgow, Bradford, Leeds, and the principal towns in the northern and midland counties; and the patent London Brigade Vertical, of which thirty engines are in use in the Metropolitan Fire Brigade, and which has also been supplied to Edinburgh, Dublin, Manchester, and the leading Volunteer Brigades. The second medal is for a London Brigade manual fire-engine, bearing a number of important improvements.

We have received a circular from Mr. W. S. Oxborrow, of 57 Cheapside, E.C., announcing that he has opened an auction mart in the Romford Road, Stratford, where he purposes conducting periodical sales. We understand that Mr. Oxborrow's sale last week of an engineer's plant and stock in Commercial Street, Shoreditch, was a very successful one, the prices obtained being exceptionally good. Mr. Oxborrow has for some years past been actively engaged in the building and engineering trades, and is therefore in a peculiarly advantageous position for conducting sales in this branch of his profession.

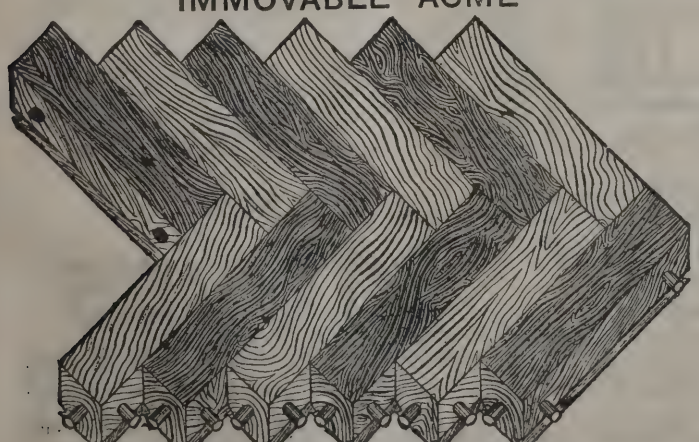
We can recommend the trade not to miss calling at Stand 154 at the Brewers' Exhibition at the Agricultural Hall, and seeing the exhibit of Mr. H. Trott, of High Street, Battersea, S.W. He shows a splendid assortment of his quick-filling bib and other valves, for high and low pressure water, and for which he has been awarded a certificate of merit by the Sanitary Institute of Great Britain. A long-felt want in this direction has been filled, and we can only say that we think these valves are simple and effective and that once used they will always be used. They are strongly made, and consist of a sliding, swinging valve in a chamber covered with a screwed cap, the unscrewing of which facilitates the removal of the inner valve, and the insertion of a new patent beaded rubber, when necessary, a work of the greatest simplicity and ease. This patent is extremely applicable for beer, wine, spirit, and other taps, and effects a great saving in the course of the year.

JOHN WARNER & SONS.

Pumping machinery forms one of the large departments of the firm of Messrs. John Warner & Sons, of Cripplegate, E.C., and Walton-on-the-Naze. Section D, Part 2 of their catalogue devotes about 130 pages illustrated throughout to this particular branch of manufacture. The pumping machinery includes every description worked by wind, water, steam, animal, or manual power. The horse-power machinery is of the most improved kind, for deep well and heavy lift purposes and for supply of asylums, prisons, workhouses, and other large institutions, breweries, schools, mansions, &c., and among others may be observed the combined horse and hand-power machinery as used on the South American railways, and other manual-power machinery, with ram pumps, as adopted by the Indian Government for prisons. Special machinery also for shallow wells, streams, pits, &c., for working with horse power, such as the colliery force pump—a small horizontal treble ram—and the same also as a portable machine, being mounted on flanged wheels and the like, and others on ordinary tire wheels. The combined horse and manual power machinery includes several varieties, according to the particular service that they are to fulfil; combined horse and steam

THE ÆOLUS WATERSPRAY
SYSTEM OF
HEATING, COOLING, & VENTILATING
IS THE
CHEAPEST AND BEST.
For Particulars apply to
MANAGER, 235 HIGH HOLBORN, LONDON, W.C.
Applications for Agencies invited.

"IMMOVABLE ACME"



WOOD-BLOCK FLOORING.

INTERNATIONAL EXHIBITION, LIVERPOOL.
GOLD MEDAL,
The ONLY and HIGHEST Award for
WOOD-BLOCK FLOORING
(W. DUFFY'S PATENT),
"Immovable Acme."
M. C. DUFFY & SON,
Chief Office: 66 Storks Road, London, S.E.

machinery, and combined horse and wind-power. A large amount of space naturally is given to steam-pumping engines and boilers, all of improved kinds; vertical and horizontal combined stationary steam-engines and vertical boilers, steam-pumping machinery for waterworks, stand-pipe pumps for deep wells with varying water levels, pulley pumps for manual and steam-power. The horizontal ram and plunger pumping-engine for wire rope or leather belt, as made by this firm for the Colombo Waterworks, was awarded a silver medal at Camborne in 1882. Treble-throw ram pumps of various descriptions for wire, chain, or hemp ropes, and a variety of pulley pumps for steam-power for minor purposes, and so on. In this section of the catalogue are over 200 forms of pumping machinery, from the most powerful to the simplest; it would be impossible to deal with it in detail, but for reference it is most valuable. The same detailed attention has been given in the production of the catalogue of plumbing and ironmonger's brasswork. Section C is a descriptive catalogue of steam motors and their application; a special catalogue is devoted to windmill power, another to water wheels and water motors. A very good handbook also has been produced by Mr. S. B. Goslin, F.R.M.S., manager for Messrs. Warner & Sons, on the growth of hops, in the course of which the author also deals with those machines which are specially suitable for this field of industry—for instance, hop-washing apparatus ranging from hand-syringes up to horse-draught washing engines; hop-washing hose, &c.; jets, sprays on garden engines, &c.; portable horse-power irrigator ram pumps; circular water-carts for carting water or washing liquors, &c.; and the most suitable kind of plough, &c., is not allowed to escape attention. This firm has taken many prize medals here and abroad, and their specialities are much valued wherever employed.

THE SOUTH YORKSHIRE MECHANICAL TRADES' EXHIBITION.

THIS exhibition, of which Mr. H. Cullabine is the secretary, was, as mentioned in last week's *Architect*, opened at Sheffield on the 19th inst., amongst those present being Alderman W. H. Bullair (who presided), the Mayor of Sheffield, Alderman J. W. Pye-Smith, Alderman Brooksbank, Colonel Byam, C.B., &c. The exhibition is mainly of a local character, the object being to promote the interests of manufacturers of the town and locality. Excellent arrangements have been made for the fair representation of the leading firms, and no fault can be found with the classification. The exhibitors of special interest to our readers are Messrs. Redmayne, May & Co., of Sheffield, who have a good show of school furniture. This firm's "Hallamshire" and "Improved Hallamshire"—forming into flat table, writing slope, and backed seat—are noticeable for their secure and simple method of locking together and rigidity in any position. Furniture suitable for any class of school, or for church missions or lecture halls, is well represented. The exhibit is a very comprehensive one, including every modern improvement, and the material and workmanship is of the very best description. Messrs. W. Truswell & Son have on exhibit a heating apparatus. This firm claim to be able to undertake heating either by hot water or hot air, and with which they have been successful. They do not insist on the advantage of any system, but do the work according to requirement. Mr. H. Foss has a very tasteful selection of tiles, grates, &c. Messrs. J. Mountain & Son are prominent with sanitary ware, their patent disinfector being a great improvement, for it is easily fixed and always in working order, and is consequently meeting with the favour of the sanitary authorities. Messrs. Garlick & McGowan, patent agents, of Sheffield, exhibit, amongst other improvements, a smoke preventer in the form of a box-shaped metal receptacle inserted in the chimney, passing through which the smoke is regulated effectually. It is an article which should come into general favour. Messrs. J. C. Glossop exhibit a patent gulley-trap worthy of notice. Messrs. Wingfield, Rowbottom & Co. show some very artistic lamps, ornamented with floral bouquets, which give a charming effect. The exhibition is a very interesting one, and merits to be described in more detail.

BUILDERS AND WORKMEN IN BOSTON, U.S.

THE Master-Builders' Association of Boston, after conference with the real estate owners and architects of the city upon certain aspects of the labour question, have adopted the following code of working principles for the ensuing year, in the hope that it will be accepted by all concerned as a rational and conservative method of meeting labour agitation in its relation to the building trades:—

Art. 1. Change in method of payment for labour performed.—Beginning at a date not later than the first day of April 1887, we will pay for all work performed by journeymen or labourers in our various trades at a certain price per hour. This price

E. LOFTS, Patentee & Manufacturer,

Hills Road, CAMBRIDGE. London Show-rooms, 165 Queen Victoria St., E.C.

OPEN FIREPLACES

FOR

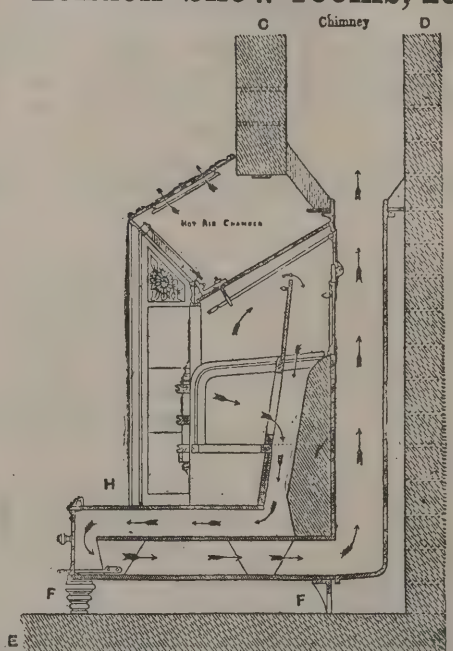
DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES.



No. 4.

HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS,

&c., &c.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Stove.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort, they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; consume their own smoke; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge

per hour shall be a matter of agreement between the individual workman and the individual employer. This change is not intended to apply to work known as "piece-work" or work "by the year."

Art. 2. Hours of labour.—In order to rationally test the question of whether ten hours per day is too long for men to labour, and whether a less number of hours can be accepted as the measure of a day's labour without seriously retarding business enterprises, we will begin on the first day of April 1887 to work nine hours in each working day, beginning at 7 o'clock, A.M., and ending at 5 o'clock P.M., with the usual hour at noon for dinner, under payment by the hour as set forth in Article No. 1. All work done before 7 o'clock A.M., and after 5 o'clock P.M., to be paid for as overtime at such price as may be agreed upon between the workmen and employers. We will continue on this plan during the year 1887. If it is demonstrated that this change can be made without detriment to the interests of the workmen, or the owners, then the contractors will be satisfied, and if further reductions seem desirable they can be considered at the close of the year when this experiment shall have had a fair trial. If, however, there should be displayed a desire to disturb this trial by bringing on any general strike during the year 1887, then we shall feel at liberty to return at once to the old standard of ten hours.

Art. 3. Protecting clause in contracts, &c.—For the greater security of the contractors, we will demand the insertion of a clause in every building contract relieving the contractor from any forfeiture or demurrage on account of delays caused by strikes. This demand, we are assured by real-estate owners and architects, will be cheerfully granted. In case of a general strike, those men who wish to work, and will work, will be kept employed as long as there is anything to be done, and will be protected in their employment, provided they do not aid and assist the strikers by contributing to their funds; but men who engage in the said strike will not be re-employed until the said strike is completely over, or until they, as individuals, are willing to go to work on the same terms as above stated. In event of a strike of any one special branch throughout the city, the men who will continue at work in that special branch will be kept employed the same as in a general strike, and all other branches of building will be continued with such men as will not contribute to support the strike. When a point shall be reached upon any building or buildings where further progress is blocked because of the said strike in a special branch, then the contractors in that special branch shall not be pushed or forced by their co-contractors to complete their work, but the said buildings shall be allowed to remain incomplete till a reasonable and satisfactory settlement be reached.

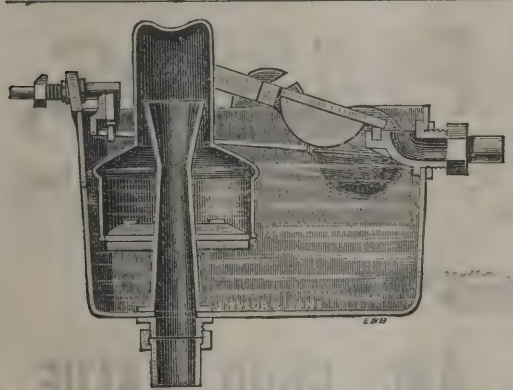
Art. 4. Improper interference with business.—Certain workmen have of late very improperly interfered with the carrying on of work by striking or threatening to strike for the most trivial causes, as follows:—Because certain other workmen were employed. Because certain workmen were not employed. Because certain workmen were discharged. Because certain stock was used or was not used. Because more than a certain number of apprentices were taken on, and for other equally untenable reasons. They have also intimidated certain fellow-workmen by threatening that they would prevent their getting employment by refusing to work with them unless they joined certain societies. Such practices we condemn as most unfair and intolerable, and we agree that in case any workmen interrupt and embarrass our operations by such procedure we will promptly discharge them and notify our fellow-members of the discharge. We also agree that all conspirators shall be prose cuted to the extent of the law.

Art. 5. Arbitration.—It shall be, as it always has been, the recognised right of the group of workmen in the employment of any individual contractor in the building trades to demand and receive from their employer a hearing upon any grievances that may arise, or any changes that may be desired; and at this hearing they can elect to be heard through a spokesman chosen from their number, or by their individual voices; but no person outside of the employment of the said contractor will be allowed to represent them. If amicable ground of settlement is not reached through such hearing, then the grievances shall be left to arbitration—should the terms of such arbitration be mutually agreed upon by the employer and his workmen—in the same manner that other business disputes and complications may be settled.

The following agreement is to be signed by the master-builders:—

We, the undersigned, in our individual capacities as contractors in the various branches of constructive work used in the erection of buildings, and as members of the Master-Builders' Association of Boston, hereby mutually agree that we will aid, support, and assist each other in maintaining the same stand against improper dictation as that taken and successfully held by us during the strike of May and June 1886.

We pledge, in addition, that we will aid, support, and assist each other in carrying out the letter and spirit of the proposi-



BEAN'S PATENT DIRECT-ACTING VALVELESS WASTE-PREVENTING CISTERNS.

These Waste-Preventers are simple in construction and rapid and powerful in action. The working parts have been improved and are well balanced. The arrangements for charging the siphon are such that a slight pull by hand is all that is necessary to cause the immediate and automatic discharge of the contents of the Cistern.

THE CHIEF ADVANTAGES are—(1) the direct-acting method of charging the siphon, by which the full flush is obtained at once; (2) simplicity of construction; (3) no valve in the bottom of the cistern to cause leakage; (4) no tight-fitting parts to corrode or get out of order; (5) no waste incurred by fastening the "pull"; (6) insures a rapid and regulated flush without holding down the pull.

PRICES AND PARTICULARS ON APPLICATION.

SOLE MAKERS—

J. TYLOR & SONS,

SANITARY AND HYDRAULIC ENGINEERS AND BRASSFOUNDERS,

2 NEWGATE STREET, LONDON, E.C.

VOLUME XXXV. OF THE ARCHITECT.

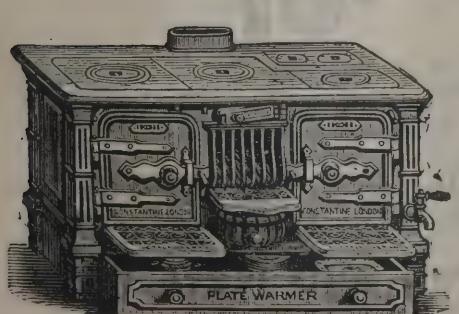
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S

PATENT "TREASURE"

COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards, Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

tions above described as our code of working principles for the year 1887.

We further agree that, should we differ from the opinion of the majority of our fellow-members, we will not in any way embarrass their purpose; but, recognising the fact that uniformity of action is necessary for the proper trial of a scheme like this now proposed, we will faithfully carry out and support the plan agreed upon by the majority during the year 1887, and agree that any member deviating from the action decided upon by the majority will be considered amenable under Section 3 of Article 8 of our by-laws.

In testimony of our assent to the agreement and propositions before mentioned, we hereunto affix our signatures, and agree to faithfully adhere to the principles set forth.

We invite all contractors in the building trades, whether located in this city or in any of the cities of New England, to join with us in this attempt to make fair trial of a scheme calculated, we trust, to set at rest labour agitation in our trades, and maintain unimpaired that necessary control and authority without which no enterprise can succeed. We invite all such contractors to call at our rooms and append their signatures to this code of working principles.

*RECLAMATION OF THE SAND-WASTES OF GASCONY.**

(*Concluded from last week.*)

I WONDER what the dull-minded and prejudiced peasant thought of this enthusiast who went forth to do battle with the mighty ocean and still mightier wind, armed only with a few handfuls of pine seeds such as might be driven far away by the first strong gust that blew. I wonder also if only the ignorant laughed at him, and if he escaped the jeers and sneers of those who had enjoyed the advantages of a better education. Probably not, and equally probably he cared little for the opinions of the prejudiced. The pine seeds were sown mixed with seeds of the common broom, and the sowings were made in a direction at right angles to the prevailing wind. A screen of hurdles made of gorse or of planks deeply driven into the sand was placed on the windward side of the seed-ground, and the seed-ground itself was thatched with pine branches and other suitable material. At the end of the first year the broom would be nine or ten inches high and the pine saplings only two or three inches, and thus the tender little saplings were nursed and protected by the plants of broom. In half a dozen years or so the brooms had reached their full growth, but the pines continued to grow, and, in course of time, overtopping the brooms smothered their nurses, and being themselves judiciously thinned and pruned by the foresters, grew into fine trees able to resist the fury of the elements, sending their long tap-roots and laterals in all directions through the dunes, and causing them to become year by year a stronger and stronger protection to the inland wastes instead of a dangerous menace. Before the dawn of the present century Bremontier had proved the success of his practice, and in the year 1801 the matter was taken in hand by the French Government, and in 1810 it was ordained that so much of the sand-dunes as belonged to the State should be planted after the manner of Bremontier, while the private property of those who were unwilling or unable to plant should be taken in hand by the State, all revenue arising from such land being confiscated until the cost entailed by the work had been recouped.

In 1817, a yearly sum of less than 4,000*l.* was voted for the reclamation of the dunes and wastes of Gascony. The result of this has been that in the department of Landes, 98,000 acres of forest have been planted, and that whereas in 1834 there were about 900,000 acres of uncultivable land in the department of Landes alone, there are now only 340,000 acres, showing that in the past half century reclamation has proceeded at the rate of 12,000 acres a year. These figures apply only to the department of the Landes, and leave out of consideration the department of Gironde, in which, however, nearly half these waste moorlands are situated. This reclamation has been made possible by the fixation of the dunes, which has rendered systematic drainage operations practicable; canals and drains have been cut in every direction, and, thanks to the pine forests, there is now no longer any risk of their being choked up with sand.

The *Pinus maritima* has proved a very profitable tree, and within twenty or twenty-five years of sowing, it began to yield a return. The timber is of very moderate quality, but is largely used for packing cases, as shores in the dockyards of Bordeaux, for railway sleepers, and for fire-wood. I may remark in passing, that the great scarcity of coal in France compels the French to look to their forests for fuel, and there is probably no nation more clever and more thrifty in the management of trees.

* An address by Dr. G. V. Poore, delivered at the meeting of the Sanitary Institute.

ASCHERBERG PIANOS,

Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET KING'S CROSS, W.C.

The pine trees are chiefly valuable for their yield of turpentine and resin, which in that comparatively warm climate is very abundant. The resin is obtained by removing a strip of bark from the tree and allowing the exuding sap to trickle into a small earthen vessel shaped like a flower-pot. The trees begin to yield resin when they are about twenty years old, and the resin is worth about 5*l.* a hogshead in its raw, crude condition. As far as I am able to judge, it requires about 250 trees on an acre of ground to give a hogshead of resin. It requires comparatively little labour to collect the resin, so that the profit per acre from the resin harvest is considerable. It is said that the draining away of the resin does not seriously affect the value of the timber. Besides resin and timber, the manufacture of charcoal is largely carried on, charcoal, as you are aware, being in great demand in France for a variety of purposes.

Thus it appears that the waste moorlands on the shores of the Bay of Biscay have become of great commercial value. Journeying from Bordeaux to Bayonne the railway passes through one long monotonous pine forest. When I state that the journey takes between four and five hours you will be able to judge of the vast tract of country which, once the abomination of desolations, is now covered with millions of the resin-yielding *Pinus maritima*. The cultivation of the pine improves the soil, which is gradually enriched and altered in quality by the dead leaves and other vegetable *débris* which fall upon it. In some places clearings have been made in the forest and vineyards planted, and I need not remind you that the most valuable vineyards in the world are on the southern bank of the Gironde, on the very fringe of the pine woods which I have been describing.

The rise in agricultural value of this tract of country, great as it is, is a small matter. The great gain, after all, has been the rendering wholesome of a pestilential swamp and the removal of a plague-spot from the face of nature. The shepherds of the Landes, except in very few places, have now no longer any need to walk about on stilts, and malaria and pellagra, from being common, have become rarities, and will soon become extinct. Life in this district no longer languishes and ends prematurely, but the dwellers of this vast district enjoy a vigorous health, and that happiness and contentment which vigorous health alone can give.

Population has increased very rapidly since the beginning of the century, and industries of various kinds are able to be carried on. Round the basin of Arcachon is a very large population supported mainly by the oyster fisheries, and the town of Arcachon, which has grown up in the pine forest, is one of the best known health resorts in Europe, where land in the best situations is worth about 1,000*l.* an acre. Well may the dwellers in Arcachon raise a statue to Bremontier, whose far-seeing and thrifty policy has brought them health, happiness, and riches, in place of disease, misery, and poverty.

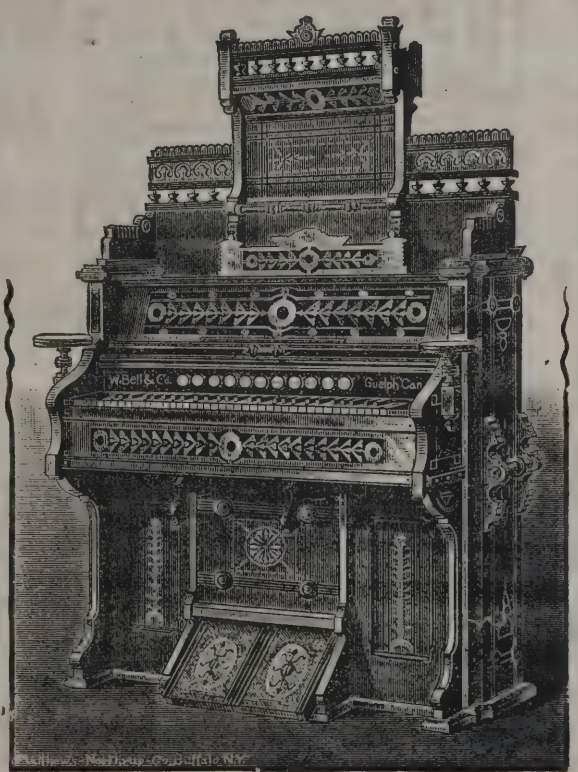
I have now given you the simple details of the manner in which Bremontier's small beginning has made great end; how his pine plantation, made at first with no little labour and sorrow, began along the coast, and with the lapse of a century has reclaimed a province.

TUBE WELLS.

A Brewers' Exhibition has been held during the week in the Agricultural Hall, Islington, with conferences in the lecture theatre. On Tuesday a paper was read by Mr. R. Sutcliffe on the subject of independent water-supply. The meeting was presided over by Mr. J. W. Lees. The lecturer said that his subject was one of universal interest, but of special importance to brewers and mineral-water manufacturers. The essentials of an independent water-supply, which should obviate the heavy cost of obtaining a supply from water companies, were constancy, purity, and economy. A public water-supply sometimes failed in all these three essentials. The preliminary step to be taken with a view to obtaining a permanent and satisfactory water-supply was to ascertain the prospect of success before incurring any great expenditure, and this would be best done by obtaining the services of a skilled hydro-geologist, who would give his opinion as to the depth necessary to go, the strata or rocks which would have to be pierced to reach that depth, and the nature of the water to be found. He stated, as an interesting fact, that at the Burton breweries some forty or fifty 3-inch tube wells yielded 2,000,000 gallons daily, and the area from which they drew water was so extended that at no one point was the water level materially depressed. In concluding his paper, the lecturer remarked that a manufacturer had not always the same facilities as a town or corporation for selecting a site for waterworks, but when a new brewery was about to be built, an inquiry should be made as to the most advantageous site for obtaining the water-supply before the land was purchased. The discussion which followed was of a lengthened and technical character.

W. BELL & CO.
AMERICAN ORGAN MANUFACTURERS,
AT THEIR NEW PREMISES,
58 HOLBORN VIADUCT,

Keep a full line of the
CELEBRATED
"BELL"
ORGANS
And the FAULTLESS
HARDMAN PIANOS
OF]
NEW YORK.



ALWAYS ON HAND FOR
INSPECTION.

THESE INSTRUMENTS ARE
ACKNOWLEDGED
LEADERS OF ALL OTHERS.

CATALOGUES
FREE
From above Address.

OVENS.

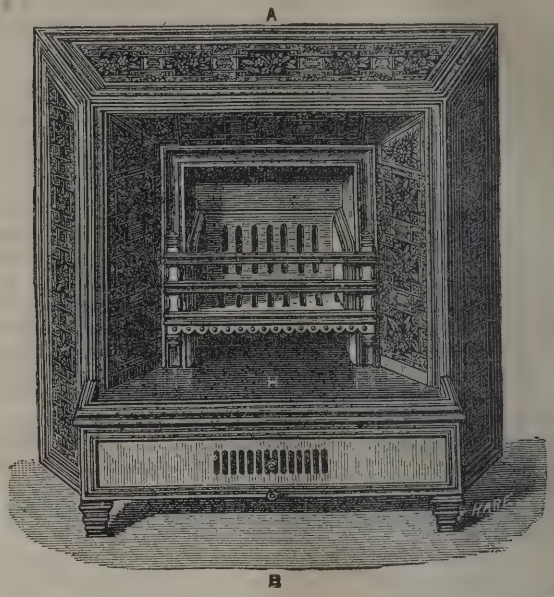
THE patent Jack oven—a new departure in ovens—which we have inspected, commends itself generally on account of its simplicity and utility. Fitted in a compartment below the oven bottom is a train of cogged wheels, acted upon by a coiled spring or its equivalent, thus imparting a rotatory motion to a vertical spindle passing through a hole drilled for the purpose in the oven below. The bottom shelf has a socket which fits on to the spindle, and also supports two standards (to carry the centre shelf or shelves) connected at the top by a cross-bar, with central pivot working in central socket in the oven top. From this it will be understood that the framework and shelves revolve, thus preventing the chance of burning in the course of baking; and for roasting purposes all that is necessary is to remove the centre shelf and hang the poultry, joints, &c., on to the hook arranged for that purpose on the under side of the before-mentioned cross-bar, thus insuring cooking in every way equal to roasting in front of the fire.

Cooks will appreciate this invention as effecting a valuable saving in their time. All interested in well-cooked food will say, "Welcome the Jack oven."

NOTES ON NOVELTIES.

Patent Improved Check Tills.—Lofts's Patent Check Till is one of the best devices yet invented for guaranteeing proprietors from peculation by dishonest assistants. In use it is manipulated as expeditiously as any ordinary till. The amount paid by a customer is entered on a slip of paper ruled for the purpose and running on a reel; the till draw is opened, change given if required, shut again, and the operation is complete. The till draw cannot be opened without ringing a bell, and, in default of the bell ringing, it is at once known that the assistant has not put the money in. If the bell rings it is because the till draw has been opened, which movement carries the entry of the amount away out of the power of its being altered or defaced. If the entry has not been made a blank space will record that trick, showing that a sum has been received and not entered. At the end of the day, or at any hour of the day, the cash in the till may be compared with the amount entered.

Open Register Stoves.—Mr. E. Lofts, of Cambridge and 165 Queen Victoria Street, London, E.C., is the patentee and manufacturer of the Open Register Stove. The results gained by this patent are an increased amount of heat over that of ordinary register stoves, with greater economy of fuel, and the consumption of its own smoke. The same principle is applied with equal success to ranges. The illustration shows that the

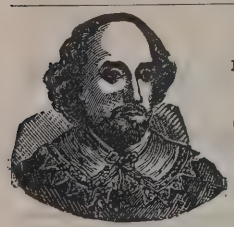


patent is well suited for all rooms in the house. As a hall stove it can also be utilised for schools, chapels, churches, and the like. The consumption of fuel is estimated to be one-fifth of the consumption of ordinary stoves.

Patent "Trentham" Rivetted Cornish Boilers.—Messrs. F. Silvester & Co., of the Castle Hill Foundry, Newcastle, Staffs., have brought out a patent steel "Trentham" boiler, of increased power and efficiency, to supersede the old "Trentham" boiler, of which they were the original makers. This new boiler consists of two steel cylinders rivetted together in a very substantial manner, the space between being the water

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,
TRADE W MARK
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

PARKINSON'S
BEST QUALITY LOWEST PRICES
WET & DRY
COTTAGE LANE CITY RD LONDON
GAS METERS

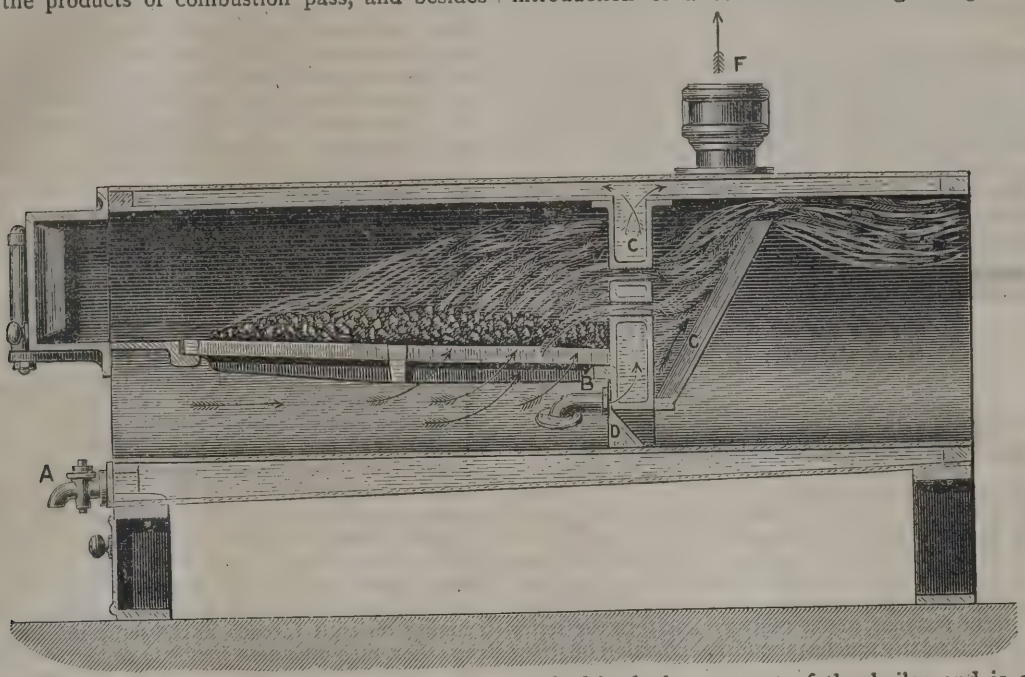
Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

J. & W. E. ARCHBUTT,
201 WESTMINSTER BRIDGE ROAD, LONDON, S.E.
Branch Establishment:
11 BRIDGE STREET, WESTMINSTER, S.E.
Surveying and Drawing Instrument and Stencil Plate Manufacturers
To H.M. Office of Works and Stationery Office, Commissioner of Woods and Forests, Royal Engineers, &c.
All Instruments guaranteed. Quality, accuracy, and prices unsurpassed. Original Manufacturers of Vulcanite Scales, Protractors, Curves, Angles, &c. General Catalogue, No. 1, 160 Illustrations, 62 pages, three stamps. Stencil Plate Catalogues, No. 3, 200 Illustrations, three stamps. Established 1795.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

space, varying in size according to the capacity of the boiler. It is constructed on the most modern and scientific principles, and possesses a combination of advantages which make it the most perfect boiler before the public. A new patent circulating bridge made of a special homogeneous metal capable of withstanding the greatest strains is fixed inside the fire-box, and connected to the boiler. It has a series of tubes worked in through which the products of combustion pass, and besides giving a very large area of additional heating surface to the boiler, it forms a most rigid stay against collapse of the inner shell. A deflector lined with fire-resisting material shown at the back of the bridge may also be added—this assists the combustion, and makes an efficient smoke consumer. In connection with the waterway bridge are fitted extra strong wrought-iron tubular furnace-bars with suitable ends, the arrangement being carefully designed in accordance with the principles which govern the circulation of hot water. It is evident that the saving of fuel is considerable, as the largest possible area is exposed to the direct action of the fire, while every particle of fuel is utilised, and undergoes a thorough combustion before passing out of the fire-box. A fatal objection to the old "Trentham" boiler was the want of a substantial provision for cleaning out. This has been entirely obviated in the new patent boiler by the introduction of a sediment-collecting trough and handhole worked in the bottom part of the boiler, and is easily cleaned out. A brass draw-off tap for the supply of hot water or for flushing out the boiler may be fixed in handhole. The boiler is complete with furnace front, cast fire bars, doors and frame, fitted with draught regulator and perforated back plate, top flue door and frame, one flow and one return branch, the whole being supported on two cast-iron chairs, the front forming the frame for the lower flue door. There are special arrangements



Telegraphic Address: "ELECTRICITY," LONDON. Telephone No. 1887.

THE GENERAL ELECTRIC APPARATUS CO.

ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE

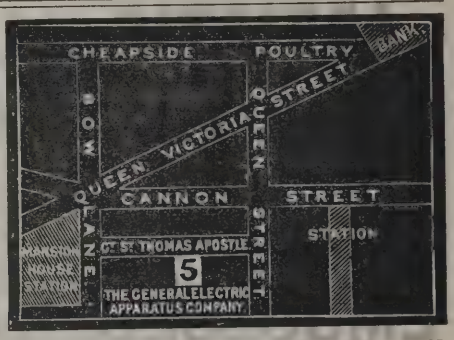
Works: BOW and SOUTH HACKNEY. (Back of the Mansion House Station), E.C.

ELECTRIC BELLS.

Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.

The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.

Electric Light Instruments, Fittings and Glassware.



VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.

OFFICE: 175 STRAND, LONDON, W.C.

IMPORTANT.—To Specialists, Manufacturers, and Others.

Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.

THE ARCHITECT AND CONTRACTOR'S COMPENDIUM

And Specialist's Directory for 1887.

EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.

An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory. Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this at a cost less than half that of sending out one circular.

The minimum guaranteed circulation of the Compendium is 3,000 copies, but the actual circulation will probably reach a much higher figure.

Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent Ink-Photo process, specimens of which are to be seen weekly in *The Architect*. The Compendium will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, without block, from any drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.

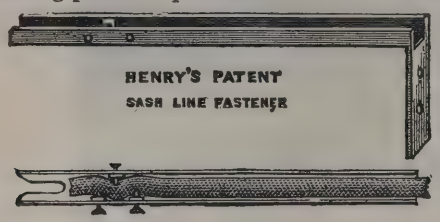
An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.

Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridge Street, London, E.C.

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

for seating these boilers in brickwork, and great care has been bestowed in this matter; special fire-bricks and slabs for lining and setting in stock, and experienced men are kept for this department. The patent bridge, tubular bars, &c., can be applied to old or existing boilers to increase their power, so that in cases where a boiler is too small for its work, by the addition of this arrangement the boiler is increased in power to a great extent. These boilers are made all sizes, to heat from 500 to 10,000 feet of 4-inch piping, and a number are kept in stock.

Henry's Patent Sash Line Fastener.—Messrs. Henry & Morant, of 104 Walbrook House, E.C., have introduced a patent arrangement of a simple and exceedingly useful character, by adopting which the inconvenience and vexation caused by breakage of sash lines is done away with entirely. Its utility is greatly enhanced because it can be readily fitted to existing windows. There is no particular difficulty as regards the operation of fitting it to windows already in use, as will be seen by the following plan of operations. Take sash frames out in



the usual way by removing beading; rip old sash line off, taking out all nails. Fit the patent fastener to the existing slot in frame; the fastener must fit the groove or slot easily, care being taken to keep the fastener in centre of sash bar. Countersink top of sash bar to allow flat top of fastener to go in flush. When accurately fitted put a screw into the slot of frame through the fork of fastener, about midway, and turn the screw down until the head nearly touches the fork. Position of screw is shown in figure. Now take the fastener out and place one end of the new sash line in lower end of fastener, as shown in figure. A few turns of the three screws will now hold the rope or line quite firmly, and the patent fastener can now be screwed down to top of frame, taking care before screwing down to see the prongs of the fork slip easily under the head of the screw. The screw holes should be made a tight fit for the screws, which should on no account be hammered but carefully screwed down; a little tallow on the screws will greatly facilitate their being taken out when necessary. The object of the single screw passing through forked end of fastener is to counteract the strain on lower end of fastener and keep it firmly in position. The sash frame should now be put back in its proper position, the other end of the rope passed over the pulley and fastened to weight in the usual way. Before replacing the beading take with chisel or plane as much off one side of the pocket piece as is overlapped by the beading; this done, the pocket piece can be taken out as often as required without disturbing the beading, which can now be permanently fixed in its place. Should the pocket piece be a loose fit, one small screw at top will hold it firmly. When a rope or sash line breaks where these fasteners are used it is only necessary to unscrew the top screws, take out fastener, put in a new rope, slip the fastener down the slot again, and screw down to sash bar. Neither sash nor beading need ever be moved again. Most persons will now be able to put in new sash lines themselves, without skilled aid, at a very trifling cost; and the renewal by this method involves no damage to paint or woodwork. The fastener is made of best malleable iron, of any size and strength required, to fit any window sashes, straight or curved, plain or ornamental, and is tested up to 200 lbs. weight.

Small-bore Heating Pipes.—The improved small-bore pipe hot-water apparatus of Mr. John Jackson, of Newcastle, Staffs., has proved so efficient that its use has become general for heating and ventilating buildings of every description. The circulating system of course is the principle adopted, the waste of steam avoided, the condensed water being returned to the boiler. Economy of fuel is also a prominent feature. In this system lengths of the best wrought iron are employed—$1\frac{5}{16}$-inch external diameter, $\frac{7}{8}$-inch bore. These are connected by means of sockets having right and left-hand threads. The sharp conical end of one pipe is brought in contact with the flattened end of another by simply turning the socket, which, running on both threads at the same time, forces the one into the other, thus making a perfectly solid metallic joint, stronger even than the pipe itself. A certain proportion, varying according to the temperature required, of the total quantity of piping used is arranged in the form of a coil, and placed in an iron or brick furnace constructed for the purpose. This circle of piping varies in size according to the work to be done, from the small coil which may be placed in an ordinary office grate, for the purpose of heating workshops or other offices adjoining or overhead, to the large apparatus, 5 feet long or more, which may be

ARTISTIC SANITARY WALL-HANGINGS.

DURO-TEXTILE, Combines all the artistic and hygienic effects of a Painted Wall, at a great saving in cost. Can be SCRUBBED with Soap and Water any number of times without injury.

MURALINE, a highly-finished artistic washable Wall Paper, in beautiful designs and colourings.

EMBOSSED TAPESTRY, a high-class Wall-Hanging, fitted for superior Decorations, made in the most striking effects.

Patterns are kept by all Decorators and Upholsterers, or will be sent on application to

FISHER & CO., 33 SOUTHAMPTON ST., STRAND, LONDON, W.C.
WORKS:—LOUGHBOROUGH JUNCTION, S.E.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

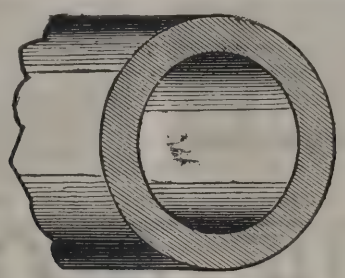
THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers LONDON, E.C.

necessary to heat the various floors in a large mansion or extensive warehouse. The coil having been placed in the furnace and connected with the pipes in the building, the endless circuit of pipes now formed is filled with water, and tested with a hydraulic pump. Upon the application of heat, the process speedily comes into operation. The water at the bottom catching the heat, ascends by virtue of a well-known law to the top of the circulation, cold particles at the same time come down to supply the place of what has ascended. In time the whole of the water, from the top down to the bottom is heated, and the process is then in full operation; after which it is only necessary to keep up a fire sufficient to maintain the heat required. As the expansion of the water increases with the increased temperature, special provision is made for it by fixing at the highest part of the apparatus, and near to the fill pipe, an expansion tube about 3 inches in diameter, which is hermetic-



FULL SIZE OF PIPE USED

ally sealed. With the exception of the necessary supply of fuel to the furnace, the only other attention required is to see that the apparatus is periodically supplied with about a pint of water. Any kind of fuel can be burned, but coke or non-bituminous coal is used in preference; and by means of control in connection with the furnace door and damper in the flue, the heat can be regulated with great nicety. Ventilation may be accomplished by means of a ventilator fixed near the ceiling, and connected with channels which lead to a foul air chamber near the roof, fitted with a coil of piping. The heat from this coil draws the vitiated air towards it, and thus becoming further rarefied, it rises to the roof and is passed off into the open air. A careful examination of the system will show how suitable it is for all purposes, whether of private dwellings, churches, chapels, schools, shops, offices, banks, warehouses, &c. It is also used in laundries, wash-houses, drying closets, and for japanners' stoves; secures cleanliness, freedom from dirt and sulphur. Ventilation and supply of warm air can be accomplished in a variety of ways as circumstances may dictate. For large buildings a special boiler has been invented of wrought-iron tube, combining great power and economy. Among many testimonials from architects and other practical men we observe that Mr. Jethro A. Cossins, of Birmingham, has expressed his entire satisfaction with this system, which was introduced under his direction at the Liberal Club House, Birmingham, and the Old Meeting Trust Church, Bristol Road, Birmingham.

Roofing Felt.—The patent non-porous "Thistle" roofing felt of Messrs. G. Davidson & Co., of 119 Queen Victoria Street, E.C., is a valuable preparation for all purposes for which such materials are now applied. The manufacturers, in producing a light and durable article, are able to put it in the market at exceedingly reasonable prices. The material is so treated in its manufacture as to preserve its flexibility in cold as well as hot weather, and it can be fixed without complicated process by any ordinary person. It can be used with much advantage as a damp-proof course. There would be no fear of defects occurring by cracking, as may happen to slate, asphalte, &c., and it is a quick and simple way of forming a damp course. The felt is made in three degrees of thickness. This enables it to be used for many different purposes, which it would not be easy to catalogue, though everyone could bring forward some use or another to which he has applied it.

New Saw. — The Britannia Company, of Colchester, patented last year a new saw, which we have seen in working order at their London show-room, 99 Fenchurch Street, E.C. It is especially adapted for pattern makers, joiners, cabinet makers, and for circular, groove-cutting, dowelling, and drilling, and will cut up to 4 inches square. They purpose adding a moulding appliance, to enable one to cut up to $\frac{7}{8}$ths. The cutter will be driven at about 4,000 revolutions a minute. Turning even such as table tops can be done on this machine, and, if required, a handle, to enable two men (one at the treadle) to work for ripping long lengths quickly can be fixed. This patent is really one of the most useful and handy tools ever introduced in a workshop, and one that will no doubt save more than its cost every year it is used. Some accurate idea of the power of this saw can be formed from the fact that, when worked by foot, 3 feet 8 inches of 1-inch pine can be cut after the foot is taken off the treadle.

BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

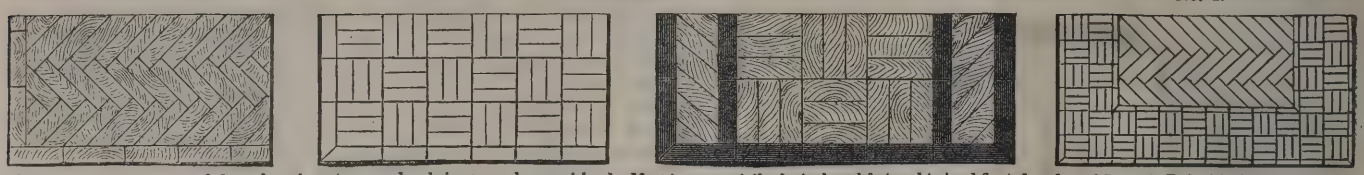
SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

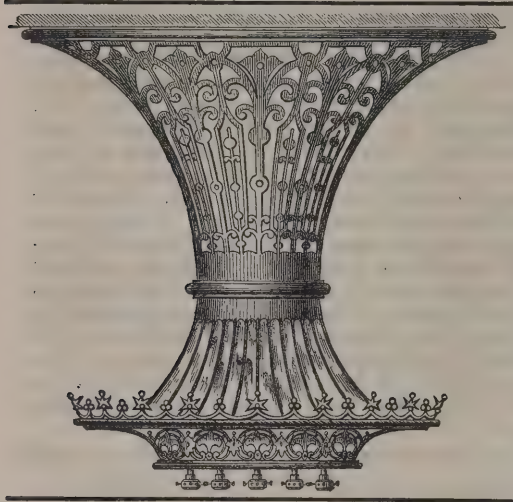
NOW BEING LAID THROUGHOUT THE KINGDOM.

No. 1. No. 2. PATTERNS. No. 3. No. 4.



Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS,

ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

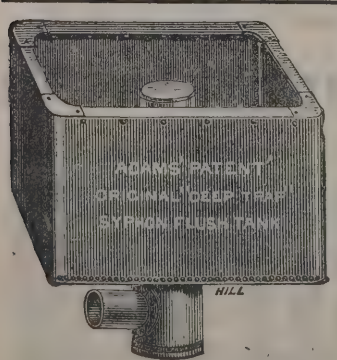
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to :—

BRISTOL	**St. Philip's Marsh.**	**READING**	**Caversham Road.**
EXETER	**Basin Head.**	**DUBLIN**	**14 St. Andrew's Street.**
SOUTHSEA	**Beaufort Road.**	**MANCHESTER**	**20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

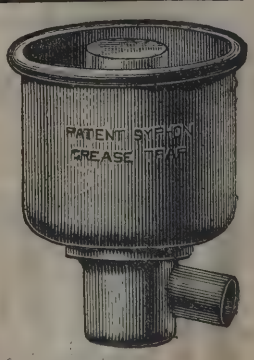


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, October 29, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, NOVEMBER 5, 1886.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

NOTICE TO THE PUBLIC.

By the Post Office arrangements THE ARCHITECT *can now be sent to any part of the United Kingdom by an affixed Halfpenny stamp; hitherto the postage has very frequently been twopence per copy. The Publishers will be happy to forward, for 19s. 6d. per annum, post paid,* THE ARCHITECT, *to residents in towns and neighbourhoods to which there is no easy access by railway. Terms for the half-year, 10s.*

Our readers are invited to address us on subjects of interest to themselves or the public. We shall be always ready to insert letters asking for a solution of any suitable questions of a professional or practical nature, and to receive replies to such inquiries.

THE ARCHITECT
AND
CONTRACT REPORTER.

ADVERTISEMENT SCALE.

	£	s	d
For Two Lines and under (eight words to the line)	0	2	6
For every Additional Line	0	0	6
For Quarter Page	2	10	0
For Half Page	4	10	0
For a Page	8	8	0
For 1 inch deep by 2½ wide	0	7	6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & CO., 175 *Strand, London, W.C.*

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

ELLAND.—Nov. 9.—Plans are invited for the Erection of a Town Hall. Mr. J. L. Garsed, Hon. Secretary, Town Hall Company's Offices, Southgate, Elland.

CONTRACTS OPEN.

ABERYSTWITH. — Nov. 26. — For Erecting Wrought-iron Bridge (exclusive of Masonry) on Cast-iron Columns over the River Rheidol. Mr. James W. Szlumper, C.E., 6 Victoria Street, London, S.W.

BALLYNESS.—Nov. 10.—For Building Coastguard Station. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

BARROW-IN-FURNESS.—Nov. 25.—For Fittings for Public Library and Reading-rooms in the New Town Hall. Mr. C. F. Preston, Town Clerk, Barrow-in-Furness.

BIRKENHEAD.—Nov. 12.—For Erection of Retort Benches and Stove Shed. Mr. T. O. Paterson, Engineer, Gasworks, Thomas Street, Birkenhead.

BLACKPOOL. — Nov. 9.—For Additions, Talbot Square. Messrs. Garlick & Sykes, Architects, 6 Talbot Square, Blackpool.

BRAUNSTON. — Nov. 5. — For Repairs to Wheatsheaf. Messrs. J. Ingham & Son, Architects, Hazlewood Road, Northampton.

BRISTOL.—Nov. 8.—For Building Almshouse in Rupert Street. Mr. E. H. Edwards, Architect, 5 Clare Street, Bristol.

BURNLEY.—Nov. 6.—For Building Livingstone Mill for Mr. J. Grey. Mr. S. Keighley, Architect, Nicholas Street, Burnley.

CHAMPION HILL.—Nov. 18.—For Laying Out and Planting Infirmary Grounds, East Dulwich Grove, Roads, Paths, Drainage, &c. Messrs. Jarvis & Son, Architects, 29 Trinity Square, Borough, S.E.

CORK.—Nov. 11.—For Taking Down and Rebuilding Portion of North Mall, Quay Wall. The City Engineer, 20 South Mall, Cork.

CROMER.—Nov. 8.—For Stoneware and Iron-pipe Sewers, with Manholes, Ventilators, &c. Mr. J. C. Mellis, C.E., 232 Gresham House, Old Broad Street, E.C.

DARENTH.—Nov. 15.—For Painting and other Works at the Asylum for Imbeciles. Messrs. A. & C. Harston, Architects, 15 Leadenhall Street, E.C.

DARLINGTON.—Nov. 9.—For Alterations and Additions to Gurney Pease Memorial Board Schools, and Building Infant School. Mr. T. W. Robson, Surveyor, Houndgate, Darlington.

EPSOM.—Nov. 12.—For Building Large Cart Shed and Lamp Store at the Waterworks. Mr. G. White, Clerk to the Local Board, Court House, Epsom.

FLEETWOOD.—For Finishing Ten Cottages, Warrenhurst Estate. Mr. J. M. Jameson, Fleetwood.

HALIFAX.—Nov. 6.—For Building Small Warehouse. Mr. Joseph F. Walsh, Architect, Waterhouse Chambers, Halifax.

HYDE.—For Re-erection of Fireproof Mill (Ironwork excepted). Messrs. Potts, Pickup & Dixon, Architects, 1 Princess Street, Manchester.

INVERNESS. — Nov. 6. — For Building Chimney Stack (55 feet high). Mr. Cameron, Architect, 51 Church Street, Inverness.

KINSALE.—Nov. 11.—For Building Dispensary and Medical Officer's Residence at Durah. Mr. R. Evans, 23 Sullivan's Quay, Cork.

LEEDS.—Nov. 6.—For Building Pair of Dwelling-houses and Stabling, Beeston Hill. Mr. C. H. Thornton, Architect, 3 Park Row, Leeds.

LEEK.—For Heating Conservative Club with Hot Water. Mr. James G. Smith, Architect, Leek.

LONDON.—For Building Methodist New Connexion Chapel and School, West Kensington. Mr. A. H. Goodall, Architect, Central Chambers, Nottingham.

LOUGHBOROUGH.—Nov. 13.—For Cast-iron Pipes (5¼ miles) and Special Castings, Construction of Intake Works, Laying Pipes, &c. Mr. H. Walker, C.E., Nottingham; Mr. G. Hodson, C.E., Loughborough.

LOUGH SHINNY.—Nov. 10.—For Pier, Boat Slip and Platform, &c. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

LYDD.—For Reseating Parish Church. Mr. J. Oldrid Scott, Architect, 21 Spring Gardens, S.W.

MANCHESTER.—Nov. 9.—For Fittings for the Reading-room, Queen's Park, Harpurhey, the City Surveyor, Town Hall, Manchester.

NORTHALLERTON.—Nov. 9.—For Additional Cells and Alteration to Existing Cells at the Workhouse. Mr. Wm. Fowle, Clerk to the Guardians, Northallerton.

NOTTINGHAM.—For Erection of Additional Classrooms at Queen's Walk Schools, and Additional Classroom, Berridge Road School. Mr. A. N. Bromley, Architect, Weekday Cross, Nottingham.

POPLAR.—Nov. 26.—For Building Engine and Boiler Houses, Chimney Shaft, Workshop, Store Sheds, &c. The Engineer to the Metropolitan Board of Works, Spring Gardens, S.W.

READING.—Nov. 11.—For Enlarging Head Post-office, H.M. Office of Works, 12 Whitehall Place, S.W.

ROCHESTER.—Nov. 8.—For Small Landing Stage, Blue Boar Hard. The City Surveyor, Guildhall, Rochester.

SEVENOAKS.—Nov. 9.—For the Works in Connection with the Sewerage, Tanks, Laying out Land, Pumping Machinery, Gas Mains, &c., Edenbridge. Mr. J. G. Hall, C.E., 8 St. Margaret Street, Canterbury.

SOUTHPORT.—Nov. 11.—For Cast-iron Manhole Covers (Thirty). Mr. Crabtree, Borough Surveyor, Southport.

SUNDERLAND.—Nov. 8.—For Alterations to Bridge Toll House. The Borough Surveyor, East Cross Street, Sunderland.

SWAFFHAM.—Nov. 8.—For Restoration and Repairs, Crown Hotel. Mr. W. G. Winearls, Solicitor, Swaffham.

TOTTENHAM.—Nov. 16.—For Construction of Engine House, Engine Foundations, Boiler House, Chimney Shaft, Flues, Setting of Boilers, Water Tower, &c., Longwater Pumping Station. Mr. De Pape, C.E., Coombes Croft House, Tottenham.

WALTHAMSTOW.—Nov. 9.—For Building Board School for Boys. Mr. W. A. Longmore, Architect, 7 Great Alie Street, Whitechapel.

WALTHAMSTOW.—Nov. 9.—For Two Classrooms to Board School for Girls. Mr. W. A. Longmore, Architect, 7 Great Alie Street, Whitechapel.

WINDSOR.—Nov. 15.—For Works to Workhouse Laundry and Infirmary. Messrs. Edgington & Summerbell, Architects, Park Street, Windsor.

TENDERS.

ASTON MANOR.

For Improvement Works, Clifford Street West, Aston Manor. Mr. W. A. DAVIES, Surveyor, Public Buildings.

Keatherly Bros., Coventry	£280 0 0
J. White, Handsworth	260 0 0
S. E. Frayne, Kidderminster	241 5 0
Currall & Lewis, Birmingham	239 10 0
G. Emery, Stafford	225 0 0
B. Pearson, Nichells, Birmingham	215 0 0
Jones & Fitzmaurice, Birmingham	199 0 0
Jones & Wood, Birmingham	187 0 0
A. Palmer, Birmingham	185 0 0
G. LAW, Kidderminster (*accepted*)	175 0 0
Surveyor's estimate	198 0 0

BRIGHTON.

For Sanitary Alterations and Additions to No. 7 Belvedere Terrace, for Captain Patton. Mr. C. E. GRITTON, M.S.A., Surveyor, of Brighton, London, and Sidcup.
GEORGE ROSE, Brighton (*accepted*).

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

BALLYCARRY.

For Building a Manse, for Ballycarry Presbyterian Church.

	Stone.	Brick.
R. Caldwell, Belfast	£639 0 0	£689 0 0
M. Laird, Belfast	635 0 0	740 0 0
H. Laverty, Carrickfergus	550 0 0	—
H. Todd, Belfast	495 0 0	540 0 0
W. M'Cullough, Ballyclare	488 0 0	520 0 0
A. Rogers, Carrickfergus	481 6 0	—
H. SERVICE,* Ballyclare	470 0 0	490 0 0

* Accepted at 470*l.*

BIRMINGHAM.

For Building Workhouse Infirmary. Mr. W. H. WARD, Architect, Paradise Street, Birmingham.

E. Howell & Son, London	£88,500 0 0
J. Everall, Malvern	87,278 0 0
Jones & Son, Wolverhampton	79,980 0 0
J. Biggs, Handsworth	79,000 0 0
C. A. Edge & Co., Birmingham	79,000 0 0
G. F. Smith, Milveston	76,550 0 0
J. Barnsley & Son, Birmingham	75,880 0 0
Barker & Son, Handsworth	75,760 0 0
Sapcote & Sons, Birmingham	75,627 0 0
Moffat, Birmingham	75,500 0 0
Horsman & Co., Wolverhampton	74,550 0 0
H. Lovett & Co., Wolverhampton	73,000 0 0
W. & J. Webb, Birmingham	72,900 0 0
J. Bowen, Balsall Heath Road	72,552 0 0
Thos. Rowbotham, Birmingham	72,500 0 0
C. Wall, Chelsea	68,788 0 0
J. Garlick, London	67,900 0 0
Gowing & Ingram, Balsall Heath Road	66,842 0 0
Storrs, Sons & Co., Stalybridge	66,599 0 0
Horsley Bros., Biminghan	65,700 0 0
Potter & Co., London	60,850 0 0
WILLIAM BISSETT & SONS, Sheffield (*accepted*)	59,850 0 0
William Robinson, Birmingham	59,353 0 0

BRIGHTLINGSEA.

For Construction of Sewerage Works, Brightlingsea, Essex. Mr. G. H. SASSE, Engineer, Thorpe-le-Soken.

F. B. Capon, Manningtree	£223 0 0
A. C. Trew, Ipswich	200 0 0
W. J. Hook, Clacton-on-Sea	152 0 0
W. G. GILLINGHAM, Frinton, Essex (*accepted*)	127 0 0
C. H. Aldridge, Colchester	113 0 0

BURNHAM.

For Construction of Water Tower and Pumping Station, Underground Accumulating Reservoir, Wrought-iron Tank, Girders, &c., for the Waterworks, Maldon Union, Burnham. Mr. A. STEWART, C.E., Burnham.

G. Bell, Tottenham	£2,268 13 5
Snow & Co, London	1,907 0 0
Boyd & Mackinlay, London	1,861 18 6
R. Cowdery, Marden, Kent	1,614 0 0
G. Potter, Lower Clapton	1,530 0 0
G. Gibson, Southall	1,519 6 2
Diss, Colchester	1,507 7 10
Cook, Burnham	1,466 0 0
Lewis, Witham	1,445 16 6
Knight, Morden, Surrey	1,428 0 0
Pickthall, Yeovil	1,417 8 6
Hills, High Wycombe	1,362 18 0
Innes & Wood, Handsworth, Birmingham	1,360 17 10
Farrow, Chelmsford	1,360 0 0
FOSTER & DICKSEE, Rugby (*accepted*)	1,319 7 6

CARDIFF.

For Building Lecture Rooms, University College, Cardiff. Mr. GEO. G. ROBINSON, Architect, Cardiff. Quantities by Mr. Norman Wright.

F. & W. Cox, Llandaff	£1,568 0 0
D. Davies, Cardiff	1,470 0 0
Jones Bros., Cardiff	1,440 0 0
Shepton & Sons, Cardiff	1,425 0 0
H. Gibbon, Cardiff	1,360 0 0
J. Miles, Cardiff	1,320 0 0
Burton, Cardiff	1,294 0 0
Turner & Sons, Cardiff	1,281 0 0

For Heating Apparatus for Unitarian Church, Cardiff, inclusive of Coils and Cases. Mr. E. H. BRUTON, A.R.I.B.A., Architect, Cardiff.

High Pressure.

Perkins & Son	£177 0 0
Renton Gibbs	124 5 0
J. Jackson	112 0 0
John King	108 0 0

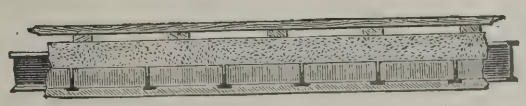
Low Pressure.

JOHN WILLIAMS & SON, Cardiff (*accepted*)	99 10 0
Richard Rundle	76 0 0
W. J. Vaughan	58 9 0

FLAT BRICK FIRE-PROOF FLOORS.



LONDON, 1874.


LONGITUDINAL SECTION.



BRUSSELS, 1876.

THE BEST as well as the CHEAPEST Fire-proof Floors yet introduced. Their small cost makes them specially suitable for artisans dwellings, residential flats, offices, chambers, and private houses.

They are constructed with hard-burnt bricks, laid flat, and bonded on the upper face with tough concrete 3 inches thick; and by the method of laying all iron is protected from the action of fire.

Experiments show a resistance to load and impact greater than furnished by the ordinary concrete floors. No thrust is transmitted to the walls, as in all arched construction, the walls being tied in and strengthened.

The floors are practically noiseless, the different densities of the concrete, brick and plaster, with the air space above, intercepting the sound vibrations.

The brick soffit forms a capital key for the plaster, and no laths or counterceiling are necessary, but for high-class work wood blocks are introduced in the soffit, to which the ordinary lath and plastering or fibrous plaster is fixed. This also provides a second air space, and furnishes the most perfect sound-resisting floors known.

They are not affected by water, acids, or alkalies, and they may be fixed during the progress of the building, thus dispensing with the use of internal scaffolding.

The concrete being tough instead of friable, the boarded finish may be nailed down without the use of sleeper joists. It is recommended to use an inch strip as a sleeper fillet. This will provide ventilation, and space for gas and water-pipes.

The depth of the finished floor is 6 to 9 inches only, and when the saving on this head is taken into account, the cost does not exceed that of the ordinary combustible timber floor of corresponding strength.

HOMAN & RODGERS,

Engineers and Patentees,

17 GRACECHURCH ST., LONDON, E.C., & 13 DAWSON ST., MANCHESTER.

WORKS: RATCLIFF, LONDON, E., & HULME IRONWORKS, MANCHESTER.

Homan's Patent Girders, Rolled Joists, Cast-iron Columns, Roofs, Bridges, and every kind of Constructional Ironwork.

London Telephone, No. 1,026. Registered Telegraphic Address—"HOMAN RODGERS, London"; "NAMOH, Manchester."

CHEAM.

For Works to Culvert, Worcester Park Railway Station, Cheam. Mr. G. MATHER, Surveyor, Epsom.

H. Knight, Malden	£70 0 0
C. Fifield, Woking	64 14 0
H. Taylor, Cheam	64 0 0
C. Powell, Cheam	59 0 0
W. J. Cherrington, Epsom	55 0 0
G. Page, Epsom	54 0 0
H. Keal, Sutton	52 10 0
T. Lye, Sutton	49 14 0
G. ACOCK, Wandsworth (*accepted*)	45 0 0

CHORLTON.

For Building Warehouse in Ackers Place and Weymouth Street, Chorlton-on-Medlock. Mr. M. SEANOR, Architect, Commercial Buildings, 15 Cross Street, Manchester.

J. K. Foreman	£3,111 0 0
B. Wade	2,920 9 0
Hampson & Co.	2,919 0 0
H. Shaw	2,915 0 0
O. Williams	2,847 0 0
Davison & Carr	2,842 0 0
J. Hibbert	2,825 0 0
G. MACFARLANE (*accepted*)	2,819 0 0

COLCHESTER.

For Alterations and Additions to Higham House, Colchester, for Mr. Thomas S. Furniss. Mr. WILLIAM H. ATKIN BERRY, A.R.I.B.A., Architect, 35 Bedford Row, W.C. Quantities by the Architect.

	Cost of Works.	Credit for Old Materials.
F. Bennett, Ipswich	£1,837 6 5	£27 6 5
S. C. Parmenter, Braintree	1,586 0 0	26 0 0
Grimwood & Sons, Sudbury	1,576 0 0	30 0 0
G. R. Hawkins, Monks Eleigh	1,505 3 0	10 0 0
F. Dupont, Colchester	1,490 0 0	55 0 0
SAUNDERS & SON, Dedham (*accepted*)	1,415 0 0	35 0 0

COVENTRY.

For Decoration of Chancel Roof, St. Michael's, Coventry.

F. HOLT, Warwick (*accepted*)	£247 18 0

CLACTON-ON-SEA.

For Kerbing, Paving, Channelling, and Making-up Pier Avenue, Clacton-on-Sea, Essex. Mr. G. H. SASSE, Engineer, Thorpe-le-Soken.

J. C. Allen, Clacton-on-Sea	£2,789 14 0
W. J. HOOK, Clacton-on-Sea (*accepted*)	2,674 14 0

DUNOON (SCOTLAND).

For Construction of a Filter, &c., at Sandbank, Dunoon. Mr. J. COLLIE, Engineer.

W. G. Flett, Paisley	£399 16 0
J. Murray, Dunoon	325 4 10
K. Moffat & Sons, Paisley	319 7 4
Kerr & Co., Dalrymple	310 7 6
Black & Eadie, Paisley	306 18 10
J. Walker, Greenock	291 11 0
Pollock & Co., Greenock	291 8 10
W. HARVIE, Lesmahagow, N.B. (*accepted*)	262 6 6
Surveyor's estimate	320 0 0
Providing and Laying Cast-Iron Pipes.	
T. Kent, Dunoon	85 17 0
M. Mitchell, Kirn	83 0 9
J. Small, Dunoon	73 13 4
A. MILLER, Dunoon (*accepted*)	69 11 0
Black Park Sewer.	
T. Kent	113 4 11
J. SMALL (*accepted*)	89 4 11

FALMOUTH.

For Supplying and Fixing Revolving Partition, Pike's Hill School, Falmouth. Mr. J. W. TROWNSON, Architect, Penzance.

FRANCIS & Co., London (*accepted*).

FINTRAY.

For Additions to House, Fintray, for Mr. John Otto Macqueen. Messrs. ELLIS & WILSON, Architects, 34 Bridge Street, Aberdeen.

Beaton Norrie, Newmarket, mason.
W. Hutcheon, Newmarket, carpenter.
S. & W. Christie, Dyce, slater.
James Sivewright, Inverurie, plasterer.
James Garvie & Sons, Aberdeen, painter.
Alexander Gunn, Aberdeen, plumber.

PHOTOGRAPHS OF **ARCHITECTURE**

In all parts of the world,

INCLUDING a NEW SERIES of DETAILS

From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.

Our magnificent Collection is always on view at our London Galleries,

24 OLD BOND STREET, W.,

Or Selections and Lists can be had by post from

WINCH BROTHERS, Colchester.

List Free.

PERMANENT EXHIBITION OF **ARCHITECTURAL APPLIANCES,**

10 Baker St., Portman Square, W.

WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.

Applications for Space can now be made to the Manager,

S. S. PHILLIPS.

HENRY KING

(Late GREEN & KING),

HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,

4 Lower Seymour St., Portman Sq., W.

(Late of 100 NEW BOND STREET).

DESIGNS PREPARED AND ESTIMATES GIVEN.

CONTRACTS.

THE LONDON GUARANTEE & ACCIDENT COMPANY (Limited) issue Bonds as security on behalf of Contractors or Builders for the due performance of Government, Municipal, or other Contracts of every description, at moderate rates. On application, leave will be given to send in the Company's name as surety with any Tender, no charge being made unless the bond is ultimately required. For terms, &c., apply to the Office, 10 Moorgate Street, London, E.C.

The Bonds of this Company are accepted by the several Government Departments.

QUESTION. WHOSE VENTILATORS are the best for Churches, **Chapels, Schools, Billiard Rooms,** Staircases, Kitchens, Stables, Factories, Hospitals, &c.?

ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, **HALIFAX.** Proved by the most extensive and varied application.

Established 1852.

WRIGHT & CO.'S PATENT FIREPROOF FIXING BLOCKS FOR WALLS AND FLOORS.

Awards 1886. { "Certificate of Merit" from the Sanitary Institute of Great Britain at York. "Highly Commended" at the Firemen's Exhibition, Westminster Aquarium.

Improved fixing, sounder work, no extra cost. Extensively used for High Class Works by leading Architects, Engineers, Contractors, H.M. War Department, &c. Our new illustrated pamphlet, post free, containing full particulars, with numerous recent references, including opinions from Arthur W. Blomfield, Esq., M.A., F.R.I.B.A., J. Douglass Matthews, Esq., F.R.I.B.A., Colonel W. J. Stuart, Commanding R.E. Department, Chatham; Basil Champneys, Esq., B.A., R. J. Withers, Esq., and many other leading architects; also recommendations from practical clerks of works, well-known contractors, &c., who have always used our patent fixings with the greatest success.

WRIGHT & CO. { 3 Westminster Chambers, Victoria Street, London, S.W.

Telegraphic Address: Fixing, London.
Works:—Gosport, Hants, and at Carnforth, Lancs.

BEST BLUE PENNANT STONE,

For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.

Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.

Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.

Wycombe Stone for Building, Pitching, Kerbing, &c.

We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.

Samples of either Stone and full particulars on application.

THOMAS FREE & SONS,

Naphill, High Wycombe.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions. — STEVENS & CO., Ceres Ironworks, Kingston-on-Thames.

VOLUME XXXV. OF THE ARCHITECT. Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

GRUNDY'S PATENT WARM-AIR VENTILATING FIRE GRATE.

The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.

TESTIMONIALS.

"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.

"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,

"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."

"6 John Street, Bedford Row, W.C.:
"December 16, 1885.

"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,

"R. S. LANDER, F.R.I.B.A.

"To Mr. John Grundy."

From James Garry, Esq., Architect, West Hartlepool, July 1884.

"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."

From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.

"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."

Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."

Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.

Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

GRANGE.

For Additions, &c., to National Schools, Grange-over-Sands. Mr. J. BENTLEY, Architect, 7 Lowther Street, Kendal.

Carpenter and Joiner Work.

H. Caddy, Grange-over-Sands	£195 13 6
W. Seay, Grange-over-Sands	190 0 0
T. Brown, Grange-over-Sands	168 10 0
J. Brown, Morecambe	158 0 0
R. Bush, Grange-over-Sands	157 19 0
Wright, Lancaster	156 10 0
W. Hutchinson, Kendal	155 15 9
W. Till, Grange-over-Sands	154 0 0
S. COMPSTON, Kendal (*accepted*)	153 10 0
J. Bush, Milnthorpe	144 10 3

Mason Work.

G. H. Pallinson, Windermere	157 4 0
J. Thoms, Grange-over-Sands	137 3 3
D. Thorns, Kendal	137 1 11
J. Dixon, Kendal	134 0 0
G. THOMPSON, Grange-over-Sands (*accepted*)	133 10 0
Keith, Arnside (*too late*)	82 9 3

Plumbing, Glazing, and Painting.

J. Gibson, Kendal	32 13 0
J. Graham, Grange-over-Sands	27 15 3
W. JACKSON, Kendal (*accepted*)	27 9 6
L. Airey, Kendal	26 0 0
J. Tanner, Kendal	25 10 4

Plastering and Slating.

G. Pattinson, Windermere	49 0 0
J. CHIPPENDALE, Grange-over-Sands (*accepted*)	42 0 0

Slating, &c.

A. Blair, Allithwaite, Grange-over-Sands	170 12 2

GORLESTON.

For Building Stables for the Great Yarmouth and Gorleston Tramway Company. Mr. H. ARNOTT, Architect, Gorleston.

J. F. W. Bray, Yarmouth	£393 0 0
T. J. Leggett, Gorleston	386 0 0
M. Barnard, Yarmouth	376 0 0
G. Fuller, Gorleston	372 10 0

GLOUCESTER.

For Constructing River Wall at the Quay. Mr. R. READ, City Surveyor, Gloucester.

	Stone.	Brick.
A. Killett, Landore	£7,047 10 4	£6,266 6 4
G. Lawson, Eyemouth	6,053 10 6	5,864 6 6
J. Fairbank, Newport, Mon.	5,874 16 6	5,874 16 6
J. Darnford & Son, Bedminster	4,135 15 3	4,040 15 3
Batchelor & Snowden, London	3,935 4 0	4,074 10 0
Johnson Bros., Hereford	3,831 3 2	2,405 9 2
R. Cowdery, Newent	3,630 4 9	3,393 14 9
M. E. Meredith, Gloucester	3,534 6 2	3,534 6 2
T. Small & Son, Birmingham	3,443 19 4	3,278 8 4
G. T. Beard, Gloucester	3,303 7 6	3,153 11 0
C. J. & W. H. King, Gloucester	3,178 0 0	3,367 0 0
E. CLUTTERBUCK, Gloucester	3,146 0 0*	3,057 10 0
J. Pickthall & Sons, Merthyr Tydvil (informal)	3,055 2 0	2,771 6 0

* Accepted.

GOOLE.

For Enlarging Board School, Alexandra Street, Goole. Mr. WILLIAM WATSON, Architect, Barstow Square, Wakefield.

Newboult & Garner, Goole, excavating, brick and stonework	£712 18 8
Richard Elliot, Goole, joiner and carpenter	580 0 0
Webster, Jackson & Co., Goole, plumbing, glazing and ironwork	276 0 0
George Stewart, Goole, slater	139 0 0
M. Baron, Goole, painting	45 0 0
Newboult & Garner, plastering	63 15 0
Total	£1,816 13 8

LEEDS.

For Building Twelve Houses, Clarendon Road. Mr. C. F. WILKINSON Architect, 6 Infirmary Street, Leeds.

Accepted Tenders.

J. Pullan, Leeds, brick and stone	£2,400 0 0
W. A. Ellison, Leeds, joinery, &c.	1,548 0 0
W. Holdsworth, Leeds, plastering	600 0 0
Young & Fawcitt, Leeds, plumbing, &c.	480 0 0
J. Atkinson, Leeds, slating	192 0 0
Killingbeck & Lowe, Leeds, painting	89 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
CORSHAM DOWN, FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).


Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET, HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.



I. SUMSION, *Quarry Owner,*


TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong-Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

LIVERPOOL.

For Repairs to Pavilions at the Workhouse, Smithdown Road, Toxteth Park. Mr. W. W. THOMAS, Architect, 25 Lord Street, Liverpool.

R. & C. Evans, Liverpool	£1,215 0 0
J. Henshaw, Liverpool	1,205 0 0
J. Williams, Garston	1,136 0 0
W. Tomkinson & Sons, Liverpool	1,085 0 0
G. Porter, Liverpool	1,064 0 0
T. Tyson, Liverpool	1,014 0 0
Kelly Bros., Walton	999 0 0
W. Thornton & Sons, Liverpool	999 0 0
Holme & Green, Liverpool	998 10 0
Raffle & Campbell, Liverpool	985 0 0
T. & P. Tyson, Liverpool	984 0 0
S. Webster, Bootle	980 0 0
Sinclair Bros., Bootle	930 0 0
J. Tetterington, Liverpool	919 0 0
J. HOLMES, Seaforth (*accepted*)	899 10 0

LONDON.

For an Addition at the Rear of 269 King's Road, S.W. Mr. H. W. BUDD, Architect, 76 Vincent Square, S.W.

Prestige & Co.	£290 0 0
Hoare & Son	269 0 0

For Works for the London School Board.

Sleaford Street (*Playground*).

C. F. Kearley	£390 0 0
R. & E. Evans	369 0 0
W. Oldrey & Co.	349 0 0
Holloway Bros.	330 0 0
J. Holloway	323 0 0
G. R. Earsdon	308 0 0
Cowley & Drake	296 10 0
W. Johnson	285 0 0

Marsh Lane (*Temporary Iron Buildings*).

J. Holloway	310 0 0
W. Johnson	270 0 0
A. Martin	230 0 0
J. H. Lyon	225 0 0
W. H. Pettit	223 0 0
T. Bendon	170 0 0

LONDON—*continued.*

For Works for the London School Board.

Hollond Street (*Playground*).

T. Riches	£347 10 0
R. Mayo	327 0 0
R. & E. Evans	315 0 0
C. F. Kearley	280 0 0
J. Webb	249 0 0
J. W. Roy	246 0 0
J. Holloway	230 0 0
Cowley & Drake	228 0 0
W. Oldrey & Co.	227 0 0
T. Bendon	225 0 0
A. Martin	215 0 0
W. Johnson	190 0 0

Harper Street (*Wash-house*).

W. Hornett	59 10 0
H. Walkley	58 6 0
J. W. Roy	44 0 0
G. B. Ash	42 10 0

St. John's Lane (*Closets*).

Johnson & Co.	87 0 0
Davis Bros.	84 0 0
J. Grover & Son	79 15 0
McCormick & Son	75 0 0
E. H. Sargeant	74 10 0

(*Galvanised Iron Dust Bins*).

F. Page	5 2 6
Jovial Pewtress	5 0 0
Brangwin & Co.	4 7 6
Croggon & Co.	4 2 6
Tuggon & Co.	4 0 0
Gospel Oak Iron Company	3 17 6
H. Greener & Co.	3 12 6
R. Crane	3 10 0
D. Codner & Co.	3 10 0
H. J. Streloon & Co.	3 9 0
R. H. & J. Pearson	3 7 6
J. C. Stokes & Co.	3 4 9
F. Braby & Co.	3 2 0
J. Bellamy	3 0 0
J. Gibb & Co.	3 0 0
J. Lysaght	2 14 0

ASCHERBERG PIANOS,

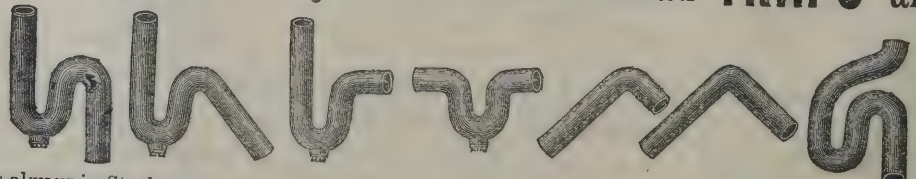
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS. PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET KING'S CROSS, W.C.

LONDON—*continued.*

For Road Improvement Works, for the Vestry of St. Mary, Islington. Mr. C. HIGGINS, Surveyor.

Anson Road.

Wall Bros.	£508 0 0
W. Nicholls	507 0 0
P. Aspinall & Son	500 0 0
J. Pizzey	495 0 0
J. Mowlem & Co.	491 0 0
G. Killingback	480 0 0
C. Irons	460 0 0
A. Walker	459 0 0
C. Taylor	397 0 0
E. HEARD (*accepted*)	340 0 0

Hugo Road.

W. Nicholls	203 0 0
Wall Bros.	186 0 0
J. Pizzey	182 0 0
C. Killingback	180 0 0
J. Mowlem & Co.	172 0 0
C. Irons	170 0 0
P. Aspinall & Son	170 0 0
E. Heard	168 15 0
A. Walker	155 0 0
C. TAYLOR (*accepted*)	148 10 0

LYNTON.

For Extension of System of Main Sewers, Lynton and Lynmouth.

JONES BROS., Lynton (*accepted*) . . . £665 0 0

MALTON.

For Restoration of Old Malton Church. Mr. TEMPLE MOORE, Architect.

SIMPSON & MALONE, Hull (*accepted*).

NOTTINGHAM.

For Erection and Completion of a Small Office, Stabling, Shed, &c., in Chesterfield Street, for Mr. J. M. Perry. Mr. W. H. RADFORD, Architect, Angel Row, Nottingham.

W. Williams, Sherwood	£221 12 0
S. C. & G. Gray, Nottingham	203 0 0
Wooll Bros., Nottingham	194 0 0
J. Middleton, Nottingham	190 0 0
W. UPTON, Ratcliffe (*accepted*)	182 17 0

MITCHAM.

For Construction of Ten Automatic Flushing Tanks, for the Sewage Works, Merton Road, Mitcham, for the Croydon Rural Sanitary Authority. Mr. R. M. CHART, Surveyor, Lower Mitcham.

Free & Sons, High Wycombe	£501 0 0
J. G. Howard, Mitcham	489 10 0
E. J. Burnand, Wallington	489 0 0
E. & W. Isles, Wimbledon	487 8 0
H. Knight, Morden	466 10 0
W. Cunliffe, Dorking	460 5 0
W. Langridge, Croydon	460 0 0
B. COOKE & Co., Battersea (*accepted*)	453 0 0

Filter.

B. Cooke & Co., Battersea	290 0 0
E. & W. Isles, Wimbledon	225 0 0
T. G. Howard, Mitcham	220 0 0
Free & Sons, High Wycombe	195 10 0
E. J. Burnand, Wallington	180 0 0
W. Cunliffe, Dorking	170 14 0
H. Knight, Morden	162 0 0
JOHNSON & Co, Mitcham (*accepted*)	158 0 0

PONTESBURY.

For Supply of Heating Apparatus, for Pontesbury Parish Church by Water or Air.

	Hot Water.	Hot Air.
W. Stainton, London	£250 0 0	—
Musgrave, Belfast	244 0 0	232 0 0
Perkins & Co., London	236 0 0	—
J. Longbottom & Co., Leeds	210 0 0	—
W. Truswell, Sheffield	185 0 0	60 0 0
Lea & Son, Runcorn	184 0 0	—
J. Jackson, Newcastle	183 16 0	—
J. King	181 10 0	152 0 0
Coalbrookdale Co., Shropshire	166 0 0	40 0 0
J. Attwood, Stourbridge	164 0 0	—
W. Jenkins, Leamington	140 0 0	—
Bacon & Co., London	138 0 0	—
W. Tice, Canterbury	136 0 0	—
J. Grundy, London	130 0 0	—
Kneale & Co., Liverpool	112 10 0	—
H. Greenhouse, Worcester	112 5 0	—
J. TRUSWELL, Sheffield, stove work (*accepted*)		£72 0 0

W. BELL & CO.

AMERICAN ORGAN MANUFACTURERS,

AT THEIR NEW PREMISES,

58 HOLBORN VIADUCT,

Keep a full line of the

CELEBRATED

"BELL"

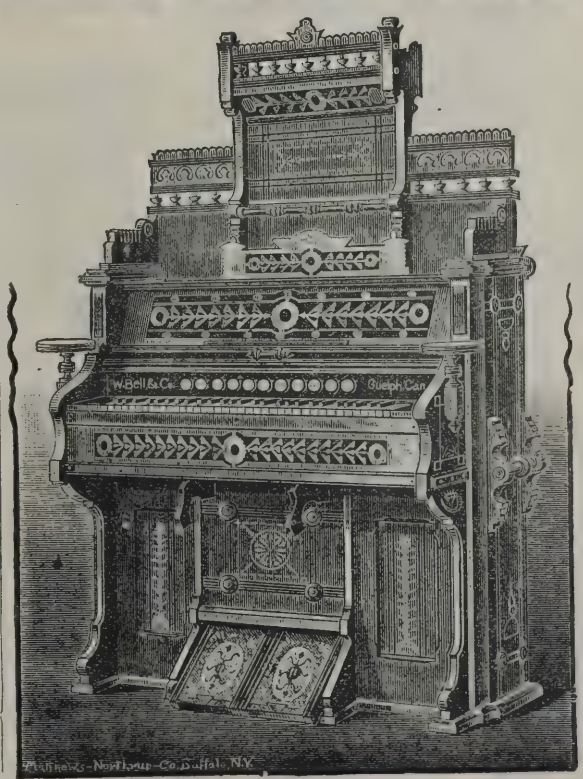
ORGANS

And the FAULTLESS

HARDMAN PIANOS

OF]

NEW YORK.



ALWAYS ON HAND FOR INSPECTION.

THESE INSTRUMENTS ARE ACKNOWLEDGED LEADERS OF ALL OTHERS.

CATALOGUES FREE

From above Address.

PLYMOUTH.

For Alterations at the Workhouse Plymouth.

Pellow & Bishop, Plymouth	£155 0 0
G. Shellabeer, Plymouth	148 0 0
W. Rowse, Plymouth	129 10 0
J. Maddock, Plymouth	129 0 0
J. Fox, jun., Plymouth	126 15 0
W. H. Tremain & Son, Plymouth	114 0 0
ROBERTS & HURRELL, Plymouth (*accepted*)	108 0 0

STEVENAGE.

For Supply of Cast-iron Pipes (200 tons), Stevenage Waterworks. Mr. A. THUEY, C.E., Palace Chambers, Westminster.

		Special Castings per ton.
Thames Bank Iron Co.	£950 14 9	£8 5 0 / 9 5 0
C. Jordan & Sons, Newport, Mon.	926 18 0	8 0 0
Butterley Co, Alfreton	912 5 0	7 5 0
H. J. Rogers, Watford	904 11 6	8 0 0
Tees Side Engine Works, Middlesbrough	901 14 3	8 0 0
Clay Cross Co., Chesterfield	901 11 8	7 12 6
J. Oakes, Alfreton	885 16 0	8 0 0
E. & F. Newton, Hitchin	882 16 9	7 17 6
J. & S. Roberts, West Bromwich	881 15 0	7 15 0
Cochrane, Grove & Co., Middlesbrough	881 11 3	7 15 0
Syrinx Gas Engine Co., Stevenage	869 15 3	8 7 6
Cochrane Co., Dudley	867 11 3	8 0 0
Stavely Iron Co., Chesterfield	856 7 6	7 10 0
C. Duckering, Lincoln	852 7 6	7 15 0
C. E. Firmstone Bros., Stourbridge	847 15 7	7 15 0
STANTON IRON CO. (*accepted*)	829 13 9	7 10 0

Reservoir.

Smith & Lovejoy	£704 15 6
Willmott & Sons, Hitchin (*accepted*)	443 0 0
Redhouse, Baldock	400 0 0

Pipe Laying.

Willmott & Sons	240 4 0

Trenching.

Gardner, Stevenage	196 15 10

RAWMARSH.

For Building Board Schools, &c., in Ashwood Road, Parkgate, for the Rawmarsh School Board. Mr. J. PLATTS, Architect, Rawmarsh.

Accepted Tenders.

W. H. Trehern, Rawmarsh, mason	£1,075 0 0
W. Treadwell, Rawmarsh, joiner	512 0 0
F. & T. Bool, Rawmarsh, plumber, &c.	169 15 0
J. Jarvis, Masbrough, slater	135 18 6
R. Jenkins & Son, Masbrough, heating	60 0 0
J. Raspin, Kimberworth, plasterer	51 0 0
W. Drake, Sheffield, palisade	31 0 0
T. White & Sons, Rawmarsh, painters	31 0 0
Architect's estimate	2,000 0 0

WHITBY.

For Enclosing Garden at the Union Workhouse with Retaining Wall, and Wrought-iron Unclimbable Railing on the top; and for Raising and Coping remaining Walls, and Fixing similar Railing on the top. Mr. E. H. SMALES, A.R.I.B.A., Architect, 1 Brunswick Street, Whitby.

	Walling.	Iron Railing.
W. Langdale & Sons, Whitby	£135 0 0	£34 0 0
W. Chapman	100 11 8	—
W. Massey, Whitby	82 16 7	—
J. Cook, Whitby	—	35 17 9
J. RUSSELL, Whitby	*73 13 0	33 16 6
J. B. Nicholson & Son, Whitby	—	33 8 3
R. HUTTON, Whitby	—	*32 0 0

Second Section.

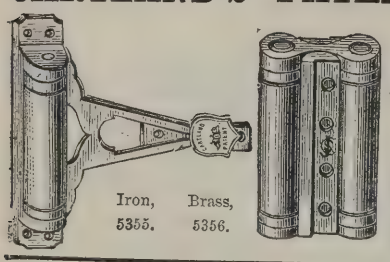
W. Langdale & Sons	120 0 0	117 10 10
W. Chapman	96 8 4	—
W. Massey	82 6 8	—
J. Cook	—	119 5 3
J. B. Nicholson & Sons	—	111 0 9
J. RUSSELL	*65 10 0	117 7 2
R. HUTTON	—	*100 0 0

*Accepted.

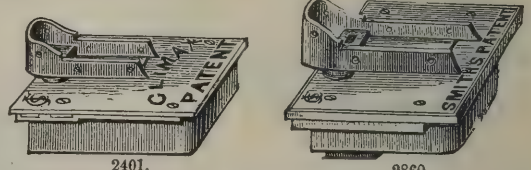
THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

MELBOURNE INTERNATIONAL EXHIBITION, 1880, THE GOLD MEDAL
In addition to FIRST-CLASS HONOURS, was awarded to
JAMES CARTLAND & SONS,
Cabinet Builders and Naval Brass Founders,
BIRMINGHAM.
London Show-rooms: 40 Holborn Viaduct, E.C.
The extent, variety, quality, and finish of articles manufactured at this establishment cannot be excelled.

CARTLAND'S PATENT HELICAL, CLIMAX DOOR SPRINGS & HINGES.



CAUTION.
Ironmongers, Builders, and others are requested to see that the Trade Mark is on each Spring, as the Patentees are informed that spurious imitations of the
"CLIMAX SPRING HINGES"
are being sold, which have neither the Power or Durability of Cartland's Patent Climax Door Springs and Hinges.



2401. 2860

Pattern Books, both full size and Miniature, containing every information, may be obtained through any Merchant or Factor on application. All Goods for Export are carefully packed in Cartoon Boxes, and distinctly labelled with orange-coloured labels, bearing our Trade Mark, as above.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

TOTTENHAM.

For Making-up Elm Road, Tottenham. Mr. W. A. H. DE PAPE, Surveyor.

George Bell, Tottenham £939 4 10

Westerfield Road.

G. Bell 667 5 11

TRADE NOTES.

MR. JONES, art metal worker, of Walker's Croft, Manchester, has just completed and fixed two pairs of gates, two single gates, and the whole of the railings of the new General Post-office, Manchester. On inspecting the work on Wednesday last we were very favourably impressed with the effective appearance and handsome design of the gates. The work has been carried out under the supervision of the architect to the building, Mr. Henry Tanner, of H.M. Office of Works.

TWO "latten" brasses, mounted on Belgian marble, one to the memory of William, Baron Brougham and Vaux, and the other of Eleonora Brougham, the mother of the whilom Lord High Chancellor, have been forwarded to Brougham from the works of Mr. Gawthorp, of Long Acre, London.

GUIDE village, with about five hundred inhabitants, is situated above the highest reservoir of the Blackburn Corporation Waterworks. Mr. J. B. McCallum, C.E., the borough and water engineer, Blackburn, has recently put down two of Blake's patent hydraulic rams, capable of forcing about 30,000 gallons per day to a service tank about three-quarters of a mile from the rams and 170 feet higher. The waste water from the rams gravitates to an adjacent reservoir. Mr. McCallum reports well of the working and efficiency of the rams.

AT the last meeting of the Committee of the Institute of Auctioneers and Surveyors of the United Kingdom, Mr. Klenck, of the firm of Messrs. J. M. Klenck & Co., in the chair, the following resolution was carried, on the proposition of Mr. E. Ingham, seconded by Mr. G. Stanham:—"That no officers be appointed by this Committee, but that the appointment of all officers be left to the Council to be elected by the members."

IN consequence of the great increase in the old and well-known business of Edwin Lumby, Son & Wood, Halifax, makers of welded boilers for hot-water heating apparatus and safe manufactory, it has been converted into a limited company under the style and title of "Lumby, Son & Wood, Limited." The capital is 40,000*l.* in 8,000 shares of 5*l.* each, of which it is only proposed to call up 3*l.* 10*s.* a share. The management will remain exactly as before, and the vendor, Mr. Percy Wood, takes 2,000 shares in part payment. Prospectus and form of application can be obtained from the bankers, the Halifax Commercial Banking Company, Limited.

WE notice that the prospectus of the Tesselated Floor Covering Company, Limited, of 74 Coleman Street, E.C., has just been issued. The company, which is fully subscribed to, proposes to take over the patents of Messrs. Hands & Bonny, referring to improvements in floor covering, in the shape of tiles claimed to be noiseless and ineffaceable, and easily restored.

NOTES ON NOVELTIES.

Terp's System of Boring Wells.—During our visit to the Brewers' Exhibition, which closed on Saturday last, we were particularly interested in the display of machinery for pumping, made by Mr. Olaf Terp, of 25*l* High Holborn. We understand that Mr. Terp intends executing artesian well borings in England, after an entirely new system, which has been successful on the Continent. The Continental press speak of the excellent results obtained by this patent, and especially the *Cologne Gazette* of January 23, 1886, which states that "at the brewery at Geistingen, at a depth of 200 feet, sufficient water was found, in a comparatively short time, to supply the whole wants of this large brewery, and at a very little expense and labour." The main object of Mr. Terp, in conjunction with Mr. Henry Schaefer, the commercial manager of the firm, is to do the borings on their simplified system quicker than has been known hitherto, and consequently involving less outlay and labour. By the aid of their casings of the wells, they effectually prevent any bad water from the first upper strata filtering through and mixing with the pure water rising from the bottom of the well. What has long been wanted is a process for obtaining really good and pure water, this being obtained through artesian well boring, which apparently has been brought to a certain perfection by the system Olaf Terp. We feel confident that this firm will acquire a certain notoriety in this particular class of work. At the present moment they are executing a well to supply the South London Brewery of Messrs. Jenner & Sons, in Southwark Bridge Road.

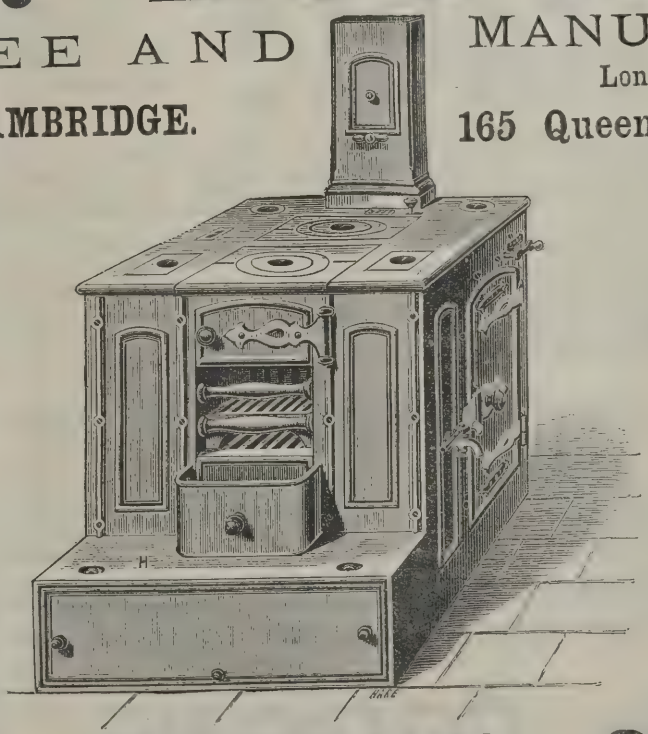
E. LOFTS,

PATENTEE AND MANUFACTURER,

Hills Road, CAMBRIDGE.

London Show-rooms:

165 Queen Victoria St., E.C.



OPEN FIREPLACES

FOR

DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES.

HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS, &c., &c.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Store.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort, they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; **consume their own smoke**; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge.

HARE & CO.

THE development of wood-engraving into high art is exemplified by the work for which this firm is so well known. Practically, the great improvements in this department have had their origin with Messrs. Hare & Co. half a century ago, and nothing but emulation has caused the appearance of so many firms claiming to be wood-engravers. Their success has been gained by great superiority in work. It may be said, in short, that the employés of the firm, the draughtsmen and engravers, are artists *con amore*, educated to the requirements of every class of trade or profession. In the engineering trade, for instance, thoroughly capable men are retained, who have made a study of it, and who know every detail. Most of the prominent engineering catalogues in the country are executed by this firm, and splendidly executed they are. In a large proportion of newspapers and journals the illustrated advertisements are the work of Messrs. Hare & Co., and the great improvement in the get-up of these—the new ideas in design which the firm volunteer to advertisers—are to be attributed to this firm. As a supplementary business, Messrs. Hare & Co. have adopted a process of photo-gravure which is sure to meet with general favour. It consists in being able to reproduce from photographs, oil-paintings, wash-drawings, or in fact any definite copy, with excellent effects. Its advantages come in where wood-engraving is unnecessary. For instance, any firm possessing a photo of an exhibit, say, or drawing, can avoid the expense of wood-engraving by having them photo-gravured. A plant for the new process is being put down at Bolt Court, Fleet Street, and it will no doubt soon be pressed to meet the demand.

WESTON-CROWLEY'S PATENT GEARED PULLEY-BLOCK.

MESSRS. JOHN CROWLEY & CO., of Sheffield, are the manufacturers and joint patentees of this improvement on pulley-blocks. Its merit is in being an addition of gearing to their original differential system. It will rather surprise some of our readers to learn that by this small pulley one man can lift several tons as if they were pounds. This we have seen done at the firm's works in Sheffield. The main idea of the Weston-Crowley system is a small, convenient, and simple pulley, in fact as simple as the tackle block of old. The difficulty of inserting the hook into the eye-bolt ring or suspending sling—making the overhead fixing a matter of no small doubt—is obviated in this patent by the absence of a wide-spreading sprocket-wheel and all other projecting attachments. We quote a description of the patent in the firm's circular:—"Like the plain Weston differential pulley, and also like its simple wooden antitype, the new geared block has its general figure and largest dimensions limited to the diameter of the main shears. Within such moderate space, however, is contained the effective gearing of a double-purchase crab, *i.e.*, two pairs of wheels and pinions well enclosed, and an operating sprocket wheel." We have inspected this patent geared pulley-block, and have seen actual tests, with most satisfactory results. It is an immense economy of labour. Another feature is that the firm will guarantee their pulley-blocks to lift a specified weight, and subject them to severe tests before leaving the works. We should decidedly recommend them in preference to many of the complicated and unreliable pulleys in the market. The patent geared pulley-block should be admirably suited to the requirements of contractors, and our readers generally. We must mention that Messrs. John Crowley & Co. are engaged extensively in the manufacture of malleable castings of all descriptions, for which they have separate works in Sheffield.

MESSRS. P. & W. MACLELLAN, GLASGOW.

THE new premises of the enterprising and well-known firm of Messrs. P. & W. Maclellan, of Trongate, Glasgow, and the Clutha Ironworks, form one of the most important commercial improvements in the city. The new building has a frontage of 72 feet 6 inches to Trongate, the front elevation being modern Italian, three storeys high. The style of architecture would be pure modern Italian were it not for a mixture of stone and iron-work, which forms one of the principal features of the building. The front building, which runs back 50 feet, is on the ground flat divided into spacious shops and saloons, and upon the flats above, warehouses and offices, and in the rear of this is an immense three-storeyed galleried warehouse, running about 150 feet, lighted from a centre-arched glass roof, which most successfully throws a flood of subdued light on to every article and into every recess, the total space covered being an acre of ground. Messrs. John Baird and James Thomson have been the architects. The contracts were secured by Messrs. Morrison &

Equitable

One Premium returned every Fifth Year to those who have made no Claim.

FIRE INCOME (all Home Business) £66,778
FUNDS £98,969

ACCIDENT CO.
INCOME ... £21,264 | FUNDS ... £36,528

Fire & Accident Offices

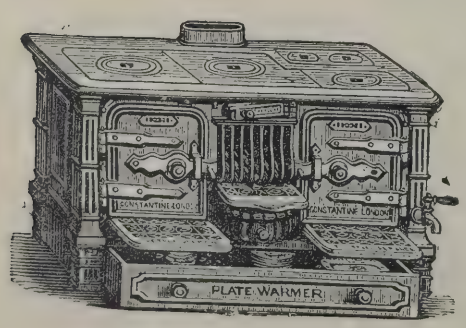
ACCIDENT POLICIES, Free from vexatious conditions, and INSURING CAPITAL SUMS in the event of PERMANENT DISABLEMENT, as well as DEATH by Accident and Allowances during TEMPORARY DISABLEMENT, are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE GUARANTEE AND ACCIDENT COMPANY LIMITED.

FIRE POLICIES, COVERING DWELLING-HOUSES and HOUSEHOLD FURNITURE; FARM BUILDINGS and FARMING STOCK; SHOPS and STOCKS-IN-TRADE, CHURCHES, CHAPELS, and SCHOOLS, and all other risks of ordinary Hazard are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE FIRE INSURANCE COMPANY LIMITED.

For information as to Agencies, apply to the
SECRETARY, EQUITABLE OFFICES, 11 & 13 ST. ANN STREET, MANCHESTER,
Or to the RESIDENT SECRETARY at the various Branches:—

London ... ... 69 Lombard Street, E.C.
Glasgow... ... ... 101 St. Vincent Street.
Birmingham ... ... Midland Buildings, 2 New Street.
Dublin ... ... 18 Dame Street.
Liverpool ... ... 11 Tithebarn Street.
Newcastle ... ... 1 St. Nicholas Buildings.
Belfast ... ... 6 Royal Avenue.

A HOUSEHOLD TREASURE.
75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S
PATENT "TREASURE"
COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*
Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.
N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

Mason, Anderson & Henderson. The malleable iron girders and other work of a like kind were furnished by the proprietors, whilst the ornamental castings were produced at the Saracen Foundry.

PORT SAID BRITISH HOSPITAL.

LAST week the hospital buildings constructed by Messrs W. H. Lascelles & Co., of Bunhill Row, E.C., were inspected at the works of the firm previous to shipment to Egyptian soil. The hospital has been built from the designs of Viscountess Strangford, to whom the realisation of the scheme owes so much, and is a commodious airy structure of one storey, admirably adapted for the Egyptian climate. It consists of two wings, one on each side of an open passage, and united under one roof at the entrance. The material used is Baltic fir, which will be painted outside and varnished within, and what first strikes all visitors is the loftiness of the various apartments, an important consideration when the destination of the building is borne in mind. At present the hospital is planned to contain thirty beds, but more patients could be accommodated on an emergency. In all there are five wards, the principal of which is 38 feet long by 28 feet wide, and the average height of the various apartments is 10 feet to the eaves, or 19 feet to the top of the ridge. The whole of the building stands on a frame, which will rest on concrete pillars 4 feet above the ground, so as to allow of a free draught of air underneath. Inside the rafters of the wards and other rooms are lined with match-boarding, and the building will be entirely roofed with "Willesden paper," a light, durable, and waterproof paper. Besides the accommodation for patients, there are quarters for the resident doctor and three nurses, a spacious bath-room lighted from the roof, a kitchen and necessary offices, and the dispensary, which is in a sense apart from the hospital, and is intended to be of service, not only to the patients, but generally to the native inhabitants of the Delta. Round three sides of the building runs a veranda, approached from the wards and rooms by French windows. The flooring of the structure is "tongued," by which means it is made thoroughly draught-proof, but the floors of the verandas and over the open passage are latticed, to allow the rain-water to pass away. As the hospital now stands at Messrs. Lascelles's premises, Sugar House Lane, Stratford, it is "in frame," and ready to be put on board ship for transport to Port Said as soon as its several parts have been numbered and taken down. Though it occupies about half an acre of ground, and its construction has cost about 3,000*l.*, the whole work has been accomplished in eight weeks. The committee hope, and with good reason, that the building will be at Port Said, ready for the reception of patients, by Christmas.

THE PLUMBERS' COMPANY.

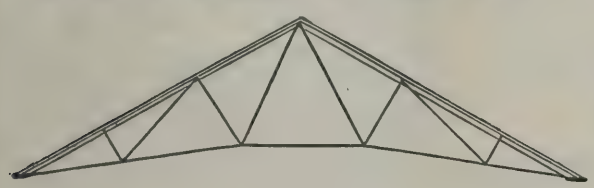
THE Lord Mayor presided at the third meeting of the General Council of the Worshipful Company of Plumbers at the Guildhall on Wednesday, for the purpose of receiving a report from the committee appointed to consider a scheme for the registration of plumbers. Mr. Alderman Stuart Knill, Master of the Company, said they had not been idle in their endeavours to carry out the resolutions passed at the last council meeting. There were certain matters that required legislative action, and these the committee and Court of the Company had under their immediate consideration, and hoped before long to succeed in carrying. Mr. George Shaw stated that applications for registration had come in not only from every quarter of London, but from almost every important district of the United Kingdom. The number of each class of applications dealt with by the committee up to Tuesday was—London masters, 149; provincial masters, 123; London journeymen, 280; provincial journeymen, 150—total applications dealt with, 702; and several hundred applications had yet to be considered.

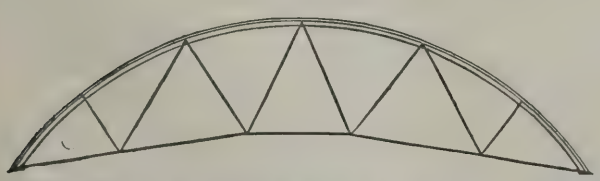
THE PROPOSED EXHIBITION IN GLASGOW.

A MEETING, convened by the Lord Provost, was held in the Council Hall, Glasgow, on Friday, "to consult as to the proposed Exhibition, to consider the formation of a General Council, and to take other preliminary measures for organising the work." Lord Provost M'Onie presided.

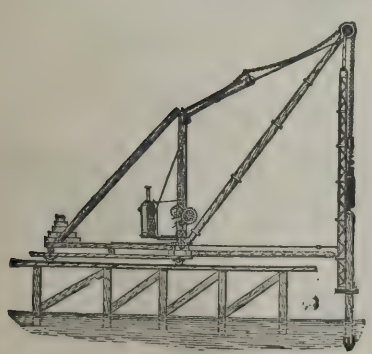
Bailie Dickson, the Chairman of the Parks and Galleries Committee of the Town Council, said that the matter of the Exhibition had been remitted to that committee to make arrangements or to inquire into the propriety as to whether or not an Exhibition should be held at this particular juncture. This movement in Glasgow had been started some three years ago, when it was resolved that, if practicable, an Exhibition

WALTER JONES, MAGNET WHARF, BOW BRIDGE, E.,
MANUFACTURER OF
WROUGHT-IRON ROOFS,
PLAIN OR ORNAMENTAL,
ADAPTED FOR
GALVANIZED IRON,
SLATES, TILES, or GLASS.



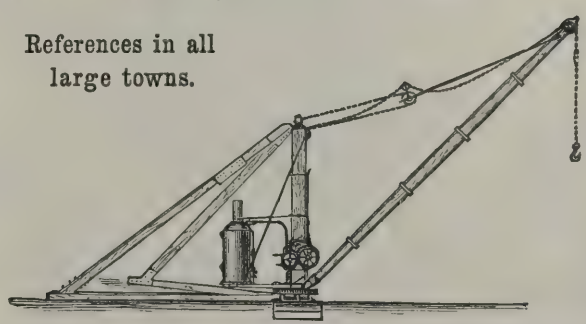


BUTTERS BROTHERS, ENGINEERS, GLASGOW.
PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.



Crane used for Piling.

References in all large towns.



SCOTCH BUILDERS' CRANES.
Large Stocks. Send for List.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8	10 0
„ ¾ „	.	9	10 0
„ 1 „	.	10	10 0

FOR SALE, HIRE OR HIRE-PURCHASE.

should be held in Glasgow; but, very unfortunately, Bailie Jackson, who was then at the head of the movement, became indisposed, and, in face of the depressed state of trade, it was felt unjustifiable to go forward and carry out the proposal. The Edinburgh people then stepped in, and he was betraying no secrets when he said that Edinburgh people had on all occasions expressed themselves in terms of the highest appreciation of the way in which Glasgow had assisted them; indeed, they questioned very much if the movement could have been launched in Edinburgh at the time but for Glasgow. The first difficulty the committee had to face was as to which year the Exhibition should take place; and in view of the fact that there was to be an Exhibition in Manchester in 1887, and one in Paris in 1889, it became imperatively necessary to fix it for 1888, or let it drop altogether. Then came the question as to what encouragement the committee would receive from the Town Council, and he need not say that that body entered into the scheme with a gratifying heartiness, and gave a guarantee of 5,000*l.* Bailie Shearer himself next inquired as to the support which the inhabitants would render, and in about a fortnight they had been guaranteed a sum of between 60,000*l.* and 70,000*l.* That was the answer which the public gave to those who thought this scheme should be delayed, and the unanimity of feeling on the matter was such as to indicate that there was an earnest desire that this matter should be carried forward, and all the gentlemen who had been approached by the committee had expressed their willingness to co-operate in every way they could to make the Exhibition a great success. They had, therefore, arrived at the stage that they had made up their minds to have an Exhibition; and the reasons for it were very obvious. In the first place, they hoped they were entering on a period when trade was beginning to revive. This Exhibition would be a help to that revival, for it would afford employment to a very large number of men, while the citizens would look forward to and anticipate good results from it. The most suitable site was the West End Park, and if the Exhibition were placed there he did not think they should have much difficulty in selling 30,000*l.* worth of season tickets. That was double the amount which had been sold in Edinburgh; but looking to the large population of Glasgow and the surrounding district, he thought they were making only a moderate estimate when they expected to double what had been done in Edinburgh. A sketch plan had been prepared by Mr. Carrick, giving 8½ acres to be occupied by the Exhibition—the Edinburgh Exhibition occupied eight acres—and the space to be enclosed was something like 39 acres, which was ample for outside amusement and recreation. Bailie Dickson then alluded to the advantages possessed by Glasgow for such an Exhibition, and concluded by expressing the hope that the outcome of the undertaking would be that some permanent benefit would accrue to the citizens.

Bailie Shearer pointed out that the amount guaranteed was double the amount which was guaranteed for the Edinburgh Exhibition. There were 5,000*l.* granted by the Corporation of Glasgow, four sums of 2,000*l.*, thirty-one sums of 1,000*l.*, thirteen sums of 500*l.*, twenty-six sums of 250*l.*; and since he had entered the meeting a number of gentlemen had stated their willingness to guarantee upwards of 1,500*l.*, so that they could say they had now a guarantee fund of 65,000*l.* The committee had received gratifying support from Glasgow manufacturers, engineers, and shipbuilders, who had also expressed themselves to the effect that so far as lay in their power they would surpass their previous efforts.

Sir Archibald Campbell, M.P., cordially supported the proposal to have an Exhibition in Glasgow, and he moved, "That this meeting approves of a National Exhibition being held in Glasgow in the year 1888, and agrees to request the Town Council to grant the use of such portions of Kelvingrove Park as may be required for the purposes of the Exhibition.

Mr. John Muir, in seconding, said that he believed the Edinburgh people would as cordially support this Exhibition as the Glasgow people had supported the Edinburgh Exhibition.

The resolution, on being put to the meeting, was adopted unanimously.

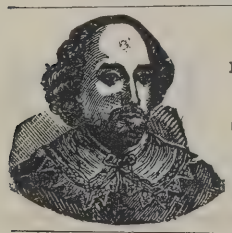
GLASGOW CATHEDRAL.*

THE first impression produced by the Cathedral of Glasgow upon any one having some knowledge of Gothic architecture is that it is a building of the thirteenth century, which has been erected probably in the course of one generation. There is a quiet dignity about it, and an all-pervading simplicity and harmony which we do not naturally associate with the architecture of later periods. On looking at it one is irresistibly reminded of Andrew Fairservice's exclamation, "Ah! it's a brave kirk—nane o' yer whigmaleeries and curliewurlies, and open-steek hems aboot it—a' solid, weel-jointed mason

* A paper by Mr. John Honeyman, read at the visit of provincial delegates to the Cathedral.

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, { Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



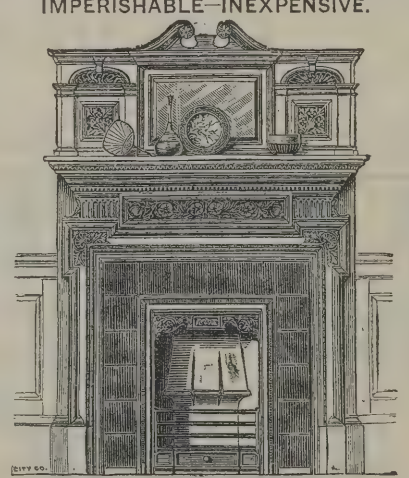
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

ART
MANTELS AND OVERMANTELS.
IMPERISHABLE—INEXPENSIVE.



IN PLAIN COLOURS OR VARIEGATED, AND MADE VARIOUS SIZES.
DESIGNS ON APPLICATION.
YATES, HAYWOOD & CO.,
AND THE ROTHERHAM FOUNDRY COMPANY, LD.
95 UPPER THAMES ST.,
LONDON.
EXTENSIVE SHOW ROOMS AS ABOVE.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

wark that will stand as lang as the warld, keep han's and gunpowther aff it." But on closer examination we find that, like most other cathedrals, it exhibits great variety of detail and specimens of every style of architecture practised from the twelfth century down to the seventeenth. You will readily understand that this variety throws considerable light on the history of the building, and even occasionally on contemporary history, for the peculiarities of the styles infallibly indicate at what time the portion of the building displaying these peculiarities was erected.

For example, if you look at the capitals and ribs nearest the door by which you entered in this apartment (the chapter-house), you will see that they are entirely different from those on the opposite side. Now, we know that capitals like those near the door were not invented, if I may so speak, till the early part of the thirteenth century, and that towards the close of that century they had completely gone out of fashion; and we also know that capitals like those on the north side were not invented till the beginning of the fifteenth century; so that even if we had no other record we could tell that this apartment had been built about two hundred years after that north wall of it had been finished. Guided in this way by the architectural features presented to us, we learn that the work of erecting the Cathedral as we have it now extended over a period of nearly three hundred years.

You have heard people say, I dare say, that we could not do anything like this nowadays; but I rather think people who make such a remark do not consider that to have the same chance with our Mediæval brethren we should be allowed three hundred years to do it! The truth is we have no patience in these days. If you wanted a cathedral like this, as large and massive, and I told you that it would not be finished within fifty years, you would think that an absurd idea. You would wish to impose penalties upon the contractors if they exceeded a limit of, say, ten years; and I admit that in that way it would be impossible to get such a work as this. But this was not done in that way. But there was one hindrance to the rapid growth of cathedrals in days of old which I think you would find still to be a drag—that is, the want of money. We find constant references to this want in Mediæval records, and accounts of various devices for "raising the wind." We almost wonder that the idea of a fancy bazaar, opened by a royal princess or a member of Parliament, did not occur to the perplexed chapter! Of course, they had an excellent substitute in the sale of indulgences—a device no longer available. In these days we go anywhere else than to the Church for our indulgences. But the difficulties of the Mediæval workmen really enhanced the value of their work. It is not merely on that account more valuable intrinsically to the archæological student, but as a monument of good work done by successive generations of our ancestors, radiant with the record of sustained faith and indomitable perseverance, it stands invested with an interest—I may say a pathetic interest—for us which, if reared in happier circumstances, it could never have possessed.

I have said that we can tell the age of any Mediæval work from the character of its details. This is true of all British work; but it is proper to notice that after the thirteenth century the development of Gothic architecture here did not follow exactly the same course as in England. From the time when Edward I. honoured Glasgow with a visit, onwards almost to the Reformation, our relations with the sister country were not amicable, to say the least of them, and our ecclesiastics being not only patriotic, but also jealous of the pretensions of the English hierarchy, were naturally averse to follow English fashions in architecture; and so we find that about that period the styles diverge and become dissimilar, and a knowledge of the two varieties becomes necessary to enable us to understand the sequence of the styles in the two countries. The place where we are now assembled offers a very good illustration of this. No one acquainted only with the cotemporaneous architecture of England would imagine that this was erected towards the middle of the fifteenth century. Still less would they think it possible that Blackader's crypt, which we shall presently see, was not erected till near the close of that century. There is not a trace of the familiar Perpendicular forms about it. Indeed, it is a remarkable fact that although we have in this Cathedral a good deal of fifteenth-century work, we have not a single example of the Perpendicular style, as practised in England. Even the late screenwork between the nave and choir is late French, not late English.

Although Glasgow Cathedral is one of the smallest in Great Britain, in one respect it excels all others—that is, in the beauty of its crypt, which is altogether unique. Most of the other British crypts are of an earlier date, with Norman or Transitional piers and plain bold ribs and vaults. One of the finest of these is at Canterbury, and we have the remains of what must have been a still more beautiful crypt, of somewhat late date, at York. Crypts seem to have been fashionable in the twelfth century, and it is probable that the idea of having a crypt here dates from that period, for there can be no doubt

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24s.; Relié, 28s.

LES STYLES.

OVER SEVEN HUNDRED ENGRAVINGS OF DIFFERENT PERIODS, WITH DESCRIPTIONS

BY PAUL ROUAIX.

"This large and sumptuous book is issued by the publishers of *L'Art*, a journal which we have frequently referred to as being one of the best publications of its kind in Europe. The French Librairie de l'Art has been known for long in connection with works treating of the fine arts, and *Les Styles* is certainly equal to anything we have ever seen of the kind, and by far superior to the vast majority of similar works issued in this country. There is something about the atmosphere of France which confers refinement of taste in everything relating to designs, and so pronounced is the national aptitude for discovering beauty and symmetry, that the very fact of a book coming from across the straits is generally a sufficient guarantee of the artistic excellence of the contents.

"M. Rouaix treats of many species of decoration, commencing with that in vogue amongst the ancient Egyptians, and proceeding in regular order of date with the Etruscan, Greek, Byzantine, Roman, Gothic, the peculiar ornamentation of the Renaissance, and of the times of Louis XIII., XIV., XV., and XVI. Before each division the author introduces a short historical introduction, and afterwards, by means of a series of beautifully executed prints, illustrates the prevailing fashion of the time. For this purpose he has levied contributions on examples of architecture, carving on wood, suits of armour, bas-reliefs, tapestry and embroidery, mural painting, mosaical work, and a host of other subjects, including caskets and chalices. In fact, anything that can be called artistic and assigned with certainty to a particular era is represented, the result being an exhaustive and exceedingly pretty production."—Book Lore.

NEW EDITION. Price, Single Number, 5s.; Complete Series, 12 Numbers (by Subscription), £2 8s.

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

LONDON: GILBERT WOOD & CO., 175 STRAND.

that there was a crypt erected here towards the close of the twelfth century, several fragments of which still remain. These are our oldest architectural remains, and none of them are older than 1174. Nothing has been found to indicate what kind of church stood here before that date, and it is somewhat singular that we have not even a sepulchral slab as old as several which may still be seen in Govan churchyard.

You have no doubt heard that this Cathedral was founded by St. Mungo, but I need hardly tell you, after what I have just said, that we know nothing about St. Mungo's church, if he ever had one, which I think very doubtful. It is probable that we are indebted to St. Mungo for the selection of the site, though tradition would have us believe that the selection was due to the direct interposition of Divine providence. I may remind you of the legend, which may possibly have had some foundation in fact. We are told that in his journeyings St. Kentigern (alias St. Mungo) lodged one night with a holy man named Fergus, to whom it had been revealed that he would not die till he had seen the holy Kentigern. That same night Fergus died; and in the morning Kentigern had his body laid on a car, to which were yoked two wild bulls. These he commanded to go to the place ordained of the Lord. Of course they were obedient, and off they went, followed by the saint and a great multitude. They finally stopped at this spot, where it is said a cemetery existed which had been consecrated by St. Ninian. There the body of Fergus was buried, and there Kentigern took up his abode. In connection with this it has been pointed out by Mr. Andrew Macgeorge that on the vault of Blackader's crypt there is a representation of Fergus on the car, and an inscription indicating that that part of the building was dedicated to him. But I must not wander beyond the limits of authentic history, which are, I may say, coincident with the restoration or constitution of the See of Glasgow, by David, then Earl of Cumberland, which included Strathclyde, in 1120. Previous to that the Celtic church—the church of Ninian, and Fergus, and Kentigern—had almost ceased to exist, and the term bishop was only beginning to acquire its present significance. The constitution of the diocese of Glasgow was confirmed by the Pope in 1172.

When Bishop Joceline came to the See in 1174 he found that the old church erected by John, the first bishop, had been destroyed by fire, and he commenced a new one, which was completed in 1197. The finest example of a building of that period which we now have in Scotland is the nave of Jedburgh Abbey. Joceline's church was in the same bold and beautiful Transitional style. Of this, as I have already said, only a few fragments remain, which we will see presently. But it is quite possible that the nave may have been commenced either by Joceline or his immediate successors, though, upon the whole, more likely that it was the work of Walter, 1208-1232. The base of the nave, with its simple splays, is distinctly older than the base of the choir; and the bases of the shafts on the bench table of the aisles, with their delicate mouldings and square plinths, belong to an earlier period than anything to be seen in the choir. But the nave was never completed in the style in which it was commenced. It was carried up a certain height—rather more on the north than on the south side—and then left at a standstill for many years while the crypt and choir were being built. These were begun by Bishop Bondington, and completed during his episcopate—probably about 1250—and after that work on the nave was resumed; and thus it comes about that while the lower part of the nave is older than the choir the upper part is later.

It seems at first sight rather puzzling to find that there was a church, erected by the first bishop, John, and consecrated in 1136; then another, erected by Joceline, consecrated in 1197; and again another, built by Bondington in 1250—that is, three new cathedrals within a period of about one hundred years. But we should see that the explanation is simple if we could only realise the condition of affairs in Strathclyde during the twelfth and preceding centuries. Conflicting tribes of Celtic and Teutonic origin had desolated the country, and swept away almost every trace of civilisation and religion. Achaius, when he came to his See, found that he had neither need for a large church, nor means to build one. He had, in short, a great charge, but no congregation. He had to begin the work of converting the natives almost *de novo*, and was as truly a bishop *in partibus infidelium* as our esteemed friend the present incumbent of St. Mungo's would be if he were consecrated Bishop of Berber or Uganda. If our reverend friend found himself thrown upon his own resources amid "pagan superstition or Mahomedan delusion" in such a diocese, he would be able to sympathise with the trials and difficulties of his illustrious predecessor here. It is recorded in the "Inquisitio" of David that Bishop John, "when he came to know the barbarity of these unhappy people, and the multitude of their abominable sins," was a good deal affrighted, and resolved to go off to Jerusalem, but the Pope caught him and consecrated him and sent him back to his See. Now, I don't know whether or not Bishop George would be "affrighted" by the manners and

ELECTRIC LIGHTING!

The Thomson-Houston System of Arc Lighting, } GOLD MEDALS AWARDED Both Systems
The Edison-Swan System of Incandescent Lighting, } AT THE INTERNATIONAL INVENTIONS EXHIBITION, 1885.

ESTIMATES FREE ON APPLICATION TO
LAING, WHARTON & DOWN,
8 & 9 HOLBORN VIADUCT, and 110 & 111 SAFFRON HILL, LONDON, ENGLAND.

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.
THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER
And every other description of
WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,
MANUFACTURED BY
EDWIN LUMBY, SON, & WOOD,
WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.
COMPLETE ILLUSTRATED LISTS ON APPLICATION.

ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustration which has appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing:—

The Bard.

FACSIMILE OF CARTOON BY PROFESSOR MAILLART.

Size, Thirty-six Inches by Twenty-two Inches.

Price One Shilling; free by post, carefully packed inside patent roller, One Shilling and Threepence.

May be obtained from all Newsagents or Booksellers, or from the
Publishers, GILBERT WOOD & CO., 175 Strand, London, W.C.

customs of the natives of Uganda, but I have not the least doubt that if he did settle down to his work among the heathen there he would do in the way of cathedral building exactly what Bishop John did here—he would erect the plainest and cheapest tabernacle which would serve his purpose, and if it did happen to get burned down by-and-by it would be no great loss.

But Jocelin was much more happily situated than his predecessor John. Through the influence of David, a great part of the ancient endowments of the church of St. Mungo had been recovered, and the nobility and freemen (for there were slaves in those days) had adopted the fashionable religion. Besides this, Glasgow itself had increased in importance, and was now thought worthy of being erected into a burgh of barony; and when the old church was burnt down it was both necessary and possible to erect one on a grander scale. Some of the most beautiful buildings in England and Scotland were erected during the episcopate of Jocelin, and there is no reason to doubt—indeed we have still some indication—that the crypt and choir which he built were worthy of the age. They were too small, however: most of the choirs built about that time were too small. I do not remember one of that age which was not within the next century either added to or rebuilt.

It is possible that Jocelin's nave was projected on a sufficiently large scale, but his choir did not at all come up to the ideas of Bishop Bondington, an able and energetic man, who succeeded to the bishopric in 1233. He seems to have made considerable changes in the constitution of his chapter, taking that of Salisbury for his model; and he introduced the Liturgy of Sarum, which continued in use in the diocese till the Reformation. We can quite understand that a man of that stamp was not likely to be content with half-measures. He found Jocelin's church, which had only been in use for about forty years, unsuitable, and instead of attempting to add to it he resolved to sweep it away entirely, and to erect another in its place. We can never regret his decision, as he obtained—where, we know not—a truly magnificent design, which seems to have been carried into execution, as we see it, in about twelve years. He would naturally commence operations at the east end, clear of the old church altogether, and in this way the use of it might be continued while a large amount of work was done. Then he would remove first one part and then another, till at last only one little bit remained, which somehow got built over and incorporated in the new work, like a fly in amber, and remains in the south-west corner of the crypt to the present day. After the completion of the choir the nave was recommenced and carried on vigorously. The central tower was ready for roofing about 1300, and the nave some time after that.

The next important addition to the building was the sacristy or vestry, now erroneously called the chapter-house. The lower part seems to have been erected by Bishop Lauder about 1425, and the upper part by his successor, Bishop Cameron. It is, I think, probable that the consistory-house, at the west end of the Cathedral (now removed), was also erected by Cameron, and that the old west tower, now also unfortunately removed, was erected somewhat earlier. The only other addition of any consequence was the south crypt, erected by Bishop Blackader about 1500. This is a very remarkable building, in that from the outside it looks more like Early English work than sixteenth century, and inside there is no trace of Perpendicular work; we have an elaborate design, with good, full mouldings, but rather coarse workmanship. The contrast between this and the great crypt in this respect is most striking. There are few Mediæval monuments in the Cathedral. There are several stone coffins under the floor of the choir, and two standing on the floor of the crypt empty; and there is only one recumbent effigy, which was long supposed to be St. Mungo himself, but which I think has been identified as the effigy of a distinguished prelate and patriot, Bishop Robert Wiseheart, who was released from an English prison after the battle of Bannockburn, and was buried here in 1316.

The delegates afterwards, under the guidance of Mr. Honeyman, made a detailed examination of the Cathedral. At the close of the inspection Mr. Honeyman was awarded the hearty thanks of the party.

FIRE INSURANCE AND BUILDING.*

He would be a bold man who would assert that any building could resist any conceivable fire. But we may assume as proof against all assault from all probable fires a type of building with which we are growing familiar. These, constructed with brick walls and iron well covered with fire-clay, with floors made of fire-clay arches, without galvanised iron, wood, or other destructible outside decoration, whose whole accessible structure, in short, has been made in the fire, these

* An address by Mr. J. W. Root, architect, read before the Fire Underwriters' Association of the North-west, held at Chicago on September 8.

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co's SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST, BENTLEY PRIORY, ROYAL, LANGHAM, GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S, BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

offer the nearest approach to absolute security from fire of anything since Mark Twain's coal mine.

But apart from these very costly structures designed to be absolutely fire-resisting, there is a large class of slow-burning buildings which, when erected in large groups in a city, form a practically fireproof neighbourhood, each individual building of which can be readily saved in case of fire. It is this class to which our attention should be more particularly directed. First let us glance at a few building materials, and then at their method of application.

Considered in their fire-resisting qualities, the first is fire-clay. This material has become of late years an invaluable adjunct to various classes of buildings, and it is safe to say that the near future will see it used in a vast number of directions now scarcely dreamed of. In its various forms it may be so cheaply made and so easily and inexpensively applied that there is no excuse for our relative indifference to it. It can be made in forms vastly lighter than brick, and consequently can be used in many cases where for reasons of support a brick wall is not possible. Moreover, being made in hollow or porous forms, its air-cells make it an ideal non-conductor of heat, and, consequently, but none the less valuable, an admirable "non-conductor of cold." On the cheaper methods of its application we will touch later in this paper.

Brick, as the next of these fireproof materials, must probably always hold its own. The cheapness of its manufacture, the ease and certainty of its use, the satisfactory artistic results obtained from its finer forms, all make it now what it was to the Romans, among the noblest of building materials. Terra-cotta is, of course, classed as brick, being in all respects a merely special form of brick, but better tempered in the clay, more carefully moulded, and more thoroughly burned than most brick.

Iron has not held its own in the list of building materials. Of course we cannot do without it, but it is always to be distrusted when freely exposed to the possible action of fire. Any high degree of heat in great measure impairs the efficiency of the material, or at best renders it liable to fracture under the sudden action of cold water. In the case of girders of wrought iron, especially when exposed freely on three sides, the danger from heat is peculiarly great, because the tensile resistance of the metal is so much lessened. Even if under this weakened resistance of either iron beams or girders the deflection is inconsiderable, it will probably be enough, in the case of girders, to drop the floor-joists resting upon them, or in the case of columns, to throw the direction of weight out of the axis of the column and so break or overturn it.

Many of our shop-fronts are built on iron girders carried across from post to post at the line of the second floor, and freely exposed. Here, although the chances are in favour of stability, yet the security would be greater if these iron girders or lintels were covered with terra-cotta or fire-clay. If the iron lintels have no essential work to perform, as in the case of several of the newer large buildings, they may be safely left unprotected. For these and similar reasons iron cannot be regarded as an ideal fireproof material, especially when it is remembered how intimately connected all the parts of a building often are, and how fatal to the entire building may be the failure of one of its parts.

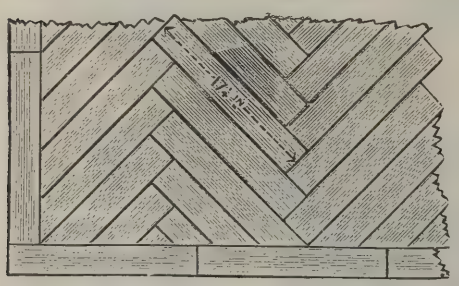
In all architectural work where iron has considerable weight to carry, it should therefore be protected from heat. The best thing for the purpose is probably some one of the various forms of fire-clay in common use. But when these are not to be obtained, or are for any reason too costly, a covering of asbestos in paper or fibre, or even of wood, provided the wood clasps the iron without intervening air-space (this condition is essential), is better than nothing.

The mechanical devices for applying fire-clay to iron may be obtained for reference from any one of the several firms engaged in this business.

Stone is now, as it has always been, the highest of all materials for building. Nothing can compare with it for the dignity of its expression and the facility with which it lends itself to all varieties of architectural expression. But regarded as a rival of iron in either its fire or time-resisting qualities, it must be conceded that it must take the second place.

Whenever stone enters very largely into the structure of a building, it is of the utmost consequence to know by actual test what is its action both under the direct contact of flame, and when suddenly cooled off by water. Nothing is stranger than the widely different performance of stone under fire, and I know of no means of predicting with anything like finality what a given kind of stone will do. Underwriters as well as architects are interested to see that all quarry owners furnish with their stone, not only tests of its water absorptive power and crushing resistance, but also of its precise action under great heat. Until this be known, absolute dependence on the integrity of a given kind of stone is unwise. This is especially true in walls faced with stone, and in piers of brick bonded with stone. In the first case, if the stone facing disintegrates

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¼×4½ Dry Wainscot Oak, 54s. 9d. per square; 1×4½ ditto, 45s.; 1¼×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ANCASTER STONE QUARRIES.
THE ANCASTER STONE COMPANY continue to work the Old Ancaster Stone Quarries formerly worked by Messrs. KIRK & PARRY, and to supply Stone of the same fine quality as heretofore.
OFFICES:—JERMYN STREET, SLEAFORD.

THE NEW CHANDELIER.
PATENT SCREW BALANCE.
See "The Architect" of October 22, 1886, page 9.
Particulars free on application.
H. T. TALLACK, 128 Hatton Garden, London, E.C.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
☞ MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES:
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices: 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.


LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

CHAPEL ARCHITECTURE.
PHOTO-LITHO DESIGNS,
With full Letterpress Description of CONGREGATIONAL and BAPTIST CHAPELS, prepared and inserted in the
CONGREGATIONAL YEAR-BOOK
AND
BAPTIST HAND-BOOK for 1887,
Which are extensively circulated throughout England.
For Terms apply to
ALEXANDER & SHEPHEARD,
Printers and Publishers, 27 Chancery Lane
Orders received up to 30th inst.

BY HER MAJESTY'S ROYAL LETTERS PATENT.
ESTABLISHED A.D. 1774.
AUSTIN'S
NEW IMPERIAL PATENT
SUPERFINE FLAX LINE.
The above article is now being manufactured and sold in large quantities for Greenhouse Sashes, Public-house Shutters, and other heavy work. The Manufacturers would recommend it for its strength, and the large amount of wear in it, consequent on its peculiar manufacture.
AUSTIN'S IMPERIAL PATENT FLAX SASH AND BLIND LINES (two Prize Medals awarded). The manufacturers of the above articles particularly wish to draw the attention of the trade to their Imperial Patent Flax Sash Lines, of which they are now making six qualities, all of which they can strongly recommend, as they have given unqualified satisfaction to the trade for now over One Hundred Years; and the Proprietors continue to give their personal attention to the manufacture of these goods.
They also invite the particular attention of the trade to their IMPERIAL PATENT BLIND LINES, which are very superior to anything yet offered.
They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in town and country.
N.B.—Please note that all our goods as advertised above are labelled either inside or outside, with our Trade Mark—The "Anchor."

ESTABLISHED 1838.

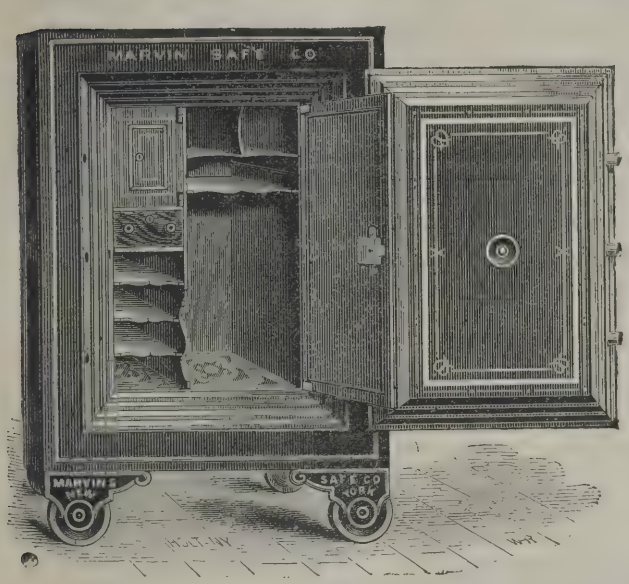
MARVIN'S

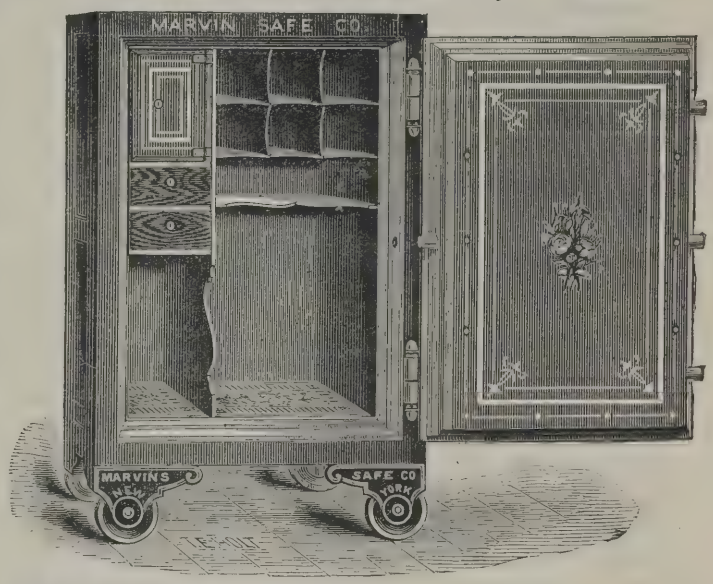
AMERICAN

FIRE & BURGLAR PROOF SAFES,

STRONG ROOM DOORS & BANKERS' VAULTS,

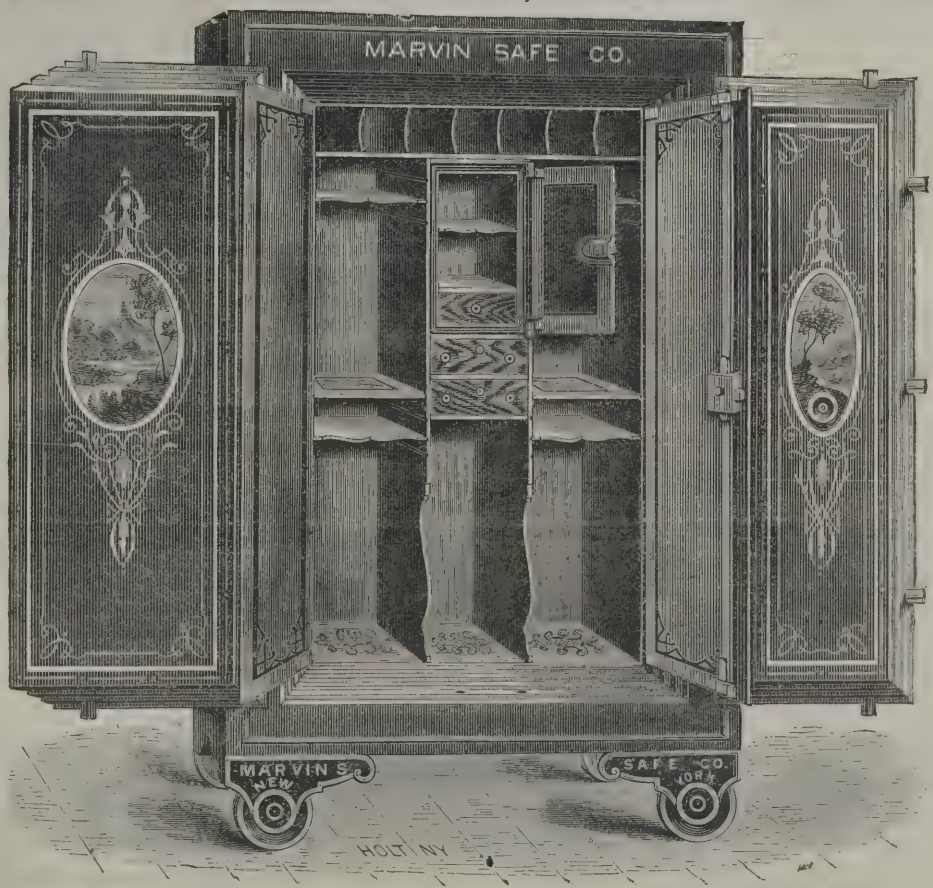
NEW YORK, U.S.A., and LONDON, E.C.





BY SPECIAL APPOINTMENT CONTRACTORS
TO THE UNITED STATES GOVERNMENT, TREASURY AND POST OFFICE.

PROOF AGAINST BLASTING, DRILLING, AND PICKLOCK.



SECURITY AGAINST FIRE AND THIEVES.

EUROPEAN BRANCH: 66 QUEEN STREET, CANNON STREET, LONDON, E.C.

under heat, the tendency is of course to make thinner places in the wall where this disintegration takes place, thus adding to the general tendency of the wall to fall outward. When, in the case of piers, the exposed edges of bond-stones are burned away, the efficient carrying area of the pier is reduced to a smaller and interior section, thus making it less safe, not only because of this diminished area, but also because few except such masons as built the wall of the New Jerusalem ever build the inside of a pier as well as the outside, and that part of the pier called upon to do the extra work is the part least able to do it. In all cases where stone, whose fire action is unknown, is used for piers, the pier should have considerable excess of size, and where such stone is used for wall facing, the brick wall which "backs" it should be thick enough for all the work necessary for perfect stability without the stone.

Wood is, of all material used in building, that most generally understood. Anyone who has, by slow and laborious degrees, learned to kindle a wood fire in an old-fashioned fireplace, knows by practice just how nearly fireproof wood may be. Wood, like paper, is very inflammable when cut thin and surrounded by an air space, but (always excepting certain highly resinous woods which burn under all conditions) when in large masses burns with comparative slowness. This peculiarity it was which made very slow burning a wood house constructed by the methods prevalent in England under Elizabeth and Anne, and in parts of New England in the early years of the last century. Wood, applied thus in large pieces, has the advantage over iron that the application of heat impairs its area only, without modifying the efficiency of the part which may remain, and the action of water upon it has no effect.

For these reasons it seems evident that for many purposes heavy solid wood posts and girders are preferable to a similar construction of unprotected iron—again assuming that we are not considering the few highly inflammable woods above mentioned.

Wood may also be protected by a number of cheap devices, which greatly add to its efficiency. Preparations of creosote and other substances are made into fireproof paints, which are often treated by both underwriters and architects with neglect, because they do not do what they seem to profess—make the wood fireproof. But this they do not or should not pretend to do. Their object is simply to retard combustion, and to sufficiently accomplish this is practically to solve the problem.

What has been said of wood has no relation to the use of it as we commonly see it, since, for reasons stated later on, the typical balloon-frame house, and the method commonly used in its construction, is just the principle used in the piling up of wood preliminary to a successful bonfire.

Asbestos is a material coming into larger use, from which we may expect results of importance. Whether used in fibre as a packing, or applied as a paper as an interlining, it is of very considerable value in retarding the progress of fire.

The same thing is true of such preparations of silica as "mineral wool," and of the substance called "fossil meal," and in an especial degree of plaster-of-Paris, whose use for fireproofing purposes is as general in Europe as it is rare here.

Two materials not yet in sufficient structural use to warrant an extended notice, but each possessing peculiar merits, are glass and paper. Glass is perhaps one of the most important of the building materials of the future, and its use will develop new applications of other materials for its protection from fire. Paper in various compressed forms will also come into more or less general use, and will have the greater advantage that in bulk it burns very slowly, and that in its preparation for use it can be readily treated by chemical processes, so that it becomes nearly fireproof.

This is a slight sketch of the relation of a few familiar materials to fire. But more important than their inherent nature is the method of their use.

What are the most prominent reasons for the total destruction of buildings by fire? I do not doubt that any man of experience would answer: first, facility furnished for the rapid and unobstructed spreading of flames, which we may call "flues"; and second, the falling out or in of parts of the burning building, which we will call "leverage."

First as to "flues." It matters very little what a house is built of if only sufficient opportunity is provided for flames in one part to swiftly communicate with other parts without burning the intervening material. And yet, by a hundred ingenious devices, these flues of communication are almost universally provided.

The typical American wooden house is generally constructed of light timbers set at small distances apart, and each timber has an open air-space on at least two sides of it, and often on three sides. The bottom of the flues thus constructed are frequently open, and generally open somewhere at the top; and in case they are closed at either the bottom or the top, the stopper is nothing more serious than a 1-inch board, or one thickness of laths and plaster.

The same thing is true of almost all brick houses where, for

Telegraphic Address: "ELECTRICITY," *LONDON.* *Telephone No. 1887.*

THE GENERAL ELECTRIC APPARATUS CO.

ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE

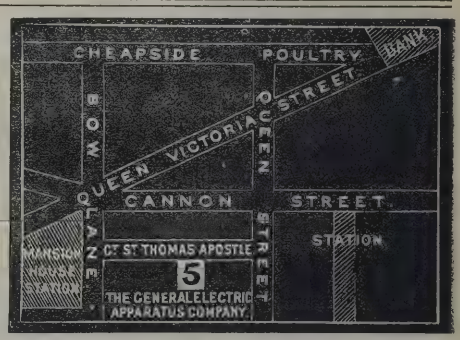
Works: BOW and SOUTH HACKNEY. *(Back of the Mansion House Station),* E.C.

ELECTRIC BELLS.

Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.

The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.

Electric Light Instruments, Fittings and Glassware.



VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.

OFFICE: 175 STRAND, LONDON, W.C.

IMPORTANT.—To Specialists, Manufacturers, and Others.

Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.

THE ARCHITECT AND CONTRACTOR'S COMPENDIUM

And Specialist's Directory for 1887.

EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.

An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, **the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory.** Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this **at a cost less than half that of sending out one circular.**

The minimum **guaranteed circulation** of the **Compendium** is 3,000 copies, but the actual circulation will probably reach a much higher figure.

Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent **Ink-Photo** process, specimens of which are to be seen weekly in *The Architect.* The **Compendium** will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an adverti-ing medium. The Ink-Photos can be produced, **without block,** from **any** drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.

An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.

Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridge Street, London, E.C.

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

reasons of cold and dampness, all inner surfaces of the walls have small wood strips set against them, to which are nailed the laths for plastering. This is, in America, the Universal Insurance Company Extinguisher, Unlimited. Generally, the entire house is run through and through with these flues, which are by no means confined to outer partitions, but with almost equal frequency core out all the inner partitions as well. Then, having thus carefully provided a good circulation for the flames, the ingenious builder often provides a large shaft or flue, open at both ends, and closed at each storey only enough to make a good draught, and this large supplementary flue he calls an "elevator shaft," or "soiled linen chute," or some other poetic and imaginative title.

Now, in all of these houses where is the fire first seen? Generally in the roof. Where does the fire start? Almost everywhere else. The bonfire thus carefully prepared has the peculiar merit of having each stick of wood provided with its own flue and draught, and the result is that the pile of sticks is at once burning at both ends. Is it cheaper to build this way? Not at all. The cost of the frills on one front gable or the crazy-quilt pattern of the stained-glass windows would change the whole thing. The only care needed is, first, to make the flue as nearly fireproof as you can, and second, stop it up with something that will not burn. At the line of the various floors run out a board between the studs of the partitions, or between the furring on the brick walls. Fill up on this board two inches deep with the mortar left from the masonry and plastering, and the difference between this and the common form of wood or brick house is that this house, if it catches fire, can be saved; the other cannot. If the wood studs or furring strips have an inner lining of asbestos paper, or an outer lining also for wooden houses or partitions, the security is just that much greater.

The same flue system is generally carried through the floors of buildings, where the space between floor joists from end to end is unobstructed. If this long space is cut into two or three fire-tight bulkheads by a piece of fire-clay tile or porous terra-cotta or brick—or, if there is nothing else, tin—the safety of the house is much enhanced.

Solidity is the measure of fire resistance in a house; "flue-idity" is the measure of its fire facility.

I can only allude to the principle involved here, which you will at once carry to its various conclusions.

Now as to the question of "leverage." Leaving out of question the ability of wall to stand alone and carry all the weight resting on it, the walls of buildings are generally forced over by some form of direct leverage. The floor joists or beams generally have with the outer wall some fixed connection which, when the action of fire causes the joists or beams to fall down, holds them to the wall, forcing the wall to "buckle" and fall out and in. The action of this force, of course, depends on how heavily the floors are loaded. But the mechanical advantage of a weight thus applied to the wall for its destruction is very great; and it is a wall or partition of very great strength which will not yield to it. Falling under the application of this strain, the wall need not necessarily fall altogether inward; part of it may fall outward. Indeed, if the strain be applied at the extreme top, or even at the bottom, several reasons may make the wall fall both ways. With the precise action of this force we have now nothing to do; but it should be insisted upon by you that some method of anchoring wooden joists to walls be used of such character that the falling of the joists shall free this anchorage and leave the walls standing.

Over and above this point should be more carefully considered in the same connection, the mere lateral tying together of walls, so that it becomes more difficult for one wall to break away from another. This involves only a small matter of cost—a few pounds of ordinary hoop iron well bonded into the walls being enough, but it often makes the difference between six and seven per cent. in the yearly dividends of your companies.

The suggestions I have felt at liberty to make in this paper are very few, and I have endeavoured, even at the risk of being commonplace, to be practical.

The essential element of the whole question of the relationship between architecture and fire insurance lies very much deeper than any details of either architecture or fire insurance. The relationship will be finally and happily adjusted at the moment when frank recognition of your interests by us is met by equally frank recognition and criticism of our work by you. The profession of underwriter cannot occupy its proper place alone. To give it its normal influence in the community, to insure its wider and deeper aims, it should enter with greater care and seriousness into the nature of the problems presented by that relationship we have been considering.

We, as architects, I trust you will find more and more willing to meet you half-way in this adjustment; and the result of our mutual understanding and concerted action I believe must be of great good to the community.

BRYANT, POWIS & BRYANT LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.

Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.

Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT LIMITED,

"THE PEDESTAL VASE,"
JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,
SANITARY ENGINEER, STANGATE, LONDON.

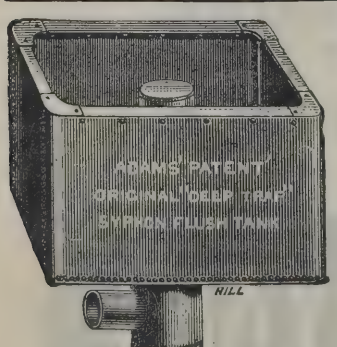
A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



ELECTRIC & PNEUMATIC BELLS.
NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.
MECHANICAL TELEPHONES. Everything for a line complete for £3.
PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

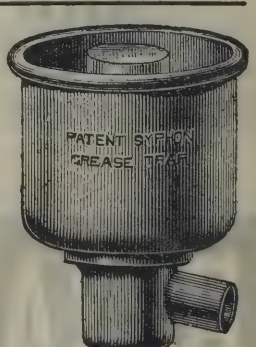


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, November 5, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, NOVEMBER 12, 1886.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to The Architect."

REGISTRATION OF PLUMBERS.

GUILDHALL, AUGUST 12, 1886.

1. In pursuance of the Resolutions of the following—
   (*a*) The Conference of Metropolitan and Provincial Plumbers held at the City and Guilds of London, Central Institute, in October 1884;
   (*b*) The General Council subsequently formed to give practical effect to the Resolutions of that Conference;
   (*c*) The Plumbing Trade of London assembled in general meeting at Guildhall, January 25, 1886.
2. A Register for Plumbers of the City of London, and a circuit of seven miles thereof, has been opened by the Worshipful Company of Plumbers.
3. The object of the Registration is to enable the public to distinguish between qualified and unqualified practitioners.
4. All applications are considered by a Special Committee of Registration, which includes Members of the General Council as well as practical Plumbers, in order that no trade interest or prejudice may operate against any Applicant, but, on the contrary, that the utmost fairness and impartiality may be secured to all.
5. Plumbers (Masters and Journeymen) established in the Trade prior to March 1, 1886, are not necessarily required to undergo any examination. Admission is granted to such Plumbers on satisfactory statement or proof of experience, according to the circumstances of each case.
6. All Applicants who cannot satisfy the Registering Committee of their experience are required to pass an examination by a Board of Examiners, composed largely of practical Plumbers.
7. No Plumber entering the trade after March 1, 1886, will be admitted to the Register unless he shall have passed an examination in the technology and practice of plumbing.
8. The Company is not connected with any Plumbers' Societies or Trade Organisations formed for other purposes, and the function of the Registering Committee is confined to distinguishing those who are fairly entitled to be registered as qualified Plumbers; the object being thus to raise the standing and efficiency of Plumbers as a body in a manner consistent with the important position they occupy in relation to the public health.
9. The Registration of the Plumbers of the London District is adopted as a preliminary step to the extension of the system of Registration throughout the Kingdom by means of Local Organisations.
10. Pending the establishment of Local Registers, Provincial Plumbers are admitted to the Company's Register on the same conditions as the Plumbers of the London District.
11. Plumbers admitted to the Register receive Certificates of Registration bearing the Company's Seal and Arms, A.D. 1588. None but the holders of such Certificates are entitled to use the letters R.P. (Registered Plumber) after their names. Lists of the names and addresses of Registered Plumbers are obtainable on application to the Company.

GEORGE SHAW, Master.

COMPETITIONS OPEN.

CARLISLE.—Nov. 20.—Designs, with Specifications and Estimates are invited for the Erection of Market Buildings. Premiums of 100*l.* and 50*l.* Mr. H. U. McKie, City Surveyor, Town Hall, Carlisle.

HARTLEPOOL.—Nov. 20.—Plans, Elevations, Specifications, and Estimates are invited for the Erection of a Boys' School (to accommodate 100) and Offices for future Extension and Residence for Head Master. Premiums of 25*l.*, and no undertaking to employ the successful architect. Mr. R. Edger, Clerk to the Governors of the Henry Smith School, Hartlepool.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

CONTRACTS OPEN.

ABERYSTWITH.—Nov. 26.—For Erecting Wrought-iron Bridge (exclusive of Masonry) on Cast-iron Columns over the River Rheidol. Mr. James W. Szlumper, C.E., 6 Victoria Street, London, S.W.

BALHAM.—Nov. 18.—For Enlargement of Board School, Oldridge Road. The Architect's Department, School Board Offices, Victoria Embankment, E.C.

BALLYMACARRETT.—Nov. 15.—For Building Vicarage. Messrs. J. Frazer & Son, C.E., 117 Victoria Street, Belfast.

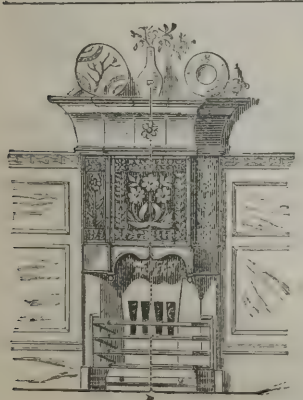
BARROW-IN-FURNESS.—Nov. 25.—For Fittings for Public Library and Reading-rooms in the New Town Hall. Mr. C. F. Preston, Town Clerk, Barrow-in-Furness.

BIRKENHEAD.—Nov. 12.—For Erection of Retort Benches and Stove Shed. Mr. T. O. Paterson, Engineer, Gasworks, Thomas Street, Birkenhead.

BLAINA.—Dec. 6.—For Building Offices and Store-room with Yard, for the Nantyglo and Blaina Local Board. Mr. Alexander Mitchell, Surveyor, Chapel Street, Blaina, Mon.

BRADFORD.—Nov. 18.—For Building Shop and Premises in Darley Street. Messrs. Milnes & France, Architects, Bradford.

CAMBERWELL.—Nov. 18.—For Forming Playground, Southampton Street, for the London School Board, Victoria Embankment, E.C.



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

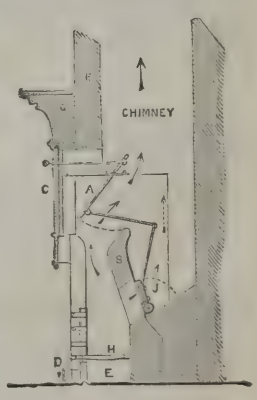
WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.



CHAMPION HILL.—Nov. 18.—For Laying Out and Planting Infirmary Grounds, East Dulwich Grove, Roads, Paths, Drainage, &c. Messrs. Jarvis & Son, Architects, 29 Trinity Square, Borough, S.E.

CORK.—Nov. 17.—For Erection of Walls, Railings, and other Improvements, between North and South Graveyards, St. Anne, Shandon Parish. Mr. W. H. Hill, Architect, 15 Marlborough Street, Cork.

DARENTH.—Nov. 15.—For Painting and other Works at the Asylum for Imbeciles. Messrs. A. & C. Harston, Architects, 15 Leadenhall Street, E.C.

DAWLISH.—Nov. 20.—For Construction of Sea Wall and Steps, cutting back portions of the Cliffs at Lea Mount, forming Terrace Walk and Promenade behind the Sea Wall. Mr. J. S. Delbridge, Surveyor, Dawlish. Mr. John S. Whidborne, Clerk to the Dawlish Local Board.

DEWSBURY.—Nov. 18.—For Building a Four-storey Warehouse at Calder Mills. Messrs. J. Kirk & Sons, Architects, Dewsbury.

EDMONTON.—Nov. 16.—For Repairs and Painting of Ten Houses, Tillotson Road. Mr. W. Buck, Surveyor, Horsham.

EMBLETON.—Nov. 13.—For Building Residence, for Mr. W. Pitt. Mr. F. R. Wilson, Architect, Alnwick.

EPSOM.—Nov. 12.—For Building Large Cart Shed and Lamp Store at the Waterworks. Mr. G. White, Clerk to the Local Board, Court House, Epsom.

FRESTON, SUFFOLK.—Nov. 16.—For Building Rectory. Mr. E. F. Bisshopp, Architect, 32 Museum Street, Ipswich.

FULHAM.—Nov. 18.—For Raising Boundary Walls and Erecting Shelter Shed, Harwood Road School, for the London School Board, Victoria Embankment, E.C.

GATESHEAD.—Nov. 20.—For Painting and Decorating (Designs and Tenders) High West Street Wesleyan Methodist Chapel. Mr. S. Kent, St. Nicholas's Buildings, Newcastle-on-Tyne.

HALIFAX.—Nov. 16.—For Building Committee-room and Alterations to Men's Day-room, at the Union Workhouse. Mr. W. H. D. Horsfall, Architect, Commercial Street, Halifax.

HATCHAM.—Nov. 18.—For Building Board School, Dennett's Grove. The Architect's Department, School Board Offices, Victoria Embankment, E.C.

LONG EATON.—Nov. 12.—For Additions to Four-storey Factory containing Eighty Standings, with Out-offices, &c., Leopold Street, for the Harrington Factory Company. Mr. John Sheldon, Architect, Market Place, Long Eaton.

LOUGHBOROUGH.—Nov. 13.—For Cast-iron Pipes (5¼ miles) and Special Castings, Construction of Intake Works, Laying Pipes, &c. Mr. H. Walker, C.E., Nottingham; Mr. G. Hodson, C.E., Loughborough.

NEWTON ABBOT.—Nov. 12.—For Alterations to Market House Inn. Mr. J. R. Cull, Architect, 46 Queen Street, Newton Abbot.

PENARTH.—Nov. 16.—For Alterations to Police Station for the Justices for Glamorganshire. Mr. J. Mansel Franklen, Clerk of the Peace, Cardiff.

PENARTH HARBOUR.—Nov. 18.—For Erection of an Iron Ore Stage, for the Taff Vale Railway Co. Plans, &c., at the Engineer's Office, Cardiff. Mr. J. G. Nicholson, Secretary, Cardiff.

PENZANCE.—Nov. 15.—For Building House at Prussia Cove. Mr. W. Richards, Trenowles, Prussia Cove, near Marazion.

PETERBOROUGH.—Nov. 16.—For Repairs to Buildings on the Feoffees' Farm, Willow Hall. Mr. H. M. Townsend, Architect, The Precincts, Peterborough.

PILKINGTON.—Nov. 24.—For Building the Ram's Head Hotel, Stand Lane, for Mr. A. Crowther, of the Star Brewery, Bury. Messrs. J. Grundy & Sons, Architects, Blackburn Street Chambers, Radcliffe.

POPLAR.—Nov. 18.—For Enlargement of Board School, Woolmore Street. The Architect's Department, School Board Offices, Victoria Embankment, E.C.

POPLAR.—Nov. 26.—For Building Engine and Boiler Houses, Chimney Shaft, Workshop, Store Sheds, &c. The Engineer to the Metropolitan Board of Works, Spring Gardens, S.W.

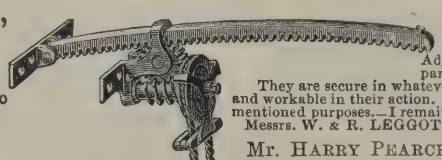
SHREWSBURY.—For Building Printing Premises. Messrs. Cox, Wright & Simpson, Shoplatch, Shrewsbury.

SOUTHPORT.—Nov. 17.—For Rebuilding and Widening Bridge for the Corporation. Mr. W. Crabtree, Borough Surveyor, Southport.

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,
Is admitted to be the best ever put before the Public.
From 5s. each.



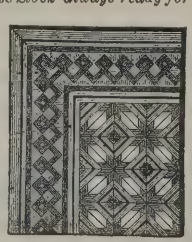
Write for REDUCED PRICE LIST and Testimonials to
W. & R. LEGGOTT,
70 Park Road, Bradford, Yorkshire.
N.B.—Size and height of window no object.

TESTIMONIAL.
BANGOR, N. Wales: September 14, 1885.
Sirs.—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction.
They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.
Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD., 22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.
150,000 ft. super. in Stock, ready for Laying.
RIGA INCH OAK FLOOR BOARDS,
Tongued and Grooved, VERY CHEAP.
Immense Stock always ready for Laying.

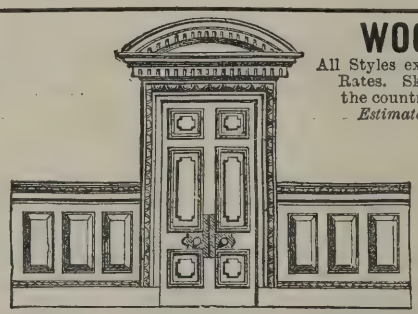


THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction.



ORNAMENTAL PARQUET.
DEAL BACKING.

WOOD CARVINGS.
All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.
Estimates and Designs on Application.





ARTISTIC JOINERY.

DOOR FURNITURE, LOCKS, &c.

EDGAR KEELING, TEALE & CO.,
ART METAL WORKERS,
IRONMONGERS, MANUFACTURERS, &c
SHOWROOMS:—14 ELM STREET, GRAY'S INN ROAD, LONDON, W.C.
Designers and Manufacturers of all kinds of Art Work for Ecclesiastic and Domestic purposes in Silver, Copper, Brass, and Iron.
PLEASE WRITE FOR ILLUSTRATED PRICE LIST AND ESTIMATES.

STANDISH, WIGAN.—Nov. 12.—For Alterations to Rectory House, for the Rev. C. W. N. Hutton. Messrs. Tate & Popplewell, Architects, 87 Mosley Street, Manchester.

STANLEY, YORKS.—Nov. 12.—For Erection of large Guibal Fan Engine House, Foundations, Fan Chamber, Cube, &c., Park Hill Colliery. The Victoria Coal and Coke Company, Park Hill Office, Stanley.

SWINDON.—Nov. 19.—For Building Manager's Residence and Coal Stores for the Swindon Gas and Coke Company. Mr. W. H. Read, Architect, Corn Exchange, Swindon.

TOTTENHAM.—Nov. 16.—For Construction of Engine House, Engine Foundations, Boiler House, Chimney Shaft, Flues, Setting of Boilers, Water Tower, &c., Longwater Pumping Station. Mr. De Pape, C.E., Coombes Croft House, Tottenham.

UXBRIDGE.—Nov. 29.—For Erection of Cart Shed, Alterations to Buildings, and Repairs to Waterworks. Mr. G. Eves, Surveyor, High Street, Uxbridge.

WILLESDEN.—Nov. 17.—For Building Additional Stables, for the London and North-Western Railway Company. Drawings, &c., at the Engineer's Office, Euston Station.

WINDSOR.—Nov. 15.—For Works to Workhouse Laundry and Infirmary. Messrs. Edgington & Summerbell, Architects, Park Street, Windsor.

TENDERS.

ABERDEEN.

For Heightening the leading Light Towers at Torry, for the Commissioners of Northern Lights.

ABERNETHY & Co. (*accepted*)	£264 1 0

ABERGAVENNY.

For Building Sulphate House at the Gasworks, Abergavenny.

T. FOSTER, Abergavenny (*accepted*)	£171 10 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

BURTON-ON-TRENT.

For Building Homestead on the Sewage Farm between Egginton, Derby, and Burton-on-Trent, for the Corporation, Burton-on-Trent. Mr. RICHARD WAITE, Architect, Duffield. Quantities by the Architect.

H. Mason & Son, Burton	£2,650 0 0
W. Wood, Hilton	2,632 17 2
H. C. Mellors, Burton	2,452 16 10
Jones & Son, Wolverhampton	2,450 0 0
J. Varlow, Burton	2,439 10 0
J. Greenwood, Mansfield	2,400 0 0
E. Wigley, Burton	2,391 16 6
West, Burton	2,389 0 0
R. Platts, Etwall	2,385 0 0
J. & C. Hunter, Burton	2,379 0 0
J. Hodson & Son, Nottingham	2,367 0 0
Walker & Slater, Derby	2,355 0 0
Charles Wileman, Burton	2,339 0 0
GEORGE HODGES, Burton (*accepted*)	2,290 10 0

CHISLEHURST.

For Re-erecting Stables at Tamara, Chislehurst, for Mr. D. Clarkson. Messrs. T. CHATFEILD CLARKE & SON, Architects. Quantities by Messrs. Leonard & Clarke.

Clarke & Bracey	£1,210 0 0
Morter	1,198 0 0
J. & J. Greenwood	1,185 0 0
Colls & Sons	1,176 0 0
Hall, Bedall & Co.	1,143 0 0
Nightingale	1,125 0 0
Lawrence	1,080 0 0
Grover	1,079 0 0
MARSLAND, Money, Chislehurst (*accepted*)	1,078 0 0

CARMARTHEN.

For Construction of Service Reservoir, &c., Laying Water Pipes, with Hydrants, &c., at Ferryside, Carmarthen.

OLD FOUNDRY Co., Carmarthen (*accepted*)	£325 0 0

DUNDEE.

For Steel Rails (100 tons) for Harbour Trustees, Dundee.

	Per Ton.
WALLACE & Co. (*accepted*)	£5 19 0

For Supplying Hydro-Extractor (90 inch diam.) for the East Poorhouse, Dundee.

Manlove, Alliott, Fryer & Co.

MAHOGANY & HARD WOODS.
ROBERT GARRARD & CO., 206 BETHNAL GREEN ROAD, LONDON, E.
Contractors to Railway and Rolling Stock Companies.
Large Stocks of thoroughly-seasoned Mahogany Teak, Wainscot Oak, and Walnut for Counter Tops, Handrails, Stair Treads, &c. Mahogany, Cedar, and Teak Panel Dry Pine, Whitewood, Ash, Birch, &c., in all thicknesses and widths. Prepared Flooring and Matching in Pitch Pine, Teak, Oak, &c.
LOGS, Mahogany, Teak, Walnut, Sawn and Hewn Pitch Pine, and other Log Timber, supplied in large or small quantities from Stocks kept at the Docks.
Telegraphic Address—"ACAJOU, LONDON."

Telegraphic Address: "ELECTRICITY," LONDON. *Telephone No. 1887.*
THE GENERAL ELECTRIC APPARATUS CO.
ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE
Works: BOW and SOUTH HACKNEY. (*Back of the Mansion House Station*), E.C.
ELECTRIC BELLS.
Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.
The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.
Electric Light Instruments, Fittings and Glassware.



IMPORTANT.—To Specialists, Manufacturers, and Others.
Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.
THE ARCHITECT AND CONTRACTOR'S COMPENDIUM
And Specialist's Directory for 1887.
EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.
An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory. Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this at a cost less than half that of sending out one circular.
The minimum guaranteed circulation of the Compendium is 3,000 copies, but the actual circulation will probably reach a much higher figure.
Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent Ink-Photo process, specimens of which are to be seen weekly in *The Architect*. The Compendium will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, without block, from any drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.
An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.
Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridge Street, London, E.C.
London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

GRANGE.

For Construction of Sewers, &c., for the Grange Local Board. Mr. R. H. LISTER, Surveyor.

W. Gradwell, Barrow	£199 0 0
J. Cleator, Barrow	192 0 0
C. Thomber, Ulverston	183 0 0
J. Thoms, Grange	163 17 3
T. & W. DIRKIN, Kendal (*accepted*)	151 7 6

GORLESTON.

For Building Five Houses at Gorleston, for Mr. R. W. Sacret. Mr. CHARLES G. BAKER, Architect, St. George's Plain, Great Yarmouth. Quantities by the Architect.

Whole Prices.

W. H. Moore, Great Yarmouth	£1,152 0 0
Rouse Bros., Great Yarmouth	1,130 0 0
Whall & Son, Great Yarmouth	1,129 0 0
Leggett, Gorleston	1,126 0 0
Bray, Great Yarmouth	1,076 0 0
Fuller, Gorleston	1,072 0 0
BARNARD, Gorleston (*accepted*)	999 0 0
Bodman, Acle	992 17 6
Wright, Great Yarmouth	825 0 0

Single Tenders.

Carpenter and Joiner.

Samuel Wright	£461 17 6
Salmon	460 0 0
Moore	379 9 0
Barnard	371 0 0
Beckett	348 10 0

Bricklayer and Plasterer.

J. Skippen	690 0 0
Rouse Bros.	620 0 0

Plumber, Glazier, and Painter.

Dyson	103 0 0
Storey	94 0 0
Goffin	93 0 0
Minns & Son	89 10 0
Harrod	81 15 0

The lowest single tenders amount to £1,049 15*s*.

JARROW.

For Street Improvement Work, Jarrow.

W. & M. Young, Jarrow	£159 11 6
G. Maughan, Jarrow	146 5 8
T. Callaghan, South Shields	130 12 2
J. ADAMS, Jarrow (*accepted*)	127 1 4

LONDON.

For Alterations to Nos. 148 and 150 Regent Street, W., for Messrs. Liberty & Co. Mr. ARTHUR VERNON, Architect, 26 Great George Street, Westminster, and High Wycombe.

Hollands	£390 0 0
Hatfield	345 0 0
BYWATERS (*accepted*)	246 0 0

For Alterations to Nos. 26, 27, and 28 Warwick Street, W., for Messrs. Liberty & Co. Mr. ARTHUR VERNON, Architect, 26 Great George Street, Westminster, and High Wycombe.

Hollands	£1,580 0 0
Hatfield	1,150 0 0
BYWATERS (*accepted*)	1,096 0 0

For Alterations at the King's Arms, 27 Aldersgate Street. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within, E.C.

Ivory	£1,205 0 0
Jackson & Todd	839 0 0
Daunton	736 0 0
Steel Bros.	720 0 0
Spencer & Co.	715 0 0
Stephenson	691 0 0
D. Brown & Co.	677 0 0

For Fitting the Premises, 169 High Street, Stoke Newington. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within, E.C.

Hill	£173 0 0
Pringle	163 0 0
Batchelder	163 0 0

For Works for the London School Board.

Wenlock Road School (Cellar).

J. Grover & Son	£69 0 0
G. S. Prichard & Son	65 0 0
T. McCormick & Son	63 0 0
J. F. Sargeant	61 10 0
C. Dearing & Son	50 0 0

Dutton Street School (Planing Desks).

Davis Bros.	27 0 0
E. H. Sargeant	24 10 0
T. Cruwys	22 0 0
N. Richards	17 0 0
Troughton & Co.	12 15 0
F. G. Hughes	11 18 6

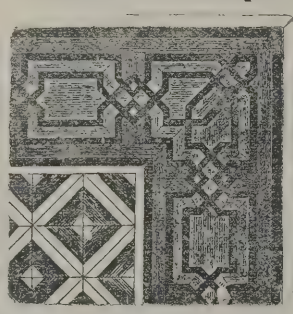
PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

PHOTOGRAPHS
OF
ARCHITECTURE
In all parts of the world,
INCLUDING a NEW SERIES of DETAILS
From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.
Our magnificent Collection is always on view at our London Galleries,
24 OLD BOND STREET, W.,
Or Selections and Lists can be had by post from
WINCH BROTHERS, Colchester.
List Free.

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

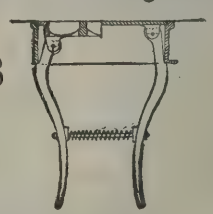
A. J. SHAW,
Gower Varnish Works, Sheffield,
MANUFACTURER OF
WOOD STAINS & VARNISHES
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.
Samples and Quotations from the Manufacturer.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c.?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered.
PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

HENRY KING
(Late GREEN & KING),
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,

M. & T.'S PATENT. NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

HORSFORTH.

For Works for Road with Sewers, Horsforth. Messrs. SMITH, GOTHARDT & CO., Surveyors, 15 Cheapside, Bradford.
G. & R. NAYLOR, Scholes (*schedule*).

MATLOCK BRIDGE.

For Erection of Third Section, New Central Block, of Smedley's Hydropathic Establishment, Matlock Bridge. Mr. GEO. E. STATHAM, Architect, Nottingham and Matlock.

Mason, Slater, and Plasterer.

Lynam & Kidd, Nottingham	£5,900 0 0
A. Bridge, Matlock	5,720 0 0
H. Vickers, Nottingham	5,700 0 0
Church & Sons, London	5,595 0 0
Moore Bros., Rawtenstall	5,526 0 0
T. Beck, Matlock	5,500 0 0
W. B. Asken, Matlock	5,300 0 0
C. Wall, Chelsea	5,152 0 0
L. T. WILDGOOSE, Matlock Bank (*accepted*)	5,107 8 0

Joiner, Plumber, Ironfounder, &c.

W. Knowles, Matlock	4,050 0 0
Lynam & Kidd, Nottingham	3,700 0 0
W. Statham, Matlock	3,600 0 0
H. Vickers, Nottingham	3,580 0 0
H. Matthews, Ardwick	3,522 0 0
T. Beck, Matlock	3,418 0 0
C. Wall, Chelsea	3,380 0 0
Church & Sons, London	3 345 0 0
Bell & Son, Nottingham	3,282 0 0
Haynes Bros., Manchester	3,000 0 0
MOORE BROS., Rawtenstall (*accepted*)	2,924 0 0

RUSHDEN.

For Enlargement of Board Schools, Rushden.

J. Thorpe, Oundle	£1,008 10 0
W. Foskett, Rushden	898 0 0
Dawkins, Wellingborough	875 0 0
Marriott, Wellingborough	867 0 0
Sparrow, Rushden	830 0 0
Stevens, Wellingborough	829 0 0
Henson, Wellingborough	825 0 0
Adnitt & Gerard, Rushden	809 0 0
C. Bayes, Rushden	799 0 0
J. Underwood, Wellingborough	788 0 0
S. Abbott, Harrowden	777 0 0
CLAYSON BROS., Cogenhoe (*accepted*)	737 0 0

SOUTHAMPTON.

For Supply of Broken Granite (900 tons), for the Southampton Town Council. Mr. W. B. G. BENNETT, Borough Surveyor.

	Per Ton.	Total.
Mowlem & Co.	10*s.* 8*d.*	£480 0 0
Winter & Son	10*s.* 6*d.*	472 10 0
Fennings	10*s.* 6*d.*	472 10 0
Wm. Stranger	9*s.* 9*d.*	438 15 0
JOHN HAMLEY (*accepted*)	9*s.* 6*d.*	427 10 0
Surveyor's estimate	10*s.* 0*d.*	450 0 0

TRADE NOTES.

WE are informed that the encaustic tiles reproduced from the Mediæval examples in our abbey churches by the firm of Messrs. Carter, Johnson & Co., of Worcester, London, and Manchester, have recently been much used in church restoration and building. This firm has just obtained a contract for floor-tiling in the new wing of the Victoria University (Owens College), from Mr. A. Waterhouse, R.A., and has executed work for Mr. A. W. Blomfield, Mr. Norman Shaw, R.A., Mr. J. D. Sedding, and many leading architects in all parts of the country. The pavement in the chancel of the new church of St. Paul's, Worcester, attracted great attention at the consecration services held early in November.

THE Bath stone used for the dressings of the new church of St. Paul's, Worcester, was supplied by the Corsham Bath Stone Co., Limited, of Corsham, from their quarry on the Monk's Park Estate.

MESSRS. EDWIN J. WHITE & SONS, auctioneers, have opened an office opposite the new post-office, at the Hornsey Station, Great Northern Railway, for the purposes of their business. The office has also been furnished as a local pattern and sample room for the Builders' Supply Stores, of Holborn Bars, E.C., for the sale of their materials, appliances, &c. This branch house will prove of great service to the building trade.

THE Coalbrookdale Company, Limited, of London (Victoria Embankment, Blackfriars, E.C.), Shropshire, and Bristol, have just issued an illustrated price list of window frames. The use of iron window frames and casements is now becoming every day more general. The publication of the catalogue is oppor-

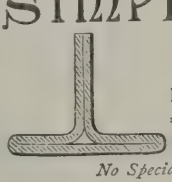
SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream.
SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper, Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
CORSHAM DOWN / FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

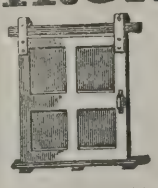
SIMPLEX LEAD GLAZING

For ROOFS, ********
****** SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL ***** PARTICULARS (SENT POST FREE). *****


Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET, HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*
MONK'S PARK
MP.
TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

tune. It comprises frames of all sizes, from 1 foot 9 inches by 9 inches up to 12 feet 6 inches by 2 feet 3 inches, for plain, rectangular, rose, and Gothic windows, ornamental lights for stained glass, ventilators with ground glass, fanlights, &c., all these thoroughly suited for square or varied geometric glazing. Attention is also directed to skylights, sky-doors, garden frames, and the like. The illustrated frames number about two hundred, prices being quoted on the average for nearly a score of various sizes for each description of frame. In addition, frames of any size or design are made to order, and special prices are allowed for large quantities.

THE prospectus of the Mortgage Insurance Corporation, Limited, is well worth the attention of large and small capitalists. The Board of Directors is constituted by men of standing, all of whom have had experience in financial work. The prospectus shows a good deal of prudence, and the rates of premiums are sure to attract the public. The list of applications will close on the 15th instant for town and country.

THE penny postage, with which the name of Mr. J. W. Palmer is so intimately connected, is, it is confidently expected, soon to be adopted as an imperial system. The ocean penny postage, according to Mr. Palmer, is no new project, but was before the public in 1840. He says :—"I have in my possession three 'envelopes'—*à la* Mulready—bearing each an appropriate device or sentiment. The first represents a ship upon the ocean, floating an ensign bearing the word 'Peace,' and beneath a black and white hand joined in a fast grip is a motto which suggests that the 'ocean penny postage' will make all Britain's children one fraternity. The second has a symbolical drawing of Britannia receiving the industry of all nations ; and the third represents a British sailor standing on a quay overlooking all the world, in his hand a great flag bearing the legend 'Ocean Penny Postage.'"

BREWERS' EXHIBITION.

MESSRS. LE GRAND & SUTCLIFF exhibited a varied display of their Norton's patent "Abyssinian" tube wells and pumps, artesian well tubes, and Norton's patent registering turnstiles, but the principal feature, which created one of the main attractions of the whole exhibition, was the gigantic artesian boring tools which were actually employed by this firm in boring the two artesian wells—6 feet diameter—for the Southampton Corporation Waterworks at Otterbourne. These are believed to be the largest artesian boring tools ever used. The auger, or miser, for bringing up the *débris* weighed when empty no less than 1½ tons, and, when full, over 3 tons. After the borings were completed, they were lined throughout with perforated steel cylinders, weighing 17 tons for each well.

MESSRS. C. ISLER & CO. also had a good display, and we are informed they have orders from the following breweries for fixing artesian bored tube wells, on their improved system, to obtain pure supplies of water :—Messrs. W. H. Brakspear & Sons, The Brewery, Henley-on-Thames ; Mr. R. Glasson, Union Court Brewery, Penrith ; Mr. H. Goodman, Kingsland Crescent Brewery, Landport ; Messrs. W. S. Pope & Co., Northfleet Brewery, Gravesend ; Messrs. Seabrooke & Sons, brewers, Grays, Essex. Amongst their works lately completed is an artesian bored tube well, 6 inches internal diameter, which is fixed for Messrs. H. & G. Simmonds, of Reading, who have obtained a yield of 10,000 gallons per hour. At Messrs. Grattan's Mineral Water Manufactory, Belfast, a 250 feet tube well, which was fixed through the new red sandstone, gives most gratifying results, both as regards purity and quantity. The upper and surface springs are strongly contaminated with sewage, which has been successfully excluded by means of their improved tube well piping. At West Drayton they have recently completed an overflowing artesian bored tube well, for the Ecclesiastical Commissioners. At the Westminster Chambers, Victoria Street, they have fixed a 370 feet bored tube well, yielding a plentiful supply. This well is the first in London pumped by hydraulic power. They are also fixing wells for the Metropolitan Asylums Board, and for the Corporation of Gravesend at the new Sanatorium.

THE LATE MR. THOMAS M. CARNEGIE.

THE *Pittsburg Commercial Gazette*, in a sketch of "the great ironmaster and millionaire," says :—Over the sea, in Fifeshire, Scotland, in the quiet town of Dunfermline, Thomas M. Carnegie was born forty-two years ago. When but a boy of five, his parents emigrated to this country, and settled in Alleghany City. Here, in the old First Ward School, under the tuition of Professors Kelly and Douthett, he received the early rudiments of mental training. When about sixteen years old he learned the telegraphic alphabet, and soon after was

HOLDEN & CO.'S PATENT ZINC ROOFING
WITH THEIR
PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,
Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.
Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.
ZINC AND IRON WORKERS AND COPPERSMITHS.
Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.
HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

H. W. COOPER & COMPANY, LIMITED,
HEALTH EXHIBITION, MEDAL AWARDED, 1884.
OPEN.
Improved Glass
Louvre Ventilator
Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).
Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.
H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.
SHUT.
Louvre Ventilator.
Improved Glass
GLASS SELLERS' COMPANY EXHIBITION, MEDAL AWARDED, 1876.
OPEN
SHUT
H. W. COOPER, Sole Inventor.
Improved Casement. Circular Glass Revolving Ventilator. Glass Sliding Ventilator. Improved Hopper for Skylights. Hopper Ventilator. Casement.
Steam Works: Little Queen St., Upper George Street, Edgware Road, W.
Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.

SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.
CARTER, JOHNSON & CO., Encaustic Tile Manufactory, St. George's Works, WORCESTER.
LONDON DEPOT:
Kinson Wharf,
Albert Embankment,
LAMBETH, S.E.
20 Victoria Buildings,
Victoria Street,
MANCHESTER
AGENTS:—
STURGEON & SMITH, Cross Lane, Eastcheap, E.C

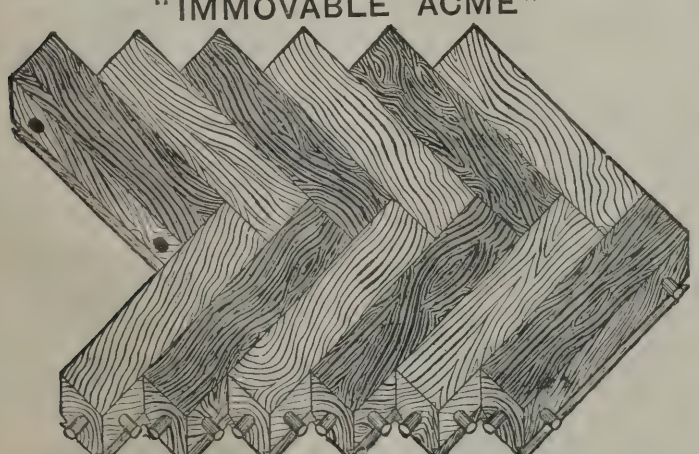
sufficiently proficient to take a position as telegraph operator under his brother Andrew, who had risen to be the acting superintendent of the Western Division of the Pennsylvania Railroad. He remained in that calling until 1860, when, in company with his brother Andrew, he became a member of Kloman & Phipps, iron manufacturers, in the old Twenty-ninth Street Works. In 1865 the firm purchased the Cyclops Mill, and both concerns were consolidated under the caption of the Union Iron Mills. A large measure of prosperity fell to their lot, and in 1867 they built the Lucy Furnace. In 1873 the firm of Carnegie Brothers & Phipps was organised, and the Edgar Thomson Steel Works—one of the most stupendous steel concerns in the world—was built, and of this company Mr. Carnegie was elected chairman. He was also largely interested in the H. C. Frick Coke Company ; was a director in the New York and Cleveland Gas Company, the Keystone Bridge Works, and many other manufacturing and industrial concerns. His estate is worth nearly 3,000,000 dols. A volume could be written regarding Mr. Carnegie's personal characteristics. He was a man of most extraordinary and exact memory, and was a profound student of metaphysical subjects. It would be hard to find his superior as to Shakespearian and Biblical knowledge. As a student he was thoroughly versed in the various systems of logic, and had the best thought of Mill, Hamilton, and other great thinkers at his fingers' end. He had, with all that has been said, a magnificent judgment and fine reasoning power. Had he not been a great manufacturer, he would have been a great lawyer or writer. His forte was the passing on schemes of magnitude in the business world, and when any profound measure met with his approval it was almost invariably consummated. He was pre-eminently a peacemaker, and always ready to unravel a tangled skein in business affairs, and in these he was quick and keen in his perceptions and perfectly just in his judgment. No man was heard to say an unkind word of Thomas M. Carnegie. Socially he was quiet and unassuming—a man of quiet, of the utmost kindness and the greatest generosity. In all of the business affairs with which he was identified he was looked on as the counsellor and business man, while Andrew was considered in the light of the genius of the family. Thomas M. Carnegie was as straight and honourable a man as ever drew breath. Universally esteemed and loved, he is universally lamented. Mr. Carnegie was wedded to Miss Lucy Coleman, daughter of the late William Coleman, in June 1866. His widow and nine children mourn his loss. His home in the East End was a home in every sense of the word—a picture of domestic happiness that is now obscured by grief. Some years ago Mr. Carnegie purchased 14,000 acres of land at Dungeness, on Cumberland Island, Georgia, and built a beautiful winter residence. The island is noted as the home and last resting-place of heroes of the revolutionary war. Here General Nathaniel Greene spent the declining years of his life, and here "Light Horse Harry" Lee lies buried.

MR. STANLEY G. BIRD.

ON the 8th instant Mr. Stanley G. Bird was entertained at dinner at the Café Royal by his colleagues of the Institute of Builders, the Builders' Accident Insurance (Limited), and the Central Association of Master Builders of London, previous to his departure on a visit to India. Mr. George Burt, J.P., presided. The health of "The Queen" having been loyally responded to, the Chairman said:—In proposing the toast of the evening it was unnecessary for him to make a long speech, but he would just give a short outline of Mr. Bird's connection with the building trade. Previous to 1872 he was connected with the Builders' Society, and in that year took a prominent part in the revival of the Central Association of Master Builders of London upon a permanent basis, and was appointed honorary secretary, which office he filled till the termination of the masons' strike in 1878. When the Employers' Liability Act was passed in 1880, Mr. Bird took a prominent part in the formation of the Builders' Accident Insurance, Limited, of which he was at present chairman ; and he served for four years as President of the National Association of Builders, which society he assisted to form in order to secure united action in trade matters among the various local associations, and he was now Vice-President. In 1884 the incorporation of the Institute of Builders was mainly accomplished through his exertions, and he was now President of the same, as well as Vice-President of the Central Association. He was past President of the Builders' and Builders Clerks' Benevolent Institutions, and had filled the office of Master of the Tylers and Bricklayers' Company, in addition to which he was the colonel of one of the best known of our volunteer regiments. The services Mr. Bird had rendered the building trade would be seen from what he had already stated, and it was with the greatest pleasure he (Mr. Burt) presided that night, when they were all assembled to wish their good friend "God speed," and a safe and pleasant

THE ÆOLUS WATERSPRAY
SYSTEM OF
HEATING, COOLING, & VENTILATING
IS THE
CHEAPEST AND BEST.
For Particulars apply to
MANAGER, 235 HIGH HOLBORN, LONDON, W.C.
Applications for Agencies invited.

"IMMOVABLE ACME"



WOOD-BLOCK FLOORING.

INTERNATIONAL EXHIBITION, LIVERPOOL.
GOLD MEDAL,
The ONLY and HIGHEST Award for
WOOD-BLOCK FLOORING
(W. DUFFY'S PATENT),
"Immovable Acme."
M. C. DUFFY & SON,
Chief Office: 66 Storks Road, London, S.E.

journey. The toast having been most cordially responded to, Mr. Bird thanked his colleagues for the honour he considered they had conferred on him in entertaining him at dinner previous to his departure.

DRAIN PIPES.

ON Saturday evening the annual address of the chairman of the Association of Public Sanitary Inspectors, Mr. George B. Jerram, A.M.I.C.E., surveyor and inspector, Walthamstow, was delivered at 1 Adam Street, Adelphi. The subject of the address was the best materials and methods of construction of drain pipes, and the most efficient means of making joints impermeable to gas and water.

Mr. Jerram, in the course of his address, said:—It will hardly be necessary to enter into the history of pipe-making, but it is interesting to note that the first patent we have record of was in June 1725, by William Edwards, for a new method, "never yet known or practised for the making of pipes with clay or earth for the conveying of water under ground from place to place," and the first patent on record for socketted pipes was by Samuel Hill in July 1810, and the first patent on record for making socket pipes by machinery was by Charles Jacob in February 1849. It would be quite out of your province to-night, and, in fact, occupy much space beyond the length of this address, if I were to attempt to shortly describe the various patents connected with drain pipes, especially when we find that between the year 1816 and 1885 over 200 have been applied for. The first salt-glazed stoneware pipes were introduced in 1845, and Mr. Edwin Chadwick, our president, was one of the first to suggest the manufacture of pipes of smoother surface than the cement or tile pipes then used. The chief material with which pipes are made is clay, as is well known, and it much depends on the quality of the earth and the manner of its manipulation, on the quality and strength of the pipe. This earth is found in various parts of the kingdom and varies very much in its nature, from the beautiful soft plastic clay found in Dorset and Devonshire and used for making the first and now well-known stoneware pipes of Messrs. Doulton and Messrs. Stiff, and others, to the more open and coarser material of bastard fireclay found in some parts of the midland counties and Yorkshire. And here we may consider the vexed question what is "stoneware?" We know that proper stoneware is clay that is, when burnt, vitreous throughout, of a dense nature, and non-porous, and the greater strength is admitted by many engineers who, in specifying the thickness of pipes to be used, make this difference, that pipes made of stoneware may be 1-12th the diameter, while pipes made of the other material must be 1-10th the diameter in thickness. It must not be thought, however, that pipes that are only made with Dorset and Devonshire clay are stoneware. We all know the beautiful Staffordshire and Leicestershire brown ware, and therefore there is clay to be found in other districts which thoroughly fulfils the conditions of stoneware, and although owing to the proximity of fireclay and other clays, inferior pipes are made in these districts, it is yet possible to obtain pipes of such a nature and material as may fairly be classed as stoneware. Pipes of house drainage are also made of concrete, and stand a very severe test, providing a sufficient time has elapsed between the time of manufacture and the time of using. In my opinion it would be a very useful additional test to specify the weight of the pipes. The standard weight of 9-inch pipes 1-12th thickness of the diameter is thirty pipes to one ton, while many of the lighter pipes that are being made will take thirty-three or thirty-four pipes to weigh a ton. This accounts for the great difference in price between different makers. That pipes should be glazed and as smooth as possible inside is also important, to avoid any obstruction on which sediment may be deposited, in order to facilitate the even flow of the sewage. Here, however, a danger often arises, as a nice looking glaze is not always a proof of a good sound pipe; in fact some of the most porous and friable clays take the best glaze, and some again are easily affected by acids and other chemical substances that are to be found in sewage. We now come to the important question of jointing pipes. What is required is that the pipes shall be perfectly straight, even, and thoroughly water and gas-tight, neither admitting subsoil water nor allowing any chance of sewer-gas from escaping. Many have been the various devices and ingenious ideas for accomplishing this seemingly very easy matter. It is only within the last few years, during which many patents have been taken out, that much attention has been paid to the necessity of making joints both gas and watertight. Mr. Jerram then proceeded to discuss and criticise in detail the various joints which have been introduced by Mr. Stanford, Messrs. Doulton, Mr. Donaldson, Mr. Pritchard, Mr. Mawby, and others, and concluded as follows:—I have thus briefly described some of the different methods used in jointing pipes, but it is no use having a good

ASCHERBERG PIANOS,

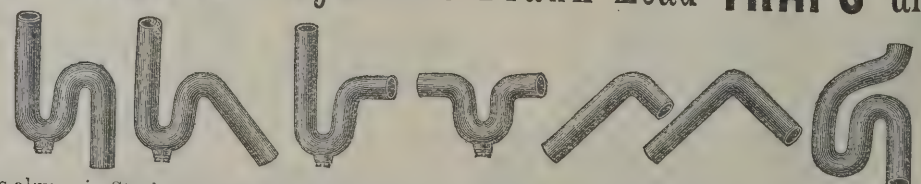
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot:—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS. PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING, No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works:—15 BRITANNIA STREET KING'S CROSS W.C.

pipe and effective joint unless the drains are laid in a proper manner. For house drains the principal use of the drain is to convey the sewage away from the dwelling as quickly as possible. In many towns, owing to the thick population, the houses are so situated that the drains must pass under the houses; and it is, therefore, most important that great care should be used in laying the drains, so that it would be utterly impossible at any time for sewage gas to escape and permeate the dwelling. The pipes should be laid at a gradient of not less than 1 in 30, thoroughly even, true, and regular, in a perfectly straight line across the narrowest part of the house, all junctions and connexions being placed outside. A manhole or disconnecting chamber should be constructed in front, and the end of the drains at the rear of the house stopped up with a stoneware stopper that could be removed if necessary. This arrangement will facilitate the cleansing or unstopping of the drain should any large foreign substance by any chance get into the pipes without having to take up the floor. In the model by-laws (which are now in force in many districts) for the construction of house drains it is stipulated that the drains should be laid on a solid bed of concrete, and covered with at least six inches of concrete. This is good as far as it goes, but unfortunately there is no definition of how the concrete is to be made, and as any mixture of stones, dust, and lime may be and is, by jerry builders, considered to be concrete, it is to be feared that this preventative may prove to be a failure. To sum up what, in my opinion, are necessary conditions in laying pipes for house drainage. See that the pipes are well made, of dense clay not less than 1-12 or 1-10th the diameter in thickness, and to insure this have the pipes a certain weight, well glazed, true, regular in shape, even in thickness in all parts, the socket to be machine made, not less than 2 inches in depth for any size under 9 and 1-5th the diameter in depth for all sizes beyond, jointed with one of the water-tight joints, and laid perfectly true, and covered in a bed of the best Portland cement concrete, in such a manner as to be easily inspected and cleansed when necessary, and then we shall never need to use cast-iron pipes or hear of any nuisance from defective drains under the houses.

Mr. W. Hearne, inspector, Paddington, suggested that the inspector should, in the first instance, test the degree of water-tightness possessed by drain pipes. The business of the drain layer seemed to belong to no trade in particular. Thus a work which required great knowledge and ingenuity, especially where curves had to be made, was left in the untrained hands of any casual workmen. Mr. Hearne then moved a vote of thanks to the chairman. The vote was duly seconded and supported by the several speakers. In the remarks of subsequent speakers amusing instances were given of what in the country and by jerry builders was considered to be concrete, of which there was no definition which could be enforced in a law court. The importance of thorough efficiency in supervision and the danger run by local authorities in being penurious in providing such supervision over all sanitary work was strongly insisted on. One speaker thought the maker of a defective drain ought to be made criminally responsible. It was also remarked that sanitary inspectors were overworked, too few in number, and had not their duties defined with sufficient accuracy.

Mr. Drake said that he had for some time acted as resident engineer at the Foundling Hospital, where he found that the drains had not been touched for forty years. Sanitary inspectors ought to be examined and formed into a body like the architects and engineers, and thereby acquire a defined professional status. They often risked their lives in their work, and their position ought to be recognised. As things were, all the dignity and honour were claimed by men who could write C.E. after their names, while the hard work fell on the inspectors. It would, of course, be important that the examination should be of a thoroughly practical as well as of a theoretic character.

Mr. Middlewick said that the question of examination and diplomas was being carefully considered by the Council of the Association. On the whole, pipes were good, but the laying of them had in too many cases been carried out in a most inefficient manner.

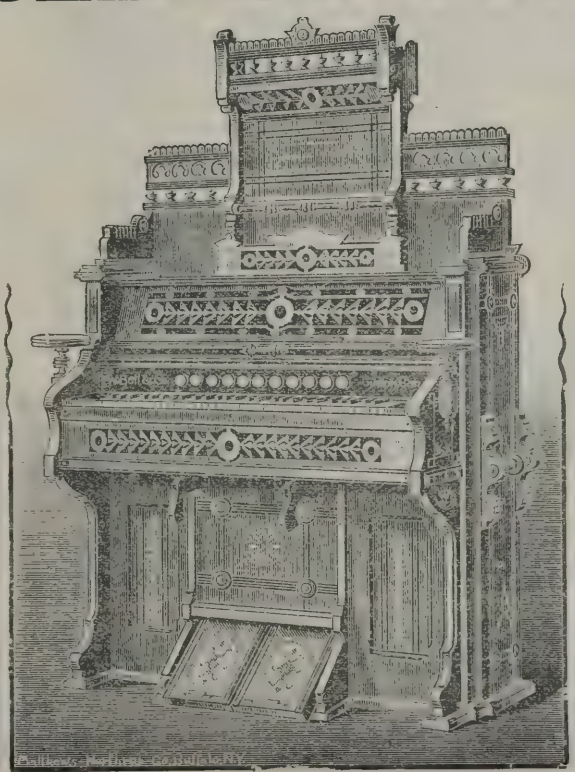
Mr. Chamberlain said that the London and urban inspectors generally had too much work in the garrets to attend much to the drains. Moreover, the London vestries had not the power of making by-laws which was possessed by rural authorities.

Mr. Legg thought it was absurd to require a certain number of inspections to be made by each inspector without any guarantee of the real character of his work.

The vote of thanks was then unanimously passed, and briefly acknowledged by the chairman, who pointed out that, though additional inspection would at first involve a greater expense, that expense would be far more than recouped by the improved sanitary condition of houses and improved health of the people.

W. BELL & CO.
AMERICAN ORGAN MANUFACTURERS,
AT THEIR NEW PREMISES,
58 HOLBORN VIADUCT,

Keep a full line of the
CELEBRATED
"BELL"
ORGANS
And the FAULTLESS
HARDMAN PIANOS
NEW YORK.



ALWAYS ON HAND FOR INSPECTION.

THESE INSTRUMENTS ARE ACKNOWLEDGED LEADERS OF ALL OTHERS.

CATALOGUES
FREE
From above Address.

ORNAMENTAL SMITH'S WORK.

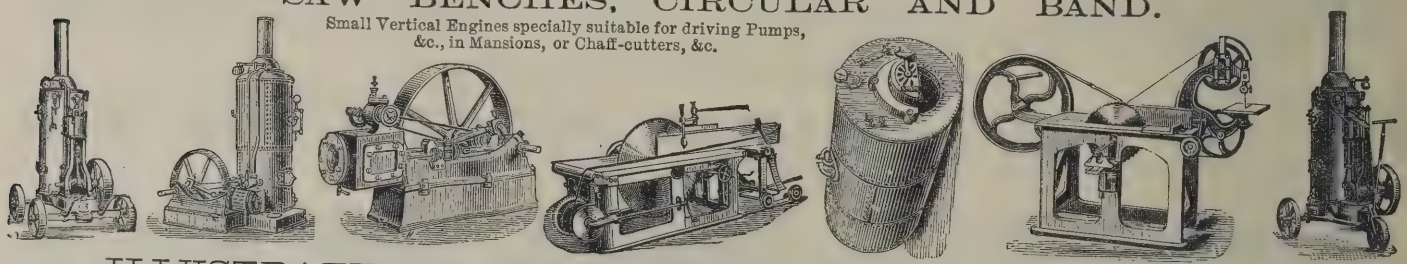
LOVERS of the smith's craft, an art which was carried to such perfection in Mediæval days, and the memory of which has come down to us in so many an example, each exquisite in design or quaintly beautiful, cannot do better than pay a visit to the establishment of Messrs. Mappin & Webb in Oxford Street, to look at the large collection of ornamental wrought ironwork that the firm have now on view. The merit of this branch of art metalwork is again meeting with recognition, but this is the first time, we imagine, that those who cater for the public have attempted to keep a stock on hand. It is so suitable for domestic purposes, scarcely anywhere is it out of place. It would be hard to find a material or surrounding decorations with which it would not harmonise. The merits of ornamental brasswork need no commenting on, and it will always hold its own for ecclesiastical furniture, but often in domestic buildings its presence or absence is scarcely noticeable enough among the general decorations of our interiors, including pictures and their frames, vases, knicknacks of all kinds, as well as the permanent ornament, in all which an effect of brightness is the effect generally aimed at to counteract the dulness of our skies. This large collection at Messrs. Mappin & Webb's comprises examples of wrought ironwork from Milan, Venice, Munich, Switzerland, Austria, Hungary, and Germany, as well as the numerous examples of English work by the firm. Nearly every conceivable purpose for which the material can be used seems to have been thought of and realised in metal. Among them are pendant hall-lights, one with a handsome Bohemian glass dish, hanging baskets for gas with stained glass, dining-room chandeliers of elaborate workmanship, arranged with lamp in centre, and also furnished with branches to hold candles, which can be lowered and run up again like the ordinary gaselier. Others, again, have the duplex burner lamp. Indeed, any lighting agent, from the common candle to electricity can be used, and we notice one bracket for electric light particularly well designed. A gigantic pair of candelabra, elaborately enriched, had a design mainly floral; a pedestal candelabrum was designed to occupy a corner position, and supported three branches for candles. A large number of fine entrance and other hanging lamps, varied in design and description, some pendant from brackets, suitable for most requirements, or also in forms for supplementary uses such as the conservatory, the summer-house, &c.; also a variety of fireplace fittings, grates, fire-dogs, fire-irons. One set of these fittings is shown in a remarkable work, forming a handsome chimney corner after the old work, of solid carved oak with seats on each side. Chaucer's "Canterbury Tales" are the subject of the carving on the panels of the frieze, the subsidiary panels showing carved Renaissance work. The roof is panelled, and filled in with stamped leather. The metalwork includes both the black and bright metal. In the latter is a peculiarly handsome table, with plush top, well worth attention; flower stands, one with flower bowl of Bohemian ware, crowned with a tasty frill of wrought ironwork, pendants for flowers, and delicate little flower hand-baskets with glass cups; a handsome mirror, well set off in frame-work of metalwork. But the objects on a large scale are too numerous to go more into detail about, and the same may be said of the smaller-sized articles. Among these latter are a great variety of prettily or quaintly-designed table furniture, inkstands, paper weights, table candlesticks, hand candlesticks, card trays, rose sprays, hand lamps for oil, &c. The old-fashioned Martin Luther candlestick, and a handsome card tray with St. George and the Dragon quaintly executed, must not be overlooked; and attention should be called to the pretty portable lamps for outdoor work, designed as miniature Swiss châlets. The idea of the firm in bringing these objects before the attention of architects and the public in general is an enterprising one, and should meet with the success it deserves.

PROPOSED RESTORATION OF ST. MARY MAGDALEN CHURCH.

AN adjourned joint vestry for the united parishes of St. Mary Magdalen and St. Gregory by St. Paul was held on Thursday, in last week, in the vestry-room of St. Mary Magdalen Church, Old Fish Street. The object of the meeting was to consider a specification of the repairs necessary to the interior of the church, and the *City Press* gives the following report of the proceedings:—

The Vestry Clerk read a report sent in by Messrs. W. Hudson, Son & Booth, architects, 19 Benet's Hill, which set forth that the exterior of the square part of the tower, up to the level of the principal cornice, is in fair condition, the stones and joints, with some few exceptions, being in a reasonable state of preservation. The lower portion of the tower, however, ha s

E. S. HINDLEY, 11 QUEEN VICTORIA STREET.
VERTICAL STEAM ENGINES, PORTABLE OR FIXED. HORIZONTAL STEAM ENGINES } WITH OR WITHOUT VERTICAL BOILERS
SAW BENCHES, CIRCULAR AND BAND.
Small Vertical Engines specially suitable for driving Pumps, &c., in Mansions, or Chaff-cutters, &c.



ILLUSTRATED CATALOGUES FREE ON APPLICATION.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.—Office: 175 Strand, London, W.C.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

at some period been rendered with Roman cement, which requires some repair. The principal cornice of the square tower appears considerably weather-worn on the surface, but, considering the length of time it has been subject to the effects of the elements, not more than might be expected. Beyond some slight indications of some portions of the coarse moulding having burst off, the stone is in a fair state of preservation. The architects consider (without further examination, to be obtained only by an efficient scaffold being erected) that a thorough repair by filling in the joints, and bedding in with Portland cement is all that is required, so far as regards the principal cornice. An inspection of the portion of stone cornice of the cupola, which fell on the roof of Messrs. Borass & Co.'s premises in Old Change, in September last, suggested that this stone might have been originally defective at the time of building, over two hundred years ago, and that the weather has gradually acted upon the stone so as to eat it nearly through (within three-quarters of an inch), and its fall was inevitable sooner or later. It is, however, not to be supposed because this particular stone has fallen, that the whole of the upper cornice is in like condition, but rather that this is an exceptional case. The stone steps of the winding staircase of the tower leading up from the ground floor of the church to the first stage above the gutter of the main building, or where the large bell is hung, are worn away to some extent, not only the treads, but the segmental ends forming the central newel. There is, perhaps, no immediate necessity for repairs here. The roof of the church, which is covered with cast lead, is generally in fair condition, together with the gutters thereof. The parapets of the north and west fronts require superficial repairs by pointing both inside and out, the joints being perished to the extent of 3 inches deep in some places. The stone facings of the west front, next the skylight of Nos. 51 and 53 Knightrider Street, require repair. Approximately, the cost of the necessary works, including the raising of a scaffold round the octagonal cupola, will not exceed 150*l*.

Mr. Foyle said all that was desired was to effect such repairs as would secure the safety of the fabric and the surrounding property. He believed that St. Mary Magdalen had some funds in hand.

Mr. Booth said the works mentioned in the report were absolutely necessary for the safety of the building.

Mr. Adamson said last Sunday morning he saw a portion of the stone of the church, about four pounds in weight, that had fallen on to the street. If it had fallen on a man's head it must have killed him.

Mr. Foyle said they must not lose sight of the fact that in a few years this church might be used for other purposes. In all probability, in a few years many of the City churches would be turned into warehouses. This should be borne in mind when spending the money of the ratepayers.

Mr. Adamson was of opinion that the whole of the work should be proceeded with without delay, before the bad weather set in.

After a conversation it was decided that the financial portion of the subject should be discussed in the respective vestries of St. Mary Magdalen and St. Gregory, each parish having control of its own funds.

It was decided that the following firms be invited to tender for the work, viz. :—Messrs. R. C. Cutting & Co., Wardrobe Chambers; Mr. W. B. Lawrence, Knightrider Street; Messrs. Bevan & Dallman, Sermon Lane; and Mr. Mixon, Godliman Street.

The vestry was then adjourned for a fortnight, when, it was stated, the tenders will be opened.

BRYANT, POWIS & BRYANT, LIMITED.

A GENERAL meeting of the shareholders in Bryant, Powis & Bryant, Limited, was held last week at the City Terminus Hotel. Mr. Wilberforce Bryant presided. He said it was not the practice of companies to call their shareholders together to declare an interim dividend, but to send a cheque through the post. The directors, however, thought that the shareholders would like to meet the board and hear from them a little as to how the business was going on. He was glad to inform them that in spite of the depression, their business had increased in the last six months, and notwithstanding the fact that they had exercised greater caution with respect to credits. The sum put aside last year to meet any possible bad debts had not been fully required, though all the amounts had run off. It seemed to be the general impression that the period of depression was passing away, and that a substantial improvement might be looked for at the opening of the new year. They confidently believed that when the books were made up to the end of March next—the close of their financial year—a balance would be shown which would enable them to pay a good dividend and to add a good sum to the reserve. Last year they carried forward

E. LOFTS, Patentee & Manufacturer,

Hills Road, CAMBRIDGE. London Show-rooms, 165 Queen Victoria St., E.C.

OPEN FIREPLACES

FOR

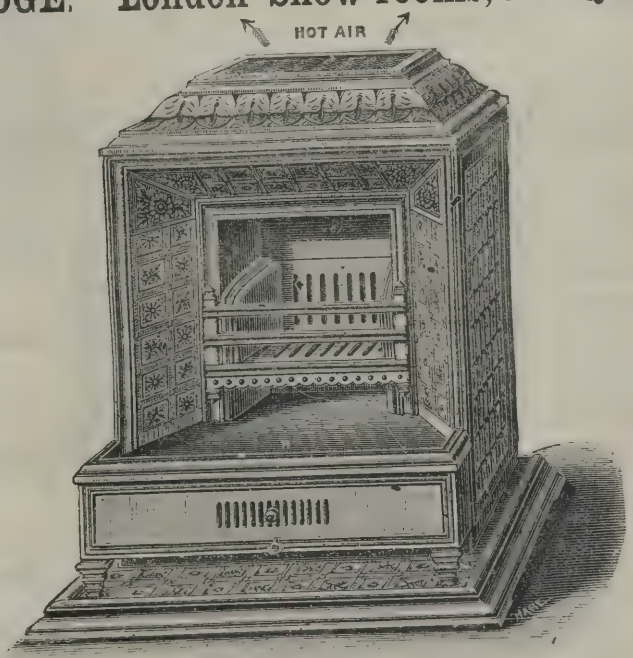
DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES,



HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS, &c., &c.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Store.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving a great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort, they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; **consume their own smoke**; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge.

some thousands to the credit of this year's business, and they said they thought it probable that a portion of the amount would be invested to form a nucleus of a reserve fund. With that object they had invested 5,000*l.* in Consols. He concluded by proposing a resolution authorising the directors to distribute "out of estimated profits" an interim dividend for the half-year ended September 30 last, at the rate of 15 per cent. per annum. Mr. Pugh (a shareholder) seconded the motion. In reply to questions, the Chairman said that the dividend would be paid less income tax. The question of a Stock Exchange quotation had been engaging their attention, but the matter had been deferred on a technical objection by the Stock Exchange Committee. Mr. Wotton took his goodwill in shares instead of money, and that fact was construed by the committee into that gentleman being the vendor, and that more shares had thus been taken by them that the Stock Exchange would permit. The motion was carried unanimously.

ENCROACHMENTS OF THE SEA.

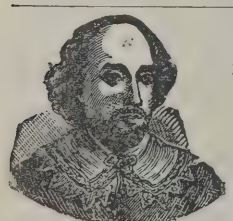
A MEETING of the Geologists' Association was held at University College on the 5th inst., when Mr. Topley, the president, read a paper on "The Erosion of the Coasts of England and Wales." Mr. Topley, who is secretary of the British Association Committee which is investigating this subject, stated that the greatest encroachments took place along the coasts of Holderness and Norfolk, where the sea gains on the land at the average rate of from two to three yards per year; but, locally, and during exceptional gales, the rate is much higher. On January 30, 1877, parts of Norfolk lost an average of three yards for several miles, and near Bacton the loss was fifteen yards. On the south and west coasts, Folkestone, Brighton, Worthing, Bournemouth, Westward Ho! and Pembrokeshire were amongst the places mentioned as typical instances of the constant scouring action of the sea. It has been shown conclusively that shingle beaches, the natural protectors of the coast, are driven eastwards on the south coast and southwards on the east coast, their direction being wholly due not to tides, but to the prevailing winds. The effect of groynes is to collect the shingle and to protect the immediate locality, but generally at the expense of places further east or south. Worthing, Mr. Topley observed, is heavily groyned, and the shingle there accumulates, but east of the town the coast is rapidly receding. Folkestone pier is a large groyne, which has collected a considerable area of shingle on its west side, while Copt Point and Eastwear Bay, once protected by a continuous band of shingle, are now nearly bare and the coast is rapidly receding. In the case of Brighton, the groyning to the west caused extra scouring to the east, and the old raised beach was being undermined. It was pointed out, also, that the erosion of the sea-bottom in front of the beach was steadily deepening the sea, and this increased the effect of heavy storms. The lecturer strongly denounced the removal of shingle for road metal, ballast, and other purposes, a practice which was in many places doing vast mischief. Notwithstanding the encroachments of the sea in some directions, it is computed that the surface of England is at least as great as it was 500 years ago, the reclamation of land in some places equalling the waste in others. In the Wash alone, within historic times, an area of 100 square miles had thus been gained from the sea.

NOTES ON NOVELTIES.

"Gransorbian."—A new method of graining has been patented by Mr. George Brighouse, of 40 Irvine Street, Liverpool, who is the sole manufacturer and proprietor. The employment of this new process has been taken up in the trade already to a very large extent, but there is not a doubt that its use will become universal, for wherever it is known it is approved, by reason of the saving of time, and consequently saving in cost, it effects. By means of the "Gransorbian" large spaces can be grained in a space of time that appears incredible to all who have not seen the ready way in which the work is accomplished. A description of this new process—the "Gransorbian"—has been given by a writer who has had long experience in decoration, and what he writes agrees with our own views after a personal examination of the process:—"The 'Gransorbian' is made in continuous rolls, 2 feet wide, and presents the appearance of a wooden block cut for printing purposes. Suppose it is a piece of oak. We are looking at the portions that would, in the ordinary way of graining, appear light, as the figure or dapple and the combing. This appears on the 'Gransorbian' paper in relief, and is white in colour and spongy in texture, and it is this portion that produces the graining effect. In the case of each wood the pattern is made 6 feet long without a repeat, in this respect giving a distinct advantage over any other mechanical process. The paper is prepared for the following woods:—Oak (three

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

PARKINSON'S
BEST QUALITY
LOWEST PRICES.
WET & DRY
COTTAGE LANE
CITY Rd LONDON.
GAS METERS

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions.—STEVENS & CO., Ceres Ironworks, Kingston-on-Thames.

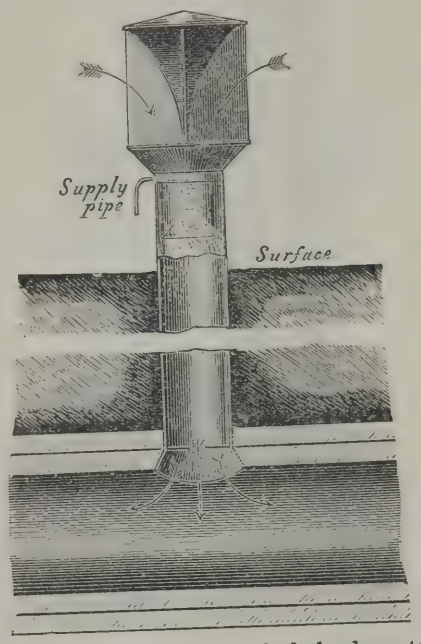
THE NEW CHANDELIER.
PATENT SCREW BALANCE.
See "The Architect" of October 22, 1886, page 9.
Particulars free on application.
H. T. TALLACK, {28 Hatton Garden, London, E.C.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

kinds), oak sap, pollard oak, pitch pine (two kinds), walnut' mahogany, Hungarian ash, English ash, and maple, so that the decorator has a range of some eleven woods to work upon, and the imitation of the respective woods is excellent, and will satisfy the most fastidious grainer. It is a strong recommendation of 'Gransorbian' that it is available for either oil or distemper graining, and with equal advantage and facility of manipulation. This is a distinct advantage, inasmuch as it allows the decorator to deal with any job demanding urgency in a satisfactory manner. Assuming that we have a range of doors to grain in oak, we work as follows :—First, we cut four pieces out of the paper to the size of our door-panels, and another piece for the lock-rail ; having mixed our graining colour of half oil and half turps with the other ingredients in the usual proportion, we proceed and rub in the door. Now comb the stiles in the usual way, getting as much variety in the combing as possible ; the top and bottom cross-rails we may simply streak across with the stippler or rubbing-in brush, and the lock-rail we may do in the same manner or leave it plain. We now take the 'Gransorbian' for the top panel and lay it against the panel directly, and without any indecision, as the absorbent properties of the paper are so great that wherever it touches it lifts the colour, and it is, therefore, a necessity that it should touch only the place where it is wanted. Having placed it on the panel, we take the small roller and roll it well over the back of the paper. This is to insure that the grain is pressed equally over every part of the surface, and in doing this it is very important indeed that the paper is not shifted, and to this end it is better that two are employed, one to hold the paper and another to roll. The whole thing is done in a much shorter time than it has taken us to pen this description. We now take the second, third, and fourth panels, and treat them in the same way, whilst for the lock-rail we use a piece of the sap, and for the top and bottom stiles a piece of figured wood, and the whole door is complete." As to the finished work, it cannot fail to be pleasing if proper judgment has been used. Overloading the design with figured work is just as distasteful, if not more so, than the opposite fault of weak or attenuated design. For church work, public halls, railway stations, or any other large works, it would make all the difference between profit and loss. A church at Wavertree, Liverpool, was done by this process inside in about the same length of time as the grainer occupied in graining the outside doors of the church ; and a church at Colne was recently grained throughout at a cost in material of *7s. 6d.*

Sewer Ventilation.—The illustrations show the application of the well-known Æolus Waterspray ventilator to sewer ventilation, whereby the direction of the currents, whether upcast or downcast, are compelled to travel in the direction desired. It is a well-established fact that automatic systems, however well contrived theoretically, do not in practice effect this result, but frequently reverse themselves, the inlet shaft becoming the up-take and the outlet shaft the down-take. The unpleasant, not to say dangerous, results of this aberration can be readily conceived. Fig. 1 shows the downcast ventilator with the ordinary wind-catcher head in the shaft, below which is set the spray, which drives the fresh air down into the sewer. Fig. 2 is the upcast ventilator, in the suction limb of which another spray is fixed exhausting the gas from the sewer, and driving it up the upcast shaft, which may be carried to any



EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.

THE EMPLOYERS' LIABILITY
ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required ; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

NASH & HULL,
LETTER
MANUFACTURERS
WRITERS AND ENGRAVERS.
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

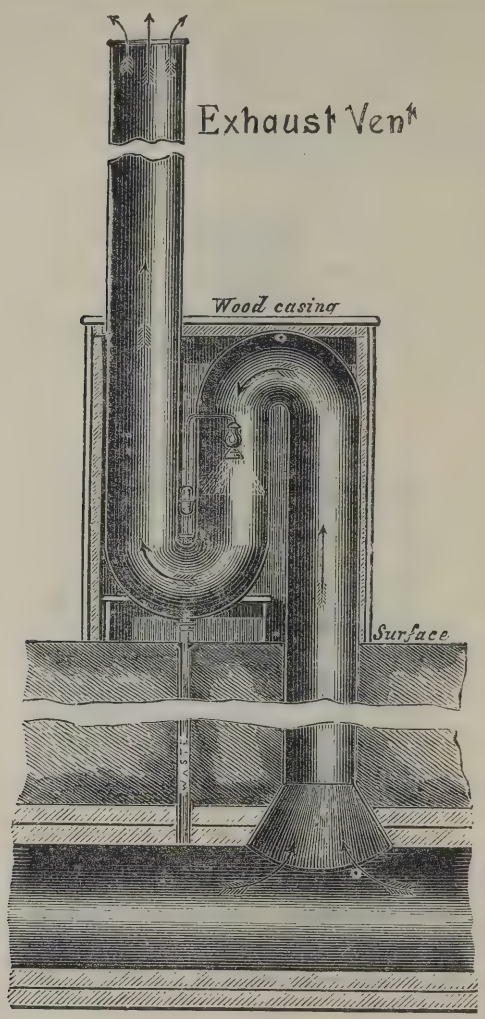
E. SCOTT & CO.,
(ESTABLISHED 1851)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES:
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices : 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.

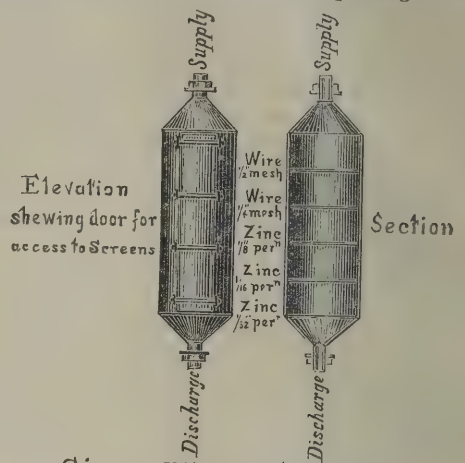
LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

EDWARD SMITH & CO.
MAKERS OF EVERY DESCRIPTION OF PLAIN AND ORNAMENTAL FLOOR AND WALL TILES : MOSAICS :
EMBOSSED AND INCISED TILES, ETC., RED & WHITE TERRA-COTTA PRESSED BRICKS, ETC., ETC., ETC.
COALVILLE. LEICESTERSHIRE.

BY HER MAJESTY'S ROYAL LETTERS PATENT.
ESTABLISHED A.D. 1771.
AUSTIN'S
NEW IMPERIAL PATENT
SUPERFINE FLAX LINE.
The above article is now being manufactured and sold in large quantities for Greenhouse Sashes, Public-house Shutters, and other heavy work. The Manufacturers would recommend it for its strength, and the large amount of wear in it, consequent on its peculiar manufacture.
AUSTIN'S IMPERIAL PATENT FLAX SASH AND BLIND LINES (two Prize Medals awarded). The manufacturers of the above articles particularly wish to draw the attention of the trade to their Imperial Patent Flax Sash Lines, of which they are now making six qualities, all of which they can strongly recommend, as they have given unqualified satisfaction to the trade for now over One Hundred Years ; and the Proprietors continue to give their personal attention to the manufacture of these goods.
They also invite the particular attention of the trade to their IMPERIAL PATENT BLIND LINES, which are very superior to anything yet offered.
They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in town and country.
N.B.—Please note that all our goods as advertised above are labelled either inside or outside with our Trade Mark—The "Anchor."



height against an adjoining structure otherwise supported. The syphon bands, together with the spray, are enclosed in a wood casing, which has a small door giving access to the spray. In ordinary cases the spray would be worked with fresh water with the ordinary bell-mouth spray, which is the patented invention belonging to the Company, but in seaside towns, where sea-water is taken for the motive force, they would be fitted with a special spray adapted for the passage of the grosser particles of sea-water, but as an additional precaution when the presence of seaweed and grosser impurities is suspected, it is recommended to roughly filter the water before passing it through the



Sieve or Filter for Sea Water
diameter of Cylinder 18 ins

spray. A special filter has been devised for the purpose. This sieve or filter is shown in elevation and section, fig. 3, and consists of a cylinder of copper 18 inches in diameter, contracted in the form of a cone at each end, and fitted with unions for attachment to the water-pipes, and having inside a series of diaphragms arranged in progressive degrees of fineness, access to which is gained by a door secured by plates and thumb screws. This door can be readily opened, and the compartments between the sieves cleaned out as required. The instruments can be seen in operation at the Company's Showrooms, 235 High Holborn.

BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586.
Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617.
Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

BUILDERS' BENEVOLENT INSTITUTION.

THE thirty-ninth anniversary dinner in aid of the funds of this Institution took place on the 4th inst. at Carpenters' Hall, London Wall. The President, Mr. Basil E. Peto, occupied the chair, supported by Mr. E. l'Anson, President of the Royal Institute of British Architects, Mr. H. J. Kennard, Master of the Carpenters' Company, Sir Morton Peto, Bart., Alderman W. Lawrence, Mr. George Plucknett, J.P., Messrs. F. J. Dove, T. F. Rider, Banister Fletcher, H. Colls, &c., &c.

The loyal and patriotic toasts were given from the chair, Major Brutton responding for the Army and Navy, and Major J. T. Bolding for the Reserve Forces.

The President, in giving the toast of the evening, "Success to the Builders' Benevolent Institution," referred to the ever increasing keenness of competition, which had unfortunately undermined the good old fellowship which existed in trade by isolating them one from another. Such an opportunity of meeting and uniting for the good of even a portion of the trade, must therefore be hailed with feelings of satisfaction. In the end the business of most of them would seem but an unsatisfactory, unsocial, and even selfish affair, and were it not for such opportunities as the present, some of their greatest successes might perhaps turn out to be mere Pyrrhic victories after all. Men who had set out at the commencement with no greater ambition than honestly to support themselves, their wives and families, were as a rule those helped by the Institution, and who in the approach of old age, in many cases, found their business gradually slipping from them, and going to more successful competitors. In this spirit the Institution was able to help such persons, and to show that they still had the kindly sympathy of those connected with the trade. During the year the charity had lost a munificent supporter by the death of Lord Penrhyn, and there had also been several defections of old subscribers. The powers of usefulness of the Institution depended entirely on the maintenance of its annual income, and he felt that he would not appeal in vain to them to fill up the gap that had been made in the subscription list.

The President also proposed "The health of the Carpenters' Company," thanking them for the use of their fine hall.

Mr. Kennard, the master, in replying, expressed the satisfaction felt by the Carpenters' Company in granting the use of the hall. When the Company was formed the carpenters were really the London builders, though bricks and mortar had long taken the place of wood in the construction of buildings. The old rivalry between the builders and carpenters had long ceased, and he hoped for many years they would be the guests of the Carpenters' Company on these festive and charitable occasions. Mr. Kennard also gave "The Chairman and President," who, in responding, expressed his satisfaction at being able to do something for the Institution.

Mr. Banister Fletcher next proposed "The Vice-Presidents and Trustees," coupling the toast with the name of Sir Morton Peto, who had ably filled the chair thirty-three years ago.

Sir Morton Peto replied, and spoke at some length upon the great changes in the building trade. In his day, when a few firms only were invited to compete for a large work, they used to imagine things were difficult, though nowadays it must be much harder. Their business there that evening should, therefore, be to aid those of their brethren who had not marched with the times, but had fallen by the wayside.

Alderman W. Lawrence proposed "The Treasurer" (Mr. George Plucknett, J.P.), whose presence reminded him of the days when the Lucases, Cubitts, and others used to meet and complain of the severeness of the struggle.

Mr. Plucknett, in replying, referred to the satisfactory progress of the Institution, the increased number of its pensioners, and the augmentation of their stipends. He also expressed a hope that many of the new firms established in London would become subscribers to the charity.

Mr. T. F. Rider gave "The Architects and Surveyors." The first were a body of intelligent and worthy gentlemen, whom it was a pleasure to be connected with in business. The surveyors, who performed a more prosaic work, acted as buffers between the architect and the builder.

Mr. E. l'Anson, who replied for the architects, said that no work required so much organisation, such mastery of detail and control over financial matters, as that of the builder. He believed he might truly say for the great body of his profession that in all their dealings they endeavoured to do what was just and true for the builders, as well as right for their clients.

Mr. A. J. Hunt also replied for the surveyors.

The concluding toast was "The Committee and Stewards," proposed by Mr. E. Woodthorpe, and responded to by Messrs. T. G. Smith and J. W. Hobbs. Subscriptions and donations amounting to 678*l.* were announced during the evening.

Equitable

One Premium returned every Fifth Year to those who have made no Claim.

FIRE INCOME (all Home Business) £66,778
FUNDS £98,969

ACCIDENT CO.
INCOME ... £21,264 | FUNDS ... £36,528

Fire & Accident Offices

ACCIDENT POLICIES, Free from vexatious conditions, and INSURING CAPITAL SUMS in the event of PERMANENT DISABLEMENT, as well as DEATH by Accident and Allowances during TEMPORARY DISABLEMENT, are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE GUARANTEE AND ACCIDENT COMPANY LIMITED.

FIRE POLICIES, COVERING DWELLING-HOUSES and HOUSEHOLD FURNITURE; FARM BUILDINGS and FARMING STOCK; SHOPS and STOCKS-IN-TRADE, CHURCHES, CHAPELS, and SCHOOLS, and all other risks of ordinary Hazard are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE FIRE INSURANCE COMPANY LIMITED.

For information as to Agencies, apply to the

SECRETARY, EQUITABLE OFFICES, 11 & 13 ST. ANN STREET, MANCHESTER,

Or to the RESIDENT SECRETARY at the various Branches:—

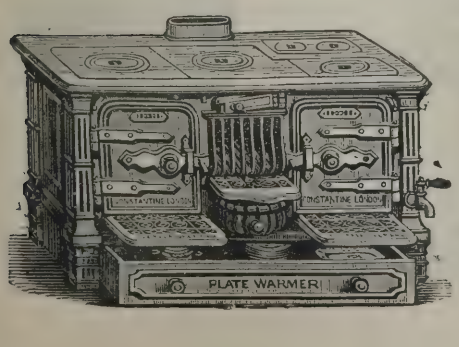
London ... ... 69 Lombard Street, E.C.
Glasgow ... ... 101 St. Vincent Street.
Birmingham ... ... Midland Buildings, 2 New Street.
Dublin ... ... 18 Dame Street.
Liverpool ... ... 11 Tithebarn Street.
Newcastle ... ... 1 St. Nicholas Buildings.
Belfast ... ... 6 Royal Avenue.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S

PATENT "TREASURE"

COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

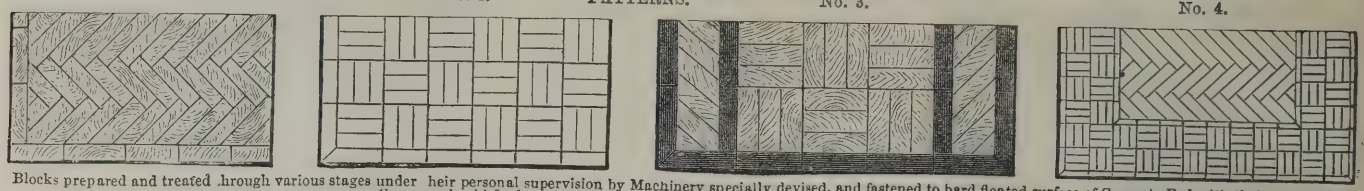
THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

PATTERNS.

No. 1. No. 2. No. 3. No. 4.



Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

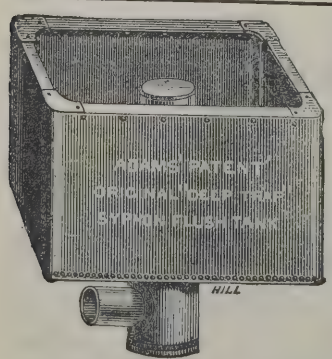
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL	St. Philip's Marsh.	READING	Caversham Road.
EXETER	Basin Head.	DUBLIN	14 St. Andrew's Street.
SOUTHSEA	Beaufort Road.	MANCHESTER	20 Cross Street.

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

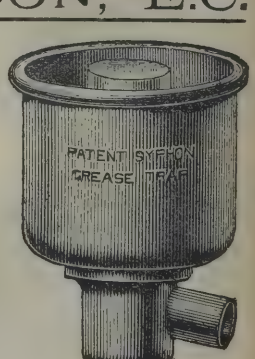


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, November 12, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, NOVEMBER 19, 1886.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

THE ARCHITECT
AND
CONTRACT REPORTER.

ADVERTISEMENT SCALE.

	£	s.	d.
For Two Lines and under (eight words to the line)	0	2	6
For every Additional Line	0	0	6
For Quarter Page	2	10	0
For Half Page	4	10	0
For a Page	8	8	0
For 1 inch deep by 2½ wide	0	7	6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & CO., 175 *Strand, London, W.C.*

COMPETITIONS OPEN.

CARLISLE.—Nov. 20.—Designs, with Specifications and Estimates are invited for the Erection of Market Buildings. Premiums of 100*l.* and 50*l.* Mr. H. U. McKie, City Surveyor, Town Hall, Carlisle.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

HARTLEPOOL.—Nov. 20.—Plans, Elevations, Specifications, and Estimates are invited for the Erection of a Boys' School (to accommodate 100) and Offices for future Extension and Residence for Head Master. Premiums of 25*l.*, and no undertaking to employ the successful architect. Mr. R. Edger, Clerk to the Governors of the Henry Smith School, Hartlepool.

CONTRACTS OPEN.

ABERYSTWITH.—Nov. 26.—For Erecting Wrought-iron Bridge (exclusive of Masonry) on Cast-iron Columns over the River Rheidol. Mr. James W. Szlumper, C.E., 6 Victoria Street, London, S.W.

BARROW-IN-FURNESS.—Nov. 25.—For Fittings for Public Library and Reading-rooms in the New Town Hall. Mr. C. F. Preston, Town Clerk, Barrow-in-Furness.

BATLEY CARR.—Nov. 19.—For Building Stables. Mr. J. J. Barstow, Secretary, Industrial Society, Dewsbury.

BELFAST.—For Building Two Semi-detached Villas. Mr. W. Eaton, Architect, 31 Botanic Avenue, Belfast.

BELFAST.—For Shop Fronts and Alterations to Houses, Berry Street. Mr. W. Eaton, Architect, 31 Botanic Avenue, Belfast.

BINGLEY.—Nov. 25.—For Building Extensive Business Premises, for Co-operative Society. Mr. Herbert Isitt, Architect, Sunbridge Road, Bradford.

BLACKPOOL.—Nov. 20.—For Additions and Alterations to National Schools, South Shore. Mr. Gorst, Architect, Clifton Chambers, Blackpool.

BLANDFORD.—Dec. 3.—For Building Vicarage House, Tarrant Monkton. Mr. W. T. Fletcher, Architect, Wimborne.

BLAINA.—Dec. 6.—For Building Offices and Store-room with Yard, for the Nantyglo and Blaina Local Board. Mr. Alexander Mitchell, Surveyor, Chapel Street, Blaina, Mon.

CARDIFF.—For Bar, &c., in new Premises. Mr. C. Rigg, Architect, 24 High Street, Cardiff.

COVENTRY.—Nov. 24.—For Additional Wards at the Workhouse. Mr. T. W. Whitley, Architect, High Street, Coventry.

DAWLISH.—Nov. 20.—For Construction of Sea Wall and Steps, cutting back portions of the Cliffs at Lea Mount, forming Terrace Walk and Promenade behind the Sea Wall. Mr. J. S. Delbridge, Surveyor, Dawlish. Mr. John S. Whidborne, Clerk to the Dawlish Local Board.

ELGIN.—Nov. 20.—For Building Cottage at Kintrae. Messrs. A. & W. Reid, Architects, Elgin.

EXMOUTH.—Nov. 22.—For Partially Rebuilding Mr. H. J. Coles' Premises, Beacon Place. Mr. E. H. Harbottle, Architect, County Chambers, Exeter.

FAREHAM.—Nov. 30.—For Building Isolation Hospital. Mr. Archibald Ford, Architect, 11 High Street, Portsmouth.

GATESHEAD.—Nov. 20.—For Painting and Decorating (Designs and Tenders) High West Street Wesleyan Methodist Chapel. Mr. S. Kent, St. Nicholas's Buildings, Newcastle-on-Tyne.

ILKLEY.—Nov. 23.—For Building Detached Residence. Mr. C. H. Thornton, Architect, 5 Park Row, Leeds.

KILDWICK.—Nov. 22.—For Building Spinning Mill, Engine and Boiler-house, and Chimney, at Sutton Mill. Mr. S. Jackson, Architect, 56 Kirkgate, Bradford.

LONDON.—For Building the Yorkshire Grey Public-house, Corner of Beer Lane and Lower Thames Street. Mr. W. Seckham Witherington, Architect, F.R.I.B.A., 27 Mark Lane, E.C.

MANCHESTER.—Nov. 27.—For Building Offices at Old Trafford, for the Stretford Local Board. Mr. C. C. Macleod, Architect, 72 Park Street, Greenheys, Manchester.

MILNROW.—Nov. 25.—For Building Police Station. Mr. H. Littler, 55 Cross Street, Manchester.

NORTH DUBLIN UNION.—Nov. 24.—For Building Six Labourers' Cottages. Mr. W. H. Byrne, Architect, 22 Suffolk Street, Dublin.

OLDHAM.—Nov. 22.—For Building Six Houses at Waterhead. Mr. T. Boyter, Architect, 103 Union Street, Oldham.

PAIGNTON.—Dec. 8.—For Building Church. Mr. W. G. Couldrey, Architect, Paignton.

PILKINGTON.—Nov. 24.—For Building the Ram's Head Hotel, Stand Lane, for Mr. A. Crowther, of the Star Brewery, Bury. Messrs. J. Grundy & Sons, Architects, Blackburn Street Chambers, Radcliffe.

POPLAR.—Nov. 26.—For Building Engine and Boiler Houses, Chimney Shaft, Workshop, Store Sheds, &c. The Engineer to the Metropolitan Board of Works, Spring Gardens S.W.

SMETHWICK.—Dec. 6.—For Building Corridor, &c., at Public Hall. Messrs. Harris, Martin & Harris, Architects, 119 Colmore Row, Birmingham.

SOUTHAMPTON.—Dec. 7.—For Enlargement of Sholing Girls' School. Mr. W. H. Mitchell, Architect, Portland Street, Southampton.

STEVENAGE.—Nov. 23.—For Building Post Office and Residence. Mr. Morton Pickett, Surveyor, Stevenage, Herts.

STROUD.—For Building Stables. Mr. J. P. Lofthouse, Architect, Lansdown, Stroud.

SWINDON.—Nov. 19.—For Building Manager's Residence and Coal Stores for the Swindon Gas and Coke Company. Mr. W. H. Read, Architect, Corn Exchange, Swindon.

UXBRIDGE.—Nov. 29.—For Erection of Cart Shed, Alterations to Buildings, and Repairs to Waterworks. Mr. G. Eves, Surveyor, High Street, Uxbridge.

TENDERS.

BRIGHTON.

For Sanitary Alterations, Improvements, and Additions to No. 15 Montpelier Villas, for Captain Patton. Mr. CHAS. ED. GRITTON, M.S.A., Surveyor, of Brighton, London, and Sidcup.

GEORGE ROSE, Brighton (*accepted*).

CRANBROOK.

For the Erection of Three Cottages, Angley Park, Cranbrook, Kent, for Mr. E. L. Tomlin. Mr. MERVYN ED. MACARTNEY, Architect, 52 Berkeley Square, W. Quantities by Messrs. Evans & Deacon, 1 Adelaide Street, Charing Cross, W.C.

Maides & Harper	£1,367 0 0
Punnett & Son	1,342 0 0
Marshall & Son	1,287 0 0
Foster & Dicksee	1,260 0 0

BEDFORD.

For Erection of Eight Villa Residences in Conduit Road, Bedford, for Mr. D. C. Preston, of Willington Lodge, Nunhead Junction, S.C. Mr. F. T. MERCER, Architect, Bedford. Quantities supplied.

First List (*October* 28).

Garrud, London	£6,558 0 0
Ansell, London	6,550 0 0
Warton & Walker, Bedford	6,436 0 0
Potter, Bedford	6,360 0 0
Spencer, Bedford	6,310 0 0
Harrison, Bedford	6,110 0 0
Foster, Bedford	6,105 0 0
White, Bedford	6,057 0 0
Balaam, London	5,928 0 0
Laughton, Bedford	5,645 0 0

Second List (*Quantities Reduced*).

Ansell	5,956 0 0
Warton & Walker	5,732 0 0
Garrud	5,685 0 0
Potter	5,608 0 0
Balaam	5,534 0 0
Harrison	5,428 0 0
Foster	5,381 0 0
White	5,352 0 0
LAUGHTON (*accepted*)	5,000 0 0

GLASGOW.

For Piling, Sheet-Piling, and Cementing the Mid Breast which separates the West from the Mid Harbour, for the Port Glasgow Harbour Trust.

Accepted Tenders.

T. Lamb & Sons, Greenock, joiner.
J. Laird & Sons, Port Glasgow, smith.
W. N. Campbell, Port Glasgow, castings.
A. Howie, jun., Port Glasgow, cartage.
J. Nugent, Greenock, concrete.
T. M'Bride & Co., Port Glasgow, cement for concrete.
Estimated cost, £2,500.

HEDNESFORD.

For Laying Sewer, George Street, Hednesford.

Robert Barton*	£113 0 0
J. Child (*informal*)	108 16 0
J. Bliss (*informal*)	105 14 0

* Recommended for acceptance if reduced to £105 14*s*.

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

COCKERMOUTH.

For Taking Down and Rebuilding Two Houses in Chaloner Street, Cockermouth. Mr. R. S. MARSH, Architect, Cockermouth.

Builder and Slater.

J. Borrowscale	£175 0 0

Building only.

Lister & Co.	190 0 0

Joiners.

Crowe & Co.	149 0 0
F. Armstrong	97 13 0
P. Robinson	97 13 0

Plasterers.

J. Waller	39 0 0
Burges & Son	39 0 0
J. Altringham	39 0 0

Plumbers.

H. Fletcher	33 0 0
J. B. Banks	28 10 0
H. Fisher	28 0 0

Painters, &c.

J. Boyd	21 13 0
J. Pearson	13 7 6

All of Cockermouth.

INVERNESS.

For New Sardine Factory and Chimney Stack. Mr. D. CAMERON, Architect, Inverness.

Thomas Macdonald, mason work	£644 0 0
Fraser & Shaw, carpenter	399 0 0
Sinclair & Sons, slater	232 15 0
Angus Macdonell, plumber	145 0 0
Charles Gallie, plasterer	21 13 4
J. & A. Hendery, concrete works	225 0 0
D. Munro, painter	24 7 0

KETTERING.

For Sewering Portion of Second Estate, for the Kettering Land Company. Mr. J. A. GOTCH, Architect, Kettering.

G. V. Henson, Kettering	£197 0 0
C. & F. Henson, Kettering	195 0 0
W. J. Payne, Kettering	185 0 0
E. Barlow, Rothwell	183 0 0
F. BARLOW, Rothwell (*accepted*)	162 10 0

KENDAL.

For Erection of Twelve Jubilee Almshouses, Aynam Road, Kendal, for Mr. J. Sleddall. Mr. ELI COX, Architect, Kendal.

Walling and Mason's Work.

R. T. Pennington.	T. Hine & Sons.
G. H. Pattinson.	W. Dixon.
Gray, Mason & Co.	D. THOMS (*accepted*).
E. Hutton.	

Carpenter and Joiner's Work.

T. Stables.	M. Thompson.
J. Huck.	A. Nelson.
J. Brown.	S. Compston.
J. Thwaites & Son.	H. Collett.
W. Hutchinson.	E. NELSON & SONS (*accepted*).

Slater's Work.

R. T. Pennington.	G. Pattinson.
Gray, Mason & Co.	T. Hine & Sons.
D. Thoms.	H. GOULDING (*accepted*).

LIVERPOOL.

For Construction of a Brick Sewer in St. Michael's Road, for the Toxteth Park Local Board. Quantities by the Engineer, Mr. JOHN PRICE, Assoc.M.Inst.C.E.

Holme & Green, Liverpool	£222 0 0
J. Garnett, Toxteth Park	203 12 1
R. Lomax, Toxteth Park	202 8 0
L. Marr, Toxteth Park	192 10 2
Catterall & Co., Liverpool	189 16 4
J. EVANS, Parkgate (*accepted*)	161 0 0
Engineer's estimate	170 0 0

For Pulling down and Re-erecting Wall in Ayburth Road, for the Toxteth Park Local Board. Mr. JOHN PRICE, C.E.

McCabe & Co., Kirkdale	£122 18 3
Holme & Green, Liverpool	86 0 0
Catterall & Co., Liverpool	77 4 4
G. Porter, Toxteth Park	73 19 0
L. Marr, Toxteth Park	73 13 4
R. Lomax, Toxteth Park	66 4 4
J. Evans, Parkgate	56 15 0
IRELAND & HURLEY, Liverpool (*accepted*)	48 15 8
Engineer's estimate	60 0 0

Equitable

One Premium returned every Fifth Year to those who have made no Claim.

FIRE INCOME (all Home Business) £66,778
FUNDS £98,969

ACCIDENT CO.
INCOME ... £21,264 | FUNDS ... £36,528

Fire & Accident Offices

ACCIDENT POLICIES, Free from vexatious conditions, and INSURING CAPITAL SUMS in the event of PERMANENT DISABLEMENT, as well as DEATH by Accident and Allowances during TEMPORARY DISABLEMENT, are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE GUARANTEE AND ACCIDENT COMPANY LIMITED.

FIRE POLICIES, COVERING DWELLING-HOUSES and HOUSEHOLD FURNITURE; FARM BUILDINGS and FARMING STOCK; SHOPS and STOCKS-IN-TRADE, CHURCHES, CHAPELS, and SCHOOLS, and all other risks of ordinary Hazard are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE FIRE INSURANCE COMPANY LIMITED.

For information as to Agencies, apply to the

SECRETARY, EQUITABLE OFFICES, 11 & 13 ST. ANN STREET, MANCHESTER,

Or to the RESIDENT SECRETARY at the various Branches:—

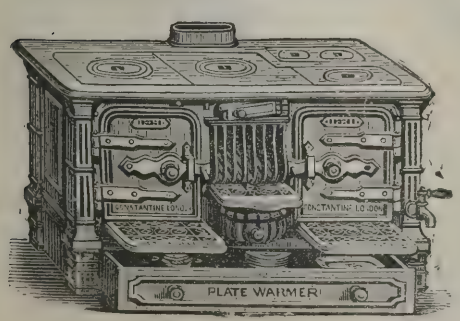
London	69 Lombard Street, E.C.	Liverpool	11 Tithebarn Street.
Glasgow	101 St. Vincent Street.	Newcastle	1 St. Nicholas Buildings.
Birmingham	Midland Buildings, 2 New Street.	Belfast	6 Royal Avenue.
Dublin	... ... 18 Dame Street.		

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S

PATENT "TREASURE"

COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medels at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

LONG EATON.

For Additions to Factory, Long Eaton. Mr. JOHN SHELDON, Architect. Quantities by the Architect, Long Eaton.

J. Greenwood, Mansfield	£5,375	0	0
Stainforth Bros., Hucknall Torkard	5,342	0	0
W. Needham, Loughborough	5,312	0	0
G. Bell & Son, Nottingham	5,238	0	0
C. Taylor, Long Eaton	5,158	0	0
G. Youngman, Long Eaton	5,153	0	0
J. Hodson & Son, Nottingham	5,076	0	0
Poxon & Rice, Long Eaton	5,030	0	0
H. Vickers, Nottingham	4,940	0	0
G. Fullalove, Long Eaton	4,934	0	0
J. Brown, Long Eaton	4,923	0	0
WHEATLEY & MAULE, Nottingham (*accepted*)	4,839	0	0
F. Shaw & Son, Ilkeston	4,770	0	0
Architect's estimate	5,250	0	0

LONDON.

For Works to Board Schools.

Droop Street (Covered Playground).

C. Wall	£130	0	0
C. H. Kearley	99	0	0
W. Johnson	89	0	0
J. Holloway	55	0	0
Stimpson & Co.	52	0	0
W. Oldrey & Co.	49	0	0

Garratt Lane (Covered Playground).

Lathey Bros.	112	0	0
W. Hammond	103	0	0
Richens & Mount	97	10	0
J. Holloway	88	0	0
W. Johnson	85	0	0

Randall Place (Covered Playground).

H. L. Holloway	145	0	0
T. Hammond	126	0	0
J. W. Roy	124	16	0
F. Johnson	95	0	0
S. J. Jerrard	94	10	0

Southwark Park Road (Repairing Skylight).

J. W. Roy	17	0	0
W. Johnson	13	5	0

LONDON—*continued.*

For the Erection of a Building on Vacant Site at St. Helen's Place, E.C., for the City of London Real Property Co., Limited. Mr. R. B. MARSH, Architect. Messrs. D. CAMPBELL & SON, Surveyors.

Mowlem	£16,985	0	0
Bywaters	16,327	0	0
Colls & Son	16,139	0	0
Ashby & Horner	16,000	0	0
Higgs & Hill	15,994	0	0
Morter	15,991	0	0
Chappell	15,746	0	0
Hall & Beddall	15,697	0	0
Conder	15,451	0	0
Brass	15,273	0	0
Woodward	15,200	0	0
Nightingale	15,180	0	0

For Road Improvement Works, Hammersmith.

Rockley Road.

Nowell & Robson, Kensington	£125	0	0
Jones & Wimpey, Hammersmith	122	0	0
Carter, Fulham	111	0	0
Mears, South Kensington	107	0	0
Coat, Hammersmith	97	0	0
Bendon, Hammersmith	87	10	0
Marshall, Stratford	86	0	0
RICKETT & SON, Millwall (*accepted*)	82	0	0

Wharton Road.

Marshall, Stratford	£478	0	0
Jones & Wimpey, Hammersmith	406	0	0
Carter, Fulham	392	0	0
Rickett & Son, Millwall	385	0	0
Mears, South Kensington	381	0	0
Nowell & Robson, Kensington	378	0	0
Bendon, Hammersmith	362	10	0
COAT, Hammersmith (*accepted*)	361	0	0

Haydn Park Road.

Nowell & Robson, Kensington	£574	0	0
Jones & Wimpey, Hammersmith	552	0	0
Marshall, Stratford	544	0	0
Carter, Fulham	537	0	0
Bendon, Hammersmith	527	10	0
Coat, Hammersmith	526	0	0
Mears, South Kensington	520	0	0
RICKETT & SON, Millwall (*accepted*)	512	0	0

MAHOGANY & HARD WOODS.

ROBERT GARRARD & CO., 206 BETHNAL GREEN ROAD, LONDON, E.

Contractors to Railway and Rolling Stock Companies.

Large Stocks of thoroughly-seasoned Mahogany Teak, Wainscot Oak, and Walnut for Counter Tops, Handrails, Stair Treads, &c. Mahogany, Cedar, and Teak Panel Dry Pine, Whitewood, Ash, Birch, &c., in all thicknesses and widths.- Prepared Flooring and Matching in Pitch Pine, Teak, Oak, &c.

LOGS, Mahogany, Teak, Walnut, Sawn and Hewn Pitch Pine, and other Log Timber, supplied in large or small quantities from Stocks kept at the Docks.

Telegraphic Address—"ACAJOU, LONDON."

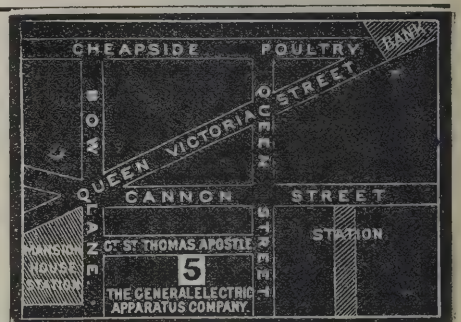
Telegraphic Address: "ELECTRICITY," *LONDON.* *Telephone No. 1887.*

THE GENERAL ELECTRIC APPARATUS CO.

ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE

Works: BOW and SOUTH HACKNEY. (*Back of the Mansion House Station*), E.C.

ELECTRIC BELLS.



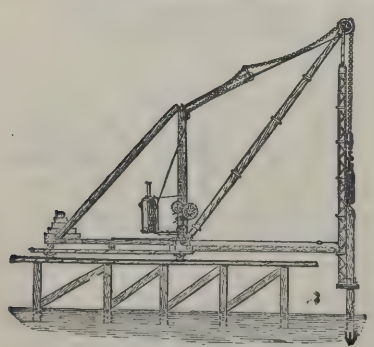
Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.

The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.

Electric Light Instruments, Fittings and Glassware.

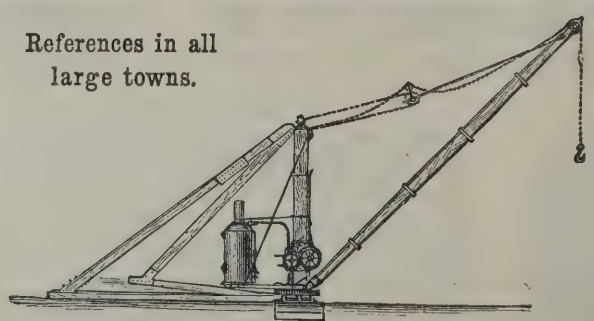
BUTTERS BROTHERS, ENGINEERS, GLASGOW.

PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.



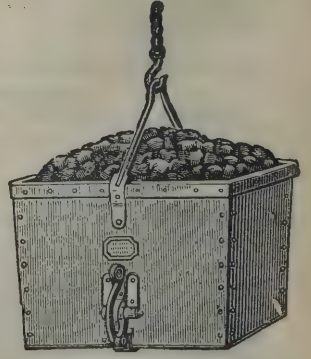
Crane used for Piling.

References in all large towns.



SCOTCH BUILDERS' CRANES.

Large Stocks. Send for List.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	£8	10	0
„ ¾ „	9	10	0
„ 1 „	10	10	0

FOR SALE, HIRE OR HIRE-PURCHASE.

LONDON—*continued.*

For Iron Railings, &c., for the Lock Burial Ground, Old Kent Road.

D. Rowell & Co., Westminster, S.W.	£77 14 0
J. W. Skinner, 67 Blackman Street, S.E.	77 2 0
G. FLETCHER, Wolverhampton (*accepted*)	66 5 0

For Alterations and Repairs at No. 6 Hamilton Place. Mr. R. B. MARSH, Architect.

Conder	£697 0 0
Killby & Gayford	687 0 0
Lawrance	669 0 0

LOUGHBOROUGH.

For Extension to Blackbrook, Loughborough Waterworks. Mr. HERBERT WALKER, C.E., Engineer. Mr. GEORGE HODSON, M.Inst.C.E., Consulting Engineer.

Contract No. 1.

J. Farrer & Co., Barnsley	£6,178 4 9
Clay Cross Co., Chesterfield	5,793 4 6
T. Small & Sons, Handsworth	5,421 9 6
J. & S. Roberts, West Bromwich	5,420 17 11
Butterley Co., Alfreton	5,406 9 1
Cochrane & Co., Dudley	5,324 1 8
Staveley Iron Co., Alfreton	5,260 2 4
Stanton Iron Co., Nottingham	5,114 7 8
J. Oakes & Co., Alfreton Ironworks *	4,893 0 0

Contract No. 2.

Henry Hill, High Wycombe	£5,855 0 0
J. Knight, Loughborough	5,774 14 2
F. Dawson, Bury	5,167 0 0
Walmsley & Co., Preston	5,140 0 0
Holme & King, Wigan	4,854 0 0
Small & Son, Handsworth	4,480 16 0
W. Drewitt, Stoke-on-Trent	4,409 0 0
A. Faulks, Loughborough	4,350 0 0
Foster & Barry, Nottingham and London	4,250 0 0
J. Mackay, Stoke-on-Trent	4,216 16 0
Innes & Wood, Birmingham	4,214 0 0
Hughes & Son, Lower Gornal, Dudley	4,158 7 9
Pickthall & Son, Merthyr Tydvil	3,979 0 0
Enoch Tempest, Leicester	3,940 0 0
H. Vickers, Nottingham*	3,713 0 0

* Recommended for acceptance.

MAIDSTONE.

For Repairs to the Mitre Tap. Mr. F. J. C. MAY, Surveyor, Maidstone.

J. Clements, Maidstone	£47 0 0
R. Avard, Maidstone	42 10 0
J. H. Smith, Maidstone	37 12 0
Candler, Maidstone	37 0 0
J. T. BARDEN, Maidstone (*accepted*)	32 0 0

MILLOM.

For Laying Pipe Sewer, Devonshire Road and Furness Road, Millom.

H. K. Richardson, Seascale and Millom	£105 1 6
W. Bradley, Millom	98 12 0
J. Cleator, Barrow-in-Furness	90 12 0
J. Emmett, Millom	82 13 6
E. ELLIS, Dalton-in-Furness (*accepted*)	69 10 0

NEW SWINDON.

For Building Villa Residence, New Swindon. Mr. ORLANDO BAKER, M.S.A., Architect, Swindon.

George Wiltshire, Bath Road, Swindon	£983 0 0
Charles J. Phillips, Devizes Road, Swindon	975 0 0
John Webb, Station Road, Swindon	923 0 0
THOMAS BARRETT, Newport Street, Swindon *	833 0 0

* Accepted with certain modifications.

For New Shop Front, High Street, Wroughton, near Swindon, Wilts. Mr. ORLANDO BAKER, Architect, 38 Regent Street, Swindon.

John Turvey, Wroughton	£51 0 0
JOHN NEVILLE, Wroughton (*accepted*)	48 2 6

SOUTH SHIELDS.

For Hot-Water Apparatus for Workhouse Hospital Wards, South Shields.

Emley & Son, Newcastle-on-Tyne		£279 0 0
Blakeborough & Rhodes, Stockton-on-Tees		250 10 0
J. W. Brown, Newcastle-on-Tyne		190 0 0
J. Rowell, Newcastle-on-Tyne		135 0 0
J. A. Somerset, Newcastle-on-Tyne		123 0 0
BAINBRIDGE & CRIMSON, South Shields (*accepted*)		130 0 0
R. T. Vause, Sunderland		77 0 0
	No. 5 Boiler.	No. 6 Boiler.
Dinning & Cooke, Newcastle-on-Tyne	£167	212 10 0
	No. 1.	No. 2.
H. Walker & Sons, Newcastle-on-Tyne	242	167 0 0

E. LOFTS, Patentee & Manufacturer,

Hills Road, CAMBRIDGE. London Show-rooms, 165 Queen Victoria St. E.C.,

OPEN FIREPLACES

FOR

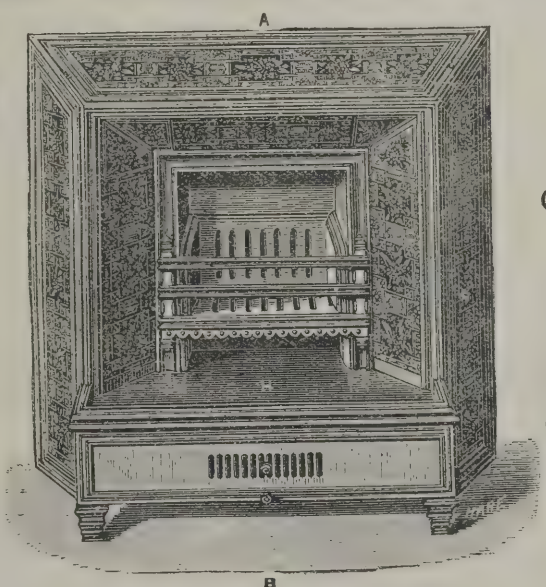
DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES.



HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS,

&c., &c.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Stove.

After four years of tedious experiments I have been able to produce what has long been required, viz, Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort, they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; consume their own smoke; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge.

PENDLEBURY.

For Diversion of Sewer, Pendlebury. Mr. A. H. MOUNTAIN, Surveyor.

J. Randall, Weaste	£78 7 4
J. Oakes, Station Road, Kersley	73 1 6
W. Sharpe & Sons, Eccles	64 4 0
H. Davies, Pendlebury	61 10 2
J. Chapman, Swinton	61 0 8
J. Unsworth, Swinton	57 15 0
J. Cheetham, Swinton	55 0 0
J. Unsworth, Walkden	53 16 0
T. MOORE & SONS, Manchester (*accepted*)	47 15 0
Surveyor's estimate	65 0 0

RAMSGATE.

For the Erection and Completion of Three Dwelling-houses and Shops, on Abbott's Hill, Ramsgate, for Mr. G. Norris. Mr. E. L. ELGAR, M.S.A., Architect, Broadstairs, St. Peter's, and Ramsgate.

Paramour & Sons, Margate	£1,700 0 0
J. H. Forwalk, Ramsgate	1,666 0 0
Regis & Coppen, Margate	1,650 0 0
H. Bowman, Ramsgate	1,340 0 0
C. Collins, Ramsgate	1,250 0 0
T. Elgar, Ramsgate	1,250 0 0
W. W. Martin, Ramsgate	1,198 0 0
G. M. DAWSON, Broadstairs (*accepted*)	943 0 0

SKELMANTHORPE.

For Laying-out Cemetery, Erection of Chapel, Lodge, Boundary Walls, Entrance Gateways, &c., Skelmanthorpe. Messrs. J. KIRK & SONS, Architects, Huddersfield.

Accepted Tenders.

J. Hollingworth & Son, Cumberworth, mason.
J. Burton, Clayton West, joiner.
J. Hallas, Clayton West, plasterer.
J. Haley, Skelmanthorpe, plumber.
G. Ludley, Shepley, painter.
Pickles Bros., Huddersfield, slater.
A. Dearnley & Son, Denby Dale, dry waller.

SOUTHAMPTON.

For Repairs to the Police Station, Southampton.

Honeychurch & Michelmore	£72 0 0
H. E. Leburn	69 0 0
Oake & Son	54 12 0
W. Merefield	50 0 0
H. Hussey	49 0 0
F. Kimber	41 18 6
J. Dowdall	40 10 0
S. Russell	38 10 0
W. FERRY (*accepted*)	36 0 0

TEMPLEBREDIN, CO. LIMERICK.

For Building New Spire, Entrance Gates, Railings, Piers, and Boundary. Mr. WALTER G. DOOLIN, M.A., Architect, 20 Ely Place, Dublin.

JAMES NEWSTEAD, Fermoy (*accepted*) . . £800 0 0
Five Tenders received.

WORCESTER PARK.

For Erection of House, Lawn View, Worcester Park, Surrey, for Mr. E. C. Stapylton. Messrs. WHITFIELD & THOMAS, Architects, 20 Cockspur Street, Charing Cross. Quantities by Messrs. Evans & Deacon, 1 Adelaide Street, Charing Cross.

Hards	£1,910 0 0
Foster & Dicksee	1,799 0 0
Turtle & Appleton	1,795 0 0
Maides & Harper	1,793 0 0
Bottrill	1,789 0 0
Oldridge & Sons	1,768 0 0
Adkins Bros.	1,748 0 0

TRADE NOTES.

WE are asked to mention that Faija's cement-testing plant received the highest award, a silver medal, at the Liverpool Shipperies Exhibition, and also at the York Exhibition. Messrs. Bowes, Scott & Read, of London, are the sole manufacturers of this plant, and they will forward any particulars on application.

THE letters of allotment in the Mortgage Insurance Corporation were posted on Wednesday night.

THE CORSHAM BATH STONE CO. (LIMITED) COPSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

PHOTOGRAPHS OF ARCHITECTURE
In all parts of the world,
INCLUDING a NEW SERIES of DETAILS
From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.
Our magnificent Collection is always on view at our London Galleries,
24 OLD BOND STREET, W.,
Or Selections and Lists can be had by post from
WINCH BROTHERS, Colchester.
List Free.

PERMANENT EXHIBITION OF ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

HENRY KING
(Late GREEN & KING),
HOUSE PAINTER, UPHOLSTERER, AND GENERAL CONTRACTOR,
4 Lower Seymour St., Portman Sq., W.
(Late of 100 NEW BOND STREET).
DESIGNS PREPARED AND ESTIMATES GIVEN.

Roofs complete from 7½d. per foot super.
CREWE'S PATENT DRY GLAZING
Simplest, Cheapest, and Handiest yet Introduced,
FOR ALL KINDS OF
HORTICULTURAL STRUCTURES, WAREHOUSE ROOFS, SHEDS, MARKETS, EXHIBITION BUILDINGS, etc., etc.
H. T. CREWE, Sunning Hill Road, Lewisham, London, S.E.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c.?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

WRIGHT & CO.'S PATENT FIREPROOF FIXING BLOCKS FOR WALLS AND FLOORS.
Awards 1886. "Certificate of Merit" from the Sanitary Institute of Great Britain at York. "Highly Commended" at the Firemen's Exhibition, Westminster Aquarium.
Improved fixing, sounder work, no extra cost. Extensively used for High Class Works by leading Architects, Engineers, Contractors, H.M. War Department, &c. Our new illustrated pamphlet, post free, containing full particulars, with numerous recent references, including opinions from Arthur W. Blomfield, Esq., M.A., F.R.I.B.A., J. Douglass Matthews, Esq., F.R.I.B.A., Colonel W. J. Stuart, Commanding R.E. Department, Chatham; Basil Champneys, Esq., B.A., R. J. Withers, Esq., and many other leading architects; also recommendations from practical clerks of works, well-known contractors, &c., who have always used our patent fixings with the greatest success.
WRIGHT & CO. 3 Westminster Chambers, Victoria Street, London, S.W.
Telegraphic Address: Fixing, London.
Works:—Gosport, Hants, and at Carnforth, Lancs.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.
Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

THE NEW CHANDELIER.
PATENT SECRET BALANCE.
See "The Architect" of October 22, 1886, page 9.
Particulars free on application.
H. T. TALLACK, 28 Hatton Garden, London, E.C.

GRUNDY'S PATENT WARM-AIR VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmo Place, Edinburgh.

MESSRS. C. ISLER & CO., of Southwark Street, London, have received orders for fixing their improved patent registering turnstiles at the National Agricultural Hall, Kensington. At the Liverpool Exhibition these turnstiles were awarded the silver medal.

A COMMERCIAL museum has been established in Maçon by the French Government. There are now at least fifteen museums of the kind in France.

THE Italians have set up a Chamber of Commerce in Paris, and attached to it is a pattern-room for the exhibition of samples of Italian goods likely to suit the requirements of French consumers. Samples of articles of French produce and manufacture in demand in Italy will also be received for exhibition. How long will it be before a similar institution is formed to aid in the extension of English trade in France?

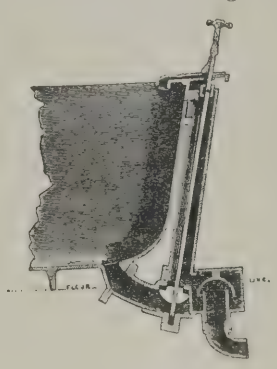
THE new stained-glass window was unveiled, and a special service held, in Oakley Church, Scole, Norfolk, on Tuesday, Nov. 16. The window is a memorial to the late Sir E. C. Kerrison, Bart., designed and executed by Messrs. Heaton, Butler & Bayne, of Garrick Street, London. In the four lights are subjects representing the "Birth of Christ," "The Crucifixion," and "The Angels with the Maries at the Tomb." The figure work is placed under canopies in the Perpendicular style, and the colouring is very refined and harmonious. The coat-of-arms of the deceased baronet is introduced into the window, with an inscription which reads as follows:—"In memory of Edward Clarence Kerrison, Bart., born January 2, 1821, died July 12, 1886. This window is erected by his sorrowing friends and parishioners of Brome and Oakley."

HIS Royal Highness Prince Henry of Battenberg has graciously acceded to the request of Mr. W. Busbridge to present to the students of the Metropolitan Drawing Classes the Queen's Prizes awarded by the Science and Art Department. The ceremony will be held in the Guildhall on Wednesday evening, December 1, at 8 o'clock, under the presidency of the Right Hon. the Lord Mayor, who will probably be supported by the Sheriffs, the Bishop of London, Sir P. Magnus, John McGregor (Rob Roy), and other members of the local science committees. The prizes have been gained chiefly by working men engaged in the building and engineering trades. About 800 artizans, after the labours of the day, attended these classes for study and self-improvement, in order to become more efficient workmen. The work of the present session has already commenced in twenty-eight centres.

THE prospectus of the Consumers' Economic Water Softening and Purifying Company, Limited, merits attention from our readers. In the first place, as a sub-company, it at once starts with a valuable connection. Southampton has adopted the system, as well as places in Kent and Surrey. The Atkins process, which is to be purchased by the Company, has been amply tested, and the patentee claims that it is practically without a rival. When it is remembered that the softening and purifying of water are becoming more essential every day, it is not unreasonable to calculate that a million or more will be expended on the Atkins system in a few years, and on that outlay there ought to be a dividend to satisfy the most exigent investor.

NOTES ON NOVELTIES.

The Wheathill Bath.—The Wheathill Foundry Company, Limited, of Rotherham, has recently patented the Wheathill Bath Discharge Valve Handle, which is a great improvement on the present system. Instead of the old awkward arrangement, the valve handle has simply to be lifted and slightly turned to close the valve when filling the bath, and the valve handle





allowed to drop to empty it. The system is practically automatic and does not require any attention when in action. We append illustrations, which will at once make the value of this improvement clear. The waste pipe is securely trapped, and both this trap, as also the discharge valve, can readily be got at and cleaned, without removing the floor boards, an

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream.
SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper,
Drawing Paper, Sectional Paper,
Mounted Papers,
Continuous Papers, Pencils, Pens, &c.
&c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES
WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithograpners,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
CORSHAM DOWN, FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

SIMPLEX LEAD GLAZING

For ROOFS, * * * * * * * * * SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL * * * * * PARTICULARS (SENT POST FREE). * * * * *



Gymnasium Fittings and Utensils.
JOHN WILSON, Jun.,
ERSKINE STREET,
HULME, MANCHESTER.
Catalogues upon Application.
Gymnastic Fitting Contractor to the Army and Navy.



I. SUMSION, *Quarry Owner,*
MONK'S PARK
MP.
TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

IRON DOORS.

TO ARCHITECTS, BUILDERS, AND OTHERS.

An extraordinary number of Iron Doors for Strong Rooms, Party Walls, or such to divide Warehouses.
Quite perfect, and in every respect equal to new, at one-third the price.
GRIFFITHS & SON,
43 Cannon Street, E.C. (only address).

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

advantage which, we believe, is peculiar to this bath. The fittings include hot and cold screwed-down valve taps, and drained soap dishes, and as all the fittings are sent out attached, nothing more is required in fixing than to make the hot and cold water and waste-pipe connections. The hot and cold water supply are delivered at the edge of the bath, and thus these are available for other than bath purposes. We can cordially recommend this patent to our readers as an improvement which has long been required, which effects a noiseless and rapid discharge, and is of sanitary importance, while the fitting is easy and convenient.

THE MERTON SMITH MEMORIAL CROSS.

A VERY handsome memorial of the late Rev. Merton Smith has just been erected in Plympton St. Mary churchyard. The cross is of grey Dartmoor granite, and is built on the model of the ancient churchyard crosses of which several examples are still remaining in the western counties. Its entire height from the ground is 22 feet 2 inches, of which the central shaft is a monolith 9 feet long, and the width of the arms of the cross is 4 feet 6 inches. The whole of this portion, including the cusped circle surrounding it, is also cut out of the solid, and some idea of the magnitude of the entire structure will be gathered from the fact that this one stone alone, before being cut, weighed 30 cwts. The base rests on six octagonal steps, round the uppermost of which is carved the following legend in Latin :—"The day is at hand. The Lord grant that he may find mercy of the Lord in that day." Above this the base rises for about 4 feet, having on alternate sides traceried panels and shields in relief. The shields bear sacred emblems, as follow :—On the first, the Cross; the second, the monogram of our Lord, "I.H.S."; the third, the fleur-de-lys of St. Mary, to whom the church is dedicated; and the fourth, the priestly symbol of the chalice and bread, in reference to the sacred calling of the deceased. The memorial inscription occupies the eastern panel, and, in letters of lead, reads thus :—"This cross was erected by many parishioners and friends to the glory of God and in memory of Merton Smith, M.A., some time vicar of this parish, who lost his life August 8, 1883, in the Pyrenees, near to Eaux Chaudes, by falling from a precipice. His remains lay undiscovered for eighteen months, when they were found and committed to the grave at Eaux Bonnes, April 27, 1885." Around the cornice of the base and at the cap of the shaft is carved conventional foliage in accordance with the style of the cross—late fourteenth-century Gothic. The work has been admirably carried out by Messrs. J. & E. Goad, of the Phœnix Steam Marble Works, Millbay Road, Plymouth, from drawings by the Rev. Ernest Geldart, rector of Little Braxted, Essex. Amongst many memorials now in hand at Messrs. Goad's is an excellent specimen of one of the old Cornish crosses, and made of granite from that county. The height of the cross from the ground is 9 feet, with a granite curb of the same material standing on a Yorkshire stone slab enclosing a space of 9 feet by 4 feet. This cross is being erected to the memory of the late Mrs. John Inglis, of Kensington, and will be fixed by Messrs. Goad in Highgate Cemetery, London. It is from drawings by Messrs. G. M. Silley and A. G. Langdon, architects, of 17 Craven Street, Strand, London.

ARBITRATION BETWEEN EMPLOYERS AND WORKMEN IN FRANCE.

M. LOCKROY has drafted a *projet de loi* on arbitration between employers and workmen. After giving a sketch of the law on this matter, and after reviewing the statutes respecting it in England, Germany, Norway, and the United States, M. Lockroy lays down that arbitration should be made easy and accessible to employers and workmen without being compulsory. He therefore proposes that arbitration should be legal at the very moment of disagreement, and without expense to either side. It will be sufficient that one of the parties should ask for an arbitration. The law will tell him to apply to the Mayor of his Arrondissement, who will communicate within forty-eight hours with the party on the other side. Should the latter refuse the arbitration, his reasons must be given in writing. The refusal is conveyed to the original applicant in the form of a declaration signed by the Mayor to that effect. Should the arbitration be accepted, each side appoints an umpire, and both jointly select a referee to decide finally in case of their disagreement.

In England, M. Lockroy says, the parties to an arbitration are bound to show their books. This would not be compulsory under the new French law, but all establishments that are not afraid of examination would doubtless show their accounts if required, and a refusal to present them might guide the judgment of the umpires. The verdict of the latter is to be final and public.

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co's
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST,
BENTLEY PRIORY, ROYAL, LANGHAM,
GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S,
BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

THE SWEDISH TIMBER TRADE.

THE following extract from an article published this month in the *Swedish Timber Journal* will be read with interest by those engaged in the timber trade with Sweden :—

During the latter months the prospects of the timber trade have been very dismal, and those clouds which did not exist have been imagined by many people in order to aggravate the situation and hasten the acceptance of losing prices by exporters. The latter have nevertheless not joined in the agitation, either by selling off or by consigning their goods, but have prudently held back, awaiting more favourable opportunities. This has given rise to an unfortunate state of affairs, as it is now reported from England and France that the stores lying in Swedish ports are so large that a rise in prices cannot possibly come to pass. That this is not the case, exporters ought to be able to decide for themselves better than the foreign agents, and from what we can gather, there is no danger on that account, as either the stores in Sweden are not larger than usual, or it is a well-known fact that the stores of timber in the importing countries, especially in England and France, are very small.

It is true that the depressed state of commerce has wrought its effect upon the timber trade, but in comparison to other articles, wood goods have held their prices very fairly, and those falls which have occurred at the close of the summer seasons could surely have been prevented if exporters had not allowed themselves to be intimidated by evil forebodings.

Already last winter it was known that the stores in England and France were small, and with the limited export which took place this shipping season, the prices ought to have been held up. In short, we have shown in every number of our journal this year that the exportation has lessened month by month, and yet many considered us sanguine.

It appears, however, now, that this was not the case, as there are indisputable signs of an early improvement in the timber trade, which should also be favourably affected by the progressive movement which is commencing to force itself into the old world from America.

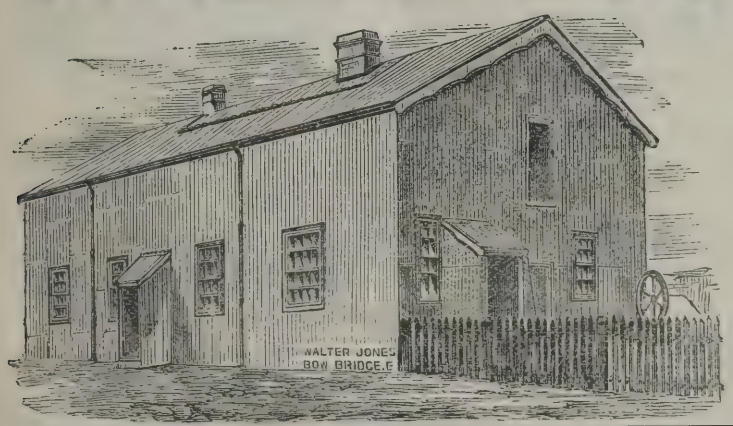
We have lately heard of several speculations which can only be regarded as a commencement of what is to come. That the improvement which we now foretell will come, together with the speculations, we do not consider likely, and we therefore recommend great prudence in accepting offers, as it is only thereby that any improvement can be strengthened.

The freight market continues steady, with a tendency to rise. The latest quotations which have come to our knowledge are Hernösand to London, 28*s.* to 28*s.* 6*d.*; Gefle to London, 26*s.* to 26*s.* 6*d.*; Sundsvall to Grimsby, 30*s.*

MANCHESTER TECHNICAL SCHOOL.

THE following is an abridgment of the third annual report of the Council of the above-named school which was presented to the annual meeting of supporters on Wednesday :—In consequence of the resolution of the annual meeting of February 1885, which altered the rule (under which the annual meetings were formerly held in February) so as to read "September of each year," the present report and financial statement embraces two sessions, namely, 1884-85, 1885-86. The Council are pleased to be able to speak of satisfactory and steady progress in every department of the school. During the year there have been 2,209 students, 3,081 tickets issued, and 2,241*l.* 11*s.* 8*d.* received in fees. The results of the May science, art, and technological examinations of 1885 and 188 were exceedingly creditable to the school, and were no less satisfactory financially. In the month of May 1885 the Council took into their serious consideration the position of the boys' day school, the numbers in which had shown a somewhat uniform decline for several years, due doubtless to the greatly-increased competition of now well-equipped and efficient elementary schools. Stimulated by the reports of the successful progress of the manual training schools of America, the Council determined to reorganise the school, with a view to the introduction of manual exercises in the use of tools for working in wood and iron, and of giving a more practical direction to the studies generally. In addition to the ordinary staff of the school, a special instructor has been engaged as superintendent of the wood-working department, and the curriculum has been extended so as to include special courses in chemistry, mechanical drawing, and bookkeeping. The experiment has so far proved satisfactory; the boys take great delight in the work, which in no way interferes with their ordinary studies. The Council are of opinion that as the special and practical aims of this department of the school become known its unique advantages will attract an increasing number of pupils, and that it will eventually become self-supporting. The Council regret that, under the changed

WALTER JONES, MAGNET WHARF, BOW BRIDGE,



MANUFACTURER OF

GALVANIZED IRON HOUSES,

OFFICES, | CHURCHES,
WAREHOUSES, | STABLES,
&c., &c.

IRON OR WOOD FRAMES.

Apply for Designs and Prices.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

conditions and aims of the institution, it became necessary to bring to an end its connection with Mr. R. F. Brewer, B.A., who for seventeen years had been the respected headmaster of the boys' day school. This step was not taken without serious consideration, and in parting with Mr. Brewer the Council desire to place on record their warm recognition of his valuable services and their good wishes for his future welfare. The department of theoretical and practical engineering maintains its position as one of the most successful features of the school, numbering upwards of 450 individual students, of whom 30 are day students, who follow a systematic course of study from nine until five each day, in the principles and practice of engineering. The bleaching, dyeing, and printing department shows an increased number of students. The Council are glad to report that the departments of cotton-spinning, weaving, and design, especially that for weaving and design, continue to progress most satisfactorily. Many of the students in the weaving department, feeling their want of some artistic knowledge of design, have entered the art class, the teacher of which, Mr. Glazier, has made himself specially conversant with the manipulation and the technicalities of the loom. In this way it is hoped that the character of the designs produced in this department may be greatly improved. With this object the Council have sought the assistance of the Art Gallery Committee of the Corporation, which has kindly placed at the disposal of the class for the purposes of study a portion of the valuable Bocks collection of textiles. The classes in building construction, which are, perhaps, the largest in the country, are progressing satisfactorily, especially when the depressed state of the building trade is considered. They are attended not only by joiners, bricklayers, masons, &c., but by architects' articled pupils, and they provide considerable advantages to those desirous of becoming practically acquainted with the principles of building construction. In connection therewith instruction is given in masonry, bricklaying, staircase-making, and classes have also been formed for quantity surveying, plumbing, and metal plate work, which have proved most successful. The Council desire to tender their grateful thanks to the numerous friends who have so kindly favoured the school with gifts of appliances and materials for use in the classes and in the various practical departments. The Council of the school have to report an adverse balance of 3,140*l.* 13*s.* 1*d.* at July 31, towards the liquidation of which there is still to receive a science, art, and technological grant.

BIRMINGHAM MASTER BUILDERS' ASSOCIATION.

THE annual meeting in connection with the Birmingham Master Builders' Association was held on Monday evening, at the Great Western Hotel. Mr. J. Bowen presided. The annual report, which was taken as read, stated that the committee regretted that they were unable to record any improvement in the past year, or any prospect of substantial advance in the year just entered upon. The supply of labour in all branches of the trade was still far in excess of the demand, and in consequence it had been decided by the committee, and confirmed at a general meeting of the trade, that notices of a reduction of one penny per hour be served on the operatives in the following branches, viz., bricklayers, carpenters, stonemasons, plasterers, and plumbers. In the latter case, the Association was working jointly with the Master Plumbers and Painters' Association, under the rule, settled on January 1 last, by which the wages were maintained at the previous rate, viz., 8½*d.* per hour, the operatives agreeing to accept the arbitration clause, and to accede to the masters' demand that the hours worked be the same as in the other branches of the trade. The committee believed that in adopting that course they had the hearty approval of every member of the Association, and relied upon receiving that cordial support and co-operation which would alone secure a satisfactory result. The proposed new by-laws of the Corporation Water Department were considered with a sub-committee of the Master Plumbers and Painters' Association, and joint recommendations thereon were submitted to the water committee. That action resulted in several modifications in the direction suggested by the committee. At the request of the National Association, a deputation waited upon Messrs. G. Dixon, M.P., and W. Cook, M.P., as to the amendment submitted to Parliament seeking to make the Employers' Liability Act of 1880 more onerous than at present; also to invite their support to a Bill introduced to repeal a statute of the reign of Queen Elizabeth, under which recently in several boroughs fixed machinery had been assessed for local rating purposes. The vacancy on the council of the National Association, caused by the death of Mr. C. W. Barker, had been filled by the election of the president, Mr. John Bowen. On the acceptance by the Corporation of a design for the new Law Courts, application was made to the Mayor to receive a deputation as to the appointment of a quantity surveyor to represent the builders, and a reply was

IMPORTANT.—To Specialists, Manufacturers, and Others.

Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.

THE ARCHITECT AND CONTRACTOR'S COMPENDIUM

And Specialist's Directory for 1887.

EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.

An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, **the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory.** Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this **at a cost less than half that of sending out one circular.**

The minimum **guaranteed circulation** of the **Compendium** is 3,000 copies, but the actual circulation will probably reach a much higher figure.

Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent **Ink-Photo** process, specimens of which are to be seen weekly in *The Architect*. The **Compendium** will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, **without block**, from **any** drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.

An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.

Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridge Street, London, E.C.

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustration which has appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing:—

The Bard.

FACSIMILE OF CARTOON BY PROFESSOR MAILLART.

Size, Thirty-six Inches by Twenty-two Inches.

Price One Shilling; free by post, carefully packed inside patent roller, One Shilling and Threepence.

May be obtained from all Newsagents or Booksellers, or from the

Publishers, GILBERT WOOD & CO., 175 Strand, London, W.C.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

received that he would be pleased to do so, but that as the plans were not then finally settled, he would communicate further on their completion. That promise was unfortunately overlooked. The committee next heard, unofficially, that appointments of both surveyors, on behalf of the Council and of the contractors, had been made without an opportunity being given to the Association of even suggesting a surveyor to protect their interests. It appeared to the Association that the appointment of both surveyors by the Council was a great anomaly and an injustice to the trade, and every effort had and would be used to obtain its reversal. The committee regretted that they were unable to report any addition to the number of members, but they had satisfaction in stating that the receipts, for the first time for some years, showed a slight increase over the expenditure. The report was adopted.

OLD LONDON IN NEW YORK.

It will be of interest to English people to know that a street similar to the Old London Street in the Exhibition grounds, which was erected in 1884, is being erected in New York city. A large plot of land has been secured in Broadway, near Eighth Street. The plans for the street in New York are now being prepared by the architect, Mr. G. H. Birch, F.S.A., who furnished the plans for the street at the Exhibition here. It is intended that the shops shall be occupied, as at the "Healtheries," by workmen, with the object of providing, as far as practicable, useful comparisons between ancient and modern handicrafts. It is also intended that some of the shops, especially on the first floor, shall contain selections or exhibits kindred to the subject. The entrance will be from Bishopsgate, and the plan is different from that at Kensington, as it includes two streets parallel to each other, with cross-street, alley, and open square at the end; and many beautiful old houses will be erected of great historical interest which did not appear at Kensington. The only ones which will be reproduced are Whittington's, Isaac Walton's, Oliver Cromwell's, the Hall of the Holy Trinity, and the Old Cock Tavern, Leadenhall Street; while the new houses will include the Tabard (Chaucer's inn), the Falcon, Bankside (Shakespeare's daily haunt), the house of Elias Ashmole, Sir Paul Pindar's house (not the existing portion), Sweedon's passage, Grub Street (close to Milton's house), Sir John Lawrence's house in Great St. Helen's, a portion of the Charterhouse, Butcher's Row, the Old Queen's Head (identified with Sir Walter Raleigh), a bit of Old Hungerford Market, a portion of Old Savoy Palace, Nell Gwynne's house, the cellar of the Old Devil Tavern (Ben Jonson's) under Child's Bank, where Simon Wardloe officiated, the original of "Old Sir Simon the King," and different old houses in Bishopsgate Street, and other old houses not yet decided upon.

RESTORATION OF THE DUOMO, FLORENCE.

The character of the work done at Venice, says the correspondent of the *Times*, supplies no rule for the judgment of what was to be done at Florence, especially on the Duomo, which, with St. Mark's, must, so far as the artistic and historical interests are concerned, be placed in the first places in importance of all Italian churches. The problem in Santa Maria del Fiore has been double, involving not merely restoration but completion. The history of the façades of the cathedral has never been thoroughly searched out, and may some day be the subject of an interesting monograph, in which we shall learn to regret the way in which the revolutions of taste in Italy abolished the genuine old, to substitute spurious new ideals, and of which we have an indication in a passage of Rondinelli, writing of the Duomo:—

> There was a façade of Gothic architecture (*Tedesca*) carried up about to the half-way, full of most beautiful niches intended for statues, which later were put in place; some were by the famous Donatello, and some by other sculptors, artistically done, with most beautiful orders disposed and divided. There one saw several chapels introduced, divided and sustained by most beautiful and varied columns, some smooth and some twisted, so that, what with the variety of marbles and porphyries and the difference of the statues and columns, it had a very rich appearance, and filled with majesty the sight of the beholder.

Then follows a detailed description of what had been done and of the statues of the historical personages introduced, and the opinion as to its general worth that it was equal to its position on the cathedral; but in 1587, being regarded by the Classicists of the day as barbarous, it was destroyed, as Rondinelli says, so brutally that—

> There was no piece of marble that was got out entire—even the columns were broken, which was, in truth, a pitiful spectacle, first, in

ASCHERBERG PIANOS,

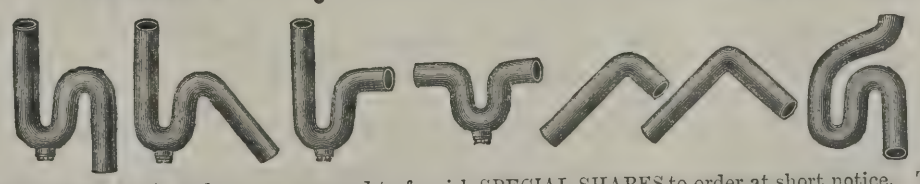
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot:—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS. PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works:—15 BRITANNIA STREET, KING'S CROSS, W.C.

the destruction of the façade, and, secondly, in the breaking of those beautiful marbles and porphyries worked with so much cunning that if they had been taken out whole they would have served for ornaments in many other places with advantage to the works, which would have been able to sell them for some hundreds of scudi.

What consolation there is in proving that former and presumably more æsthetic generations were really more barbarous and tasteless than this we can here obtain and have the grim satisfaction of uttering maledictions on the Florentines of the end of the sixteenth century, as on the Venetians who, in the beginning of the thirteenth, melted the statues of Lysippus to coin money for their soldiers, and later destroyed the Parthenon car of Minerva; the French, who demolished scores of churches in Venice, and the ecclesiastical authorities who have covered Italian basilicas with the garniture and bad painting of the seventeenth century, and whitewashed the frescoes of Giotto and his successors for a hundred years and more. There is really no room for outcry if this generation should at most remove the disguisement of time and decay, and restore to us the noble works left by the great epochs of art in a state approximating to that in which they were completed.

The completion at length of the façade of the Duomo of Florence, which will be unveiled with great ceremony next spring, gives a peculiar appositeness to this and all other questions raised by the process of restoration, because we have here a church constructed by the greatest masters in architecture and sculpture of the Florentine Renaissance, peculiar in style, unique in construction, left to our day wanting its most attractive feature, the front; and this generation has determined that the work left incomplete shall now be completed with the best talent, whatever that may be, which Italy can furnish, and that the problem of how far this new, and therefore necessarily crude, surface juxtaposed with the old and time-toned, shall be harmonised with this.

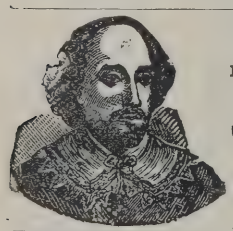
We had the problem in another shape in Venice, where parts were reconstructed but mainly with the use of the old material, and there two solutions are offered—that of the Ducal Palace, where such new stones as were necessary are coloured to match the old and deceive the eye, and that of the church of St. Mark, where the necessarily added new materials are left to time and the weather to harmonise. In neither case is there any attempt to bring the old up to match the new by removing the *patina* which centuries had given it, for the deprecated rubbing of old columns with pumice-stone, which is attacked by Signor Boni and another of your correspondents, is simply adopted where the effect of the weather and the salt air of the lagoons has been to render the surface of unsculptured marbles, especially columns, carious, and it is adopted because it is necessary to polish the surface to check and retard the action of the corroding agents, which gets more rapid and effective as the surface is made porous and capable of holding fluids. With all due respect to my friend Signor Boni, therefore, I think that Dr. Saccardo is perfectly justified in his use of the pumice in those cases where I have been able to see its use. This point does not come into question at Florence, where there is no action of the sea air, and the ordinary process of calcination which goes on in the open air in all marbles more or less only affects, in the cathedral, certain samples of stone to such an extent as to make them obnoxious. But the question how far new surface and old may be harmonised, and, if at all, whether by the process of toning the new artificially or bleaching the old, has an immense meaning here. Not only will there be the whole mass of the façade entirely new and a portion of the south flank, which was flayed with acids and chisel in the furore for renovation which prevailed in Florence about 1880, but there are throughout the entire surface of the cathedral pieces of the *intarsiatura*, which have been at various times substituted for old slabs which have come away in fragments and powder, as at St. Mark's, and which stare and break the tone of the *ensemble*.

It is premature to pronounce judgment on the work of De Fabris, to whom, after an exhaustive competition, the work was assigned in 1867, until it has been exposed entire to the deliberations of taste for a period sufficiently long to secure a firm judgment, but during a brief partial uncovering of the work in progress I was able to see enough of it to venture the opinion that it will be found, as a whole, quite in harmony with the body of the cathedral, and in itself a work which will do honour to the state of the arts in Italy, and convince the outside world that that state is nobler than is generally believed. All the most eminent sculptors of Italy have competed for the honour of contributing the statues which fill the niches, the owners of all the quarries whence was taken the stone have offered the marbles needed, and so on with all the material, either gratuitously or at the cost of production, while the purely decorative work has been done by the Tuscan stone-cutters, whose business it is to do this kind of work at wages rarely much exceeding a shilling a day, the funds being furnished by voluntary contributions from the nation and the strangers interested in Florence (in connection with which I may notice *en passant*

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.

POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



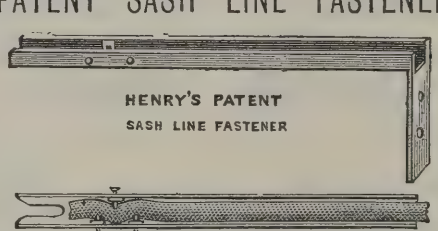
QUANTITIES, ETC
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,
TRADE W MARK
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

HENRY'S
PATENT SASH LINE FASTENER



Is easily fitted into any Window Sash, and once fixed, a broken Cord can be removed and a fresh one adjusted without taking out the Sash Frame or beadings or damaging the paint or woodwork.
The Fastener is made of best malleable iron, of any size and strength required, to fit any window sashes, straight or curved, plain or ornamental, and is tested up to 200 lb weight.
Diagrams, with full particulars and Wholesale Prices, on application to the Patentees,
HENRY & MORANT,
104 Walbrook House,
LONDON, E.C.

ANCASTER STONE QUARRIES.
THE ANCASTER STONE COMPANY continue to work the Old Ancaster Stone Quarries formerly worked by Messrs. KIRK & PARRY, and to supply Stone of the same fine quality as heretofore.
OFFICES:—JERMYN STREET, SLEAFORD.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.
Office: 175 Strand, London, W.C.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

a curious exception to the result of architects' calculations. The original estimate was for 1,500,000 frs., and the work will cost about 1,000,000 frs. !).

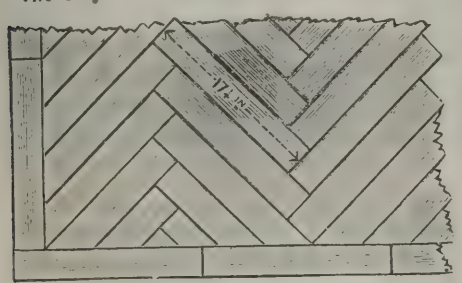
This concentration on the façade of all the best talent of Italy, aided by the contributions of the entire kingdom, and resulting in a work which is maintained by some of my friends to be really one of the greatest, if not the greatest, of modern works in decorative architecture, gives the new element an importance in the question of harmonising the parts for which we have no analogical term in the debates on St. Mark's, where no important part was new or merited to weigh *per se* in the balance. The desire of the Florentines to see their Duomo complete, but fresh and new as from the hands of the first builders, glistening like a bride-cake, is comprehensible, for the new as much as the old is their pride, and the general public opinion of the city would, I believe, like to see the surface entirely renewed, so as to be in keeping with the façade. And so far as the architecture pure and simple goes there is this consideration of great weight urged by Signor Del Moro, the architect who has succeeded De Fabris, that the designers of the church made one of the principal features of the design the employment of broad flat surfaces with the relief and motive of the general decoration given by colour, and to this end they employed a ground of white marble relieved with a deep green broken by red. Time and the slow accumulation of incrustations of dust and dirt, with the decomposition of the marble, have degraded the whites to a dingy gray, almost brown, and veiled the dark green to an extent that quite obscures the colour, and in many passages it is difficult to see the line of demarcation between them. Under such conditions it is impossible to realise the idea of the designer, who made his decoration depend on colours which are no longer visible. Therefore, says Del Moro, we must clean this surface of all the incrustations and deposit and bring out the colour of the material, not, indeed, as when it was newly cut, but with that tone alone which age would give it. This idea has prevailed in the restorations, and the whole south flank, from the point where the skinning was stopped several years ago, has been carefully washed with brush and water, all the salient lines and sculptured detail being relieved of the dirt gathered by their projecting surfaces, excepting the gate of the Pisani, which is reserved for later treatment. One face of the south-eastern chapel—that to the rear—has been left in its original condition, and will be so kept as the argument offered to all objectors to the cleaning. This treatment, which may be called of the scrubbing-brush, appears to be most legitimate. Yet it was not, and is not, permitted at St. Mark's, where, though the Republic of Venice employed men to wash the buildings at regular intervals, not even the deposit of dirt is allowed to be removed by washing, and Saccardo complains in his report that where the law now writes on the walls that it is forbidden to befoul it is practically also written that it is forbidden to wash. If larger liberty has been allowed in Florence it is no doubt partly due to the sound logic of Del Moro, who shows that in hiding the colours of the Duomo the design of the builders is really concealed. I think that if some of the energetic English *laudatores temporis acti* were to take the pains to know and discuss with the learned Italian artists who are charged by Government with these works of restoration, never without proper qualifications, what is to be done and why, they would find that the Italian masters understand their business as well as they do, to say the least, and that they are rarely inconsiderate or iconoclastic. And I say this, remembering that I myself once joined in an outcry about the use of acids and the chisel in connection with these very restorations, the only case, so far as I know, where any injury has been done, and this because the late head of the works was unable, from his age and condition, to watch all the work done. The local authorities have sometimes very crude tastes, and the central administration of repairs and restorations has human limitations of strength and watchfulness; so that if Englishmen who know of reprehensible restorations being made will at once notify the proper authorities they will do much more good than by abusing them without sound basis.

THE CONSTRUCTION OF ROADS.

BY THOMAS FAWCETT.

THE chief object sought after in making roads is, or should be, to insure the least expenditure of motive power in the case of vehicles drawn along them. Of course this would be most easily and most thoroughly attained on a perfectly flat surface, as in our railways; but as this can rarely be met with, or even made except at great expense, our next resource is to produce roads of as easy inclines and as solid and hard a surface as we can attain. Now engineers tell us that the average resistance of vehicles is about one-thirtieth of the weight; consequently the incline, or gradient as it is called in these fancy days, should be if possible and as a rule restricted to one in thirty. It is,

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



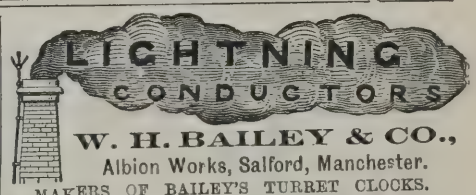
Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¼×4½ Dry Wainscot Oak, 54s. 9d. per square; 1×4½ ditto, 45s.; 1¼×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmill:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone 3,158
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

G. BARKER and CO. Established 1863.—The BANK, No. 35 Mark Lane, London.
Current accounts. Special advantages.
Deposits received at the following rates:—
3½ per cent. on demand.
4 per cent. seven days' notice.
4½ per cent. fourteen days' notice.
5 per cent. thirty days' notice.
6 per cent. three months' notice.
Interest payable quarterly. Extra bonus for 12 complete months. Pamphlet and further particulars on application.

EDWARD SMITH & CO
MAKERS OF EVERY DESCRIPTION OF PLAIN AND ORNAMENTAL FLOOR AND WALL TILES : MOSAICS :
E S C
EMBOSSED AND INCISED TILES, ETC., RED & WHITE TERRA-COTTA PRESSED BRICKS, ETC., ETC., ETC.
COALVILLE. LEICESTERSHIRE.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES:
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices: 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.



W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

A WARM BATH IN 10 MINUTES.
THE NEW PATENT "CALDA."
COST OF GAS, ONE PENNY

EXCELSIOR GAS BATH, £5 10s.
G. SHREWSBURY,
122 Newgate St, E.C.

BUILDERS' SCREENS, unequalled for Strength, Durability, Efficiency, and Cheapness. Also Castings of all descriptions. — STEVENS & CO., Ceres Ironworks, Kingston-on-Thames.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

however, found that a horse for a short time can exert a force about three times greater than its usual traction, consequently the steepest ascent, it is calculated, should not be more than one in ten.

A perfectly level road is not desirable either along its length or breadth, as it often prevents drainage and the off-flowing of water. For a road made of broken stones, the stone should be hard and durable, and not only that, but of uniform hardness and durability—not, for example, a mixture of sandstone and cobble or granite and limestone. Granite, cobble, and limestone are, upon the whole, the most suitable material if they can be had, but this is not by any means always the case; indeed, it looks as if this was to be the great difficulty in the future for the authorities who have to look after the roads. Stones gathered from fields are becoming scarcer every year and more difficult to get. In some places they hardly exist. Granite and cobble will suit any road, so, I take it, will limestone if the road is an incline or kept dry by being well drained. Limestone suits inclines much better than it suits level places that are naturally wet or where the water cannot get away, as the water entering the interstices of the stone soon causes it to decompose and break up. Some limestones are from their chemical and mineral composition much more liable to this than others—some forming a good material, others not being worth the labour of putting on. In all cases where stones are to quarry for road purposes, they should be got and broken when soft from the quarry, some time before they are required, since it is a well ascertained fact that stones are softest when fresh got from the quarry, containing as they do what is called "quarry water," that they become hard after being exposed to the air, and that, when once dried, they may be immersed for any length of time in water without becoming soft again. This is especially worth considering in the case of limestone. The reason seems to be that the water, which penetrates the minutest pores of rocks, deposits, on evaporation, carbonate of lime, iron, silica, and other minerals previously held in solution, and thereby fills up the pores partially. These particles on crystallising are not merely themselves deprived of motion in the pores, but bind together the other portions of the stone; just as mud and sand, say, become as hard as stone under frost—the water in this case being the crystallised ingredient, and so holding together all the separate particles of which loose sand and mud were composed. (Lyell's Geol., p. 39.)

The stones should be broken small enough to pass a two-inch ring as a rule, but circumstances of course alter cases. On roads where carts and conveyances travel this should be strictly the case, but a larger stone is desirable where heavy and rough work only is to be done—as in the case of quarry roads—being less expensive and much more durable. The stones, too, should be all as nearly as possible of the same size with rough and sharp corners for the purpose of setting more compactly—for if not so the larger ones are sure to work up by the shaking of conveyances, and roll about, while the smaller ones will sink in proportion. Unbroken stones, as everybody knows, as, for example, gravel or water-worn stones, do not set unless they are, as it were, glued together by some substance that would do much more harm than good; consequently as a rule they should never be used in road-making unless under very exceptional circumstances. Most vehicles made a few years ago would drive before them a stone above an inch in height, instead of running over it—a process very injurious to the roads, as also annoying to passengers. The wheels, however, of conveyances now are somewhat larger, consequently can pass with ease where others of a smaller size could not. The larger the wheels the less damage to the roads.

The materials should be spread on in layers about 3 inches thick. The whole depth of road need not be more than 6 inches, and in some places—in fact, to all places thoroughly dry, naturally or by draining—4 inches or 5 inches, according to circumstances, will be ample. On no account should the stones be broken upon the roads, that being, to say the least of it, a very slovenly process. Our great road pioneers, Telford and MacAdam, adopted different methods as regards the foundation of a road. Telford used a rough material underneath, sunk in the trenches in soft places to the depth of 3 feet or 4 feet. Not so, however, MacAdam. The native soil was his favourite to build upon, except in rare instances, his object being rather to raise the road than sink it by means of a trench, which, in too many cases, retained the water instead of allowing it to flow off. This native soil if not naturally dry was made so by draining, and then his superstructure of broken stones laid upon it. Then there is another important consideration too often lost sight of by our surveyors and contractors, and that is the season when roads should have the stones laid on. The last week in October and first in November are perhaps the best, all points considered, because the stones have time to set or partially so before intense frost sets in, when the setting process stops. But how many stones are laid on even in the early spring, or at all events, in the close of winter.

BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586.
Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617.
Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

As regards the form of a road, the slope should be from the centre to the sides, so that water may flow into the gutters. On inclines this slope should be greater than the incline itself, so that the water may flow to the sides, and not along the road down the steep, as is almost invariably the rule. This is a point, I think, all authorities who have to do with roads ought to consider well, and as far as possible carry out. On level places 6 inches will be sufficient on a road 30 feet wide, and this form should be given to it at first, so that the road material may be uniform in thickness from side to centre, and from centre to side. The very reverse is very often the case. How often do we find among our own roads water flowing not only from or along the sides of the road but down their very centre, that portion being actually the lowest part of the road which ought beyond all question to be highest. How often do we find roads that have a deeply worn track for the horse, and one deeply worn track for each wheel, all three capable of holding a quantity of water, which tends greatly to injure the road. Good side-dressing materially aids not only in giving a road a good appearance, but also in keeping it clean and dry, and a little money spent in this respect is not by any means money lost or squandered. If we studied appearance—what looks nicer than a road well side-dressed during the summer months? I should say side-dress in the spring; but if we study the road practically, then do it before the wet and damp part of the year sets in. The depth of the side gutters should be at least one foot below the road, and the width proportional to that of the road. The wear and tear of material must be replaced from time to time, and the ruts and hollows filled up by spreading fresh stones. In some parts of England—in Yorkshire I have seen it myself—it is customary to cover the roads entirely with stones so far each year; in other parts, as in the Carlisle district, only the portions that require them. On roads laid thoroughly dry, I think the Yorkshire plan a good one, for it has one very good feature, that it does away with that very unpleasant jolting that we so often experience on our roads. When once on the broken stones in Yorkshire, you know what to expect till you get off, whereas in Cumberland we have a smooth portion and then a rough piece fit to throw you out of the conveyance altogether, or at the least to break a spring. The filling up of the ruts and hollows seems to be the greatest oversight among contractors for highway work. Plainly, the oftener this wo k is done, and the thinner the layer, the better it is in all resp cts. Before laying on the new material, the old surface should be loosened with the pickaxe, and on no account should sand, clay, earth, chalk, or gravel be used on pretence of binding the stones together, as they are sure to prevent rather than forward such an object by absorbing and retaining water, which tends greatly to the injury of the roads, especially in frosty weather. Here, however, circumstances may alter cases to some extent. Where a road is not much used, it might be a benefit to the binding process to add a little earth, but in all cases it should be remembered that all so-called binding material becomes only so much scraping in the form of filth to be removed from the road from time to time—in fact, almost for ever. It forms the groundwork of no end of trouble to the contractor, and no end of annoyance to those going along the road. Roads are naturally dirty enough without making them more so artificially. Rather than add dirt in any shape wash the stones before putting them on. Broken stones, if broken as pointed out, will combine of themselves by their angles into a smooth solid surface that cannot be affected by change of weather or displaced by wheels. If our roads were perfectly dry we might defy the weather. Frost could not alter a perfectly dry and clean road. As draining is so essential to the well-being of land, so it is in road-making. There is no greater drawback to our roads than this, that they are in many places—in far too many places—little better than sponges in winter time. After a frost you may rock yourself to and fro on some of them. This arises from bad drainage, or no drainage at all, from high hedges and overhanging trees, which certainly ought to be kept down as much as possible. It is a great mistake on the part of ratepayers to have an objection to draining their roads, as half the expense would do afterwards in the way of metal. It is a penny-wise-and-pound-foolish policy. If all were drained at once, the expense might fall heavily upon men who are here to-day and away to-morrow, but let it be a part of the yearly expense to do a portion where it is required.

To conclude in the words of MacAdam, "The first thought should be that it is the native soil which really supports the weight of the traffic; this should be previously laid dry by draining; an impenetrable covering should be placed over it in the shape of road material, and these should be renewed from time to time as circumstances required." Thus this great road authority in a few words gives us the whole requirements in road-making—an impenetrable covering of stone; a renewal of that covering from time to time; a thoroughly dry support by draining or otherwise; these three, but the greatest of all is draining, not merely as regards durability, but also ultimate saving of expense.

ELECTRIC LIGHTING!

The Thomson-Houston System of Arc Lighting,
The Edison-Swan System of Incandescent Lighting,
} GOLD MEDALS AWARDED Both Systems AT THE INTERNATIONAL INVENTIONS EXHIBITION, 1885

ESTIMATES FREE ON APPLICATION TO

LAING, WHARTON & DOWN,

8 & 9 HOLBORN VIADUCT, and 110 & 111 SAFFRON HILL, LONDON, ENGLAND.

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

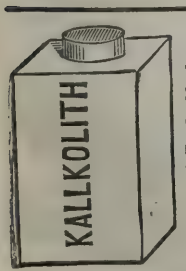
WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.



Registered Trade Mark.

TO ARCHITECTS, CONTRACTORS, AND BUILDERS.

SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using

KALLKOLITH.

IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for Smoky Ceilings and for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering.
Price per Case of Eight Tins of 14 lbs. each, 40s., packing included. Sample Tins, 6s. each.

H. RANSOM & CO., 11 Queen Victoria Street, LONDON, E.C.

Agents wanted in every Town in the United Kingdom and Colonies.



Registered Trade Mark.

VOLUME XXXV. OF THE ARCHITECT.

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

"THE PEDESTAL VASE,"
JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII, and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

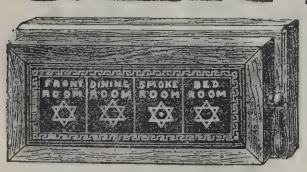
GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,
SANITARY ENGINEER, STANGATE, LONDON.

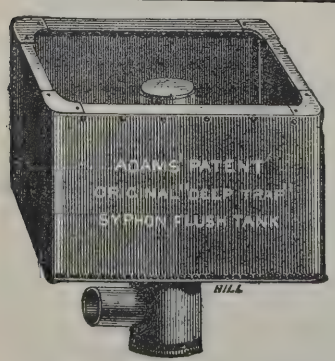
A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



ELECTRIC & PNEUMATIC BELLS.
NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.
MECHANICAL TELEPHONES. Everything for a line complete for £3.
PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

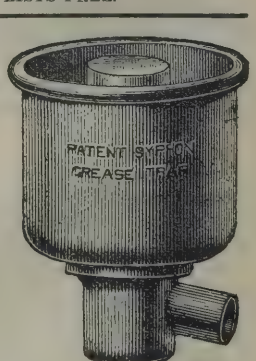


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, November 19, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, NOVEMBER 26, 1886.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

REGISTRATION OF PLUMBERS.

GUILDHALL, AUGUST 12, 1886.

1. In pursuance of the Resolutions of the following—
   (a) The Conference of Metropolitan and Provincial Plumbers held at the City and Guilds of London, Central Institute, in October 1884;
   (b) The General Council subsequently formed to give practical effect to the Resolutions of that Conference;
   (c) The Plumbing Trade of London assembled in general meeting at Guildhall, January 25, 1886.
2. A Register for Plumbers of the City of London, and a circuit of seven miles thereof, has been opened by the Worshipful Company of Plumbers.
3. The object of the Registration is to enable the public to distinguish between qualified and unqualified practitioners.
4. All applications are considered by a Special Committee of Registration, which includes Members of the General Council as well as practical Plumbers, in order that no trade interest or prejudice may operate against any Applicant, but, on the contrary, that the utmost fairness and impartiality may be secured to all.
5. Plumbers (Masters and Journeymen) established in the Trade prior to March 1, 1886, are not necessarily required to undergo any examination. Admission is granted to such Plumbers on satisfactory statement or proof of experience, according to the circumstances of each case.
6. All Applicants who cannot satisfy the Registering Committee of their experience are required to pass an examination by a Board of Examiners, composed largely of practical Plumbers.
7. No Plumber entering the trade after March 1, 1886, will be admitted to the Register unless he shall have passed an examination in the technology and practice of plumbing.
8. The Company is not connected with any Plumbers' Societies or Trade Organisations formed for other purposes, and the function of the Registering Committee is confined to distinguishing those who are fairly entitled to be registered as qualified Plumbers; the object being thus to raise the standing and efficiency of Plumbers as a body in a manner consistent with the important position they occupy in relation to the public health.
9. The Registration of the Plumbers of the London District is adopted as a preliminary step to the extension of the system of Registration throughout the Kingdom by means of Local Organisations.
10. Pending the establishment of Local Registers, Provincial Plumbers are admitted to the Company's Register on the same conditions as the Plumbers of the London District.
11. Plumbers admitted to the Register receive Certificates of Registration bearing the Company's Seal and Arms, A.D. 1568. None but the holders of such Certificates are entitled to use the letters R.P. (Registered Plumber) after their names. Lists of the names and addresses of Registered Plumbers are obtainable on application to the Company.

GEORGE SHAW, Master.

CONTRACTS OPEN.

BARNES.—Dec. 1.—For Extension of Girls' and Infants' School, Westfields. The Clerk, School Board Office, Barnes, S.W.

BLANDFORD.—Dec. 3.—For Building Vicarage House, Tarrant Monkton. Mr. W. T. Fletcher, Architect, Wimborne.

BLAINA.—Dec. 6.—For Building Offices and Store-room with Yard, for the Nantyglo and Blaina Local Board. Mr. Alexander Mitchell, Surveyor, Chapel Street, Blaina, Mon.

CLAYTON.—Dec. 1.—For Building Eight Dwelling-houses-Messrs. Milnes & France, Architects, 99 Swan Arcade, Brad. ford.

CORK.—Nov. 27.—For Building Malt-houses, &c., Lady's Well Brewery. Mr. S. F. Hynes, Architect, 80 South Mall, Cork.

EASTBOURNE.—Dec. 2.—For Building Sanatorium at Borough Hospital. Mr. A. Oakden, Architect, 15 Cornfield Road, Eastbourne.

FAREHAM.—Nov. 30.—For Building Isolation Hospital. Mr. Archibald Ford, Architect, 11 High Street, Portsmouth.

GATESHEAD.—Nov. 30.—For Building Workhouse at Bensham. Mr. J. H. Morton, Architect, South Shields.

GILDERSOME.—For Building Memorial-hall and Classrooms at Baptist Chapel. Mr. J. R. Naylor, Architect, Old Bank Chambers, Trongate, Derby.

LUDDENDEN.—Dec. 2.—For Building Shops, Warehouse, Two Houses, and Enlarging Central Co-operative Stores. Mr. T. L. Patchett, Architect, George Street Chambers, Halifax.

MAIDENHEAD.—Nov. 27.—For Building Three Cottages, Cox Green. Mr. J. R. Davison, Surveyor, Francis Road, Windsor.

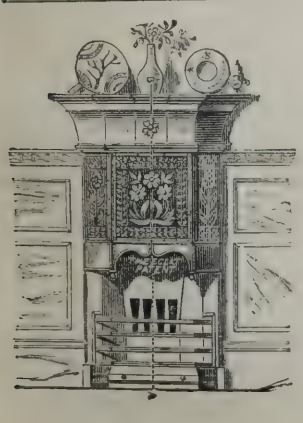
MANCHESTER.—Nov. 27.—For Building Offices at Old Trafford, for the Stretford Local Board. Mr. C. C. Macleod, Architect, 72 Park Street, Greenheys, Manchester.

MANCHESTER.—For Reconstruction of Gables, Smithfield Market. Messrs. Mangnall & Littlewoods, Architects, 29 Brown Street, Manchester.

NOTTINGHAM.—For Building Five Villas and Two Shops, Sherwood Rise. Mr. S. R. Stevenson, Architect, Imperial Buildings, Victoria Street, Nottingham.

ORMSKIRK.—Dec. 7.—For Building Brick Gasholder, Tank, and Sulphate House. Mr. J. Martin, Manager, Gas Offices, Ormskirk.

PAIGNTON.—Dec. 8.—For Building Church. Mr. W. G. Couldrey, Architect, Paignton.



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

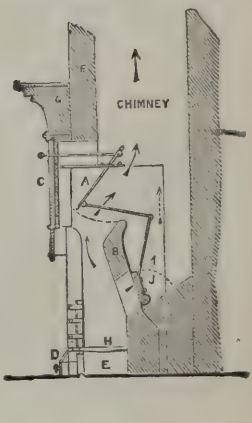
WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.



PENARTH.—Nov. 29.—For Alterations to Police Station. Mr. T. M. Franklen, Clerk of the Peace, Cardiff.

PETERBOROUGH.—For Building Sheds, &c., at Sewage Farm. Mr. J. W. Walshaw, Borough Surveyor, Guildhall, Peterborough.

PRESTWICH.—For Building Five Houses. Mr. D. Hardman, Architect, Fleet Street, Bury.

POPLAR.—Nov. 26.—For Building Engine and Boiler Houses, Chimney Shaft, Workshop, Store Sheds, &c. The Engineer to the Metropolitan Board of Works, Spring Gardens S.W.

POPLAR.—Dec. 3.—For Enlargement of Postal Sorting Office. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

SMETHWICK.—Dec. 6.—For Building Corridor, &c., at Public Hall. Messrs. Harris, Martin & Harris, Architects, 119 Colmore Row, Birmingham.

SOUTHAMPTON.—Dec. 7.—For Enlargement of Sholing Girls' School. Mr. W. H. Mitchell, Architect, Portland Street, Southampton.

THE LIZARD.—Dec. 10.—For Building Eight Coastguard Cottages at Cadgwith. The Director of Works Department, Admiralty, 21 Craven Street, Charing Cross, W.C.

UXBRIDGE.—Nov. 29.—For Erection of Cart Shed, Alterations to Buildings, and Repairs to Waterworks. Mr. G. Eves, Surveyor, High Street, Uxbridge.

TENDERS.

BATLEY.

For Building Villa Residence, Fence Walling, &c, Upper Batley, for Mr. Arthur Brearley. Mr. WALTER HANSTOCK, A.R.I.B.A., Architect, Batley. Quantities by the Architect.

J. & T. Oldroyd, Batley, mason	£764 6 0
Horsnell & Heald, Ossett, joiner	405 0 0
J. Walshaw, Batley, plumber	122 15 0
B. & J. Leadbeater, Birstal, plasterer	114 0 0
Wm. Atkinson, Leeds, slater	62 18 0
Total	£1,468 19 0

BATLEY—*continued.*

For Erection of Stabling, Fence, Walls, &c., Purlwell, Batley, for Mr. J. P. Middlebrook. Mr. WALTER HANSTOCK, A.R.I.B.A., Architect, Batley. Quantities by Architect.

C. T. Robinson, Batley, mason	£385 0 0
J. Richardson & Sons, Dewsbury, joiner	176 0 0
Wm. Atkinson, Leeds, slater	33 18 0
Metcalf & Lockwood, Dewsbury, plasterer	12 10 0
G. W. Jessop, Batley, plumber	9 10 6

BRIGHTON.

For Sanitary and Decorative Work at No. 10 Goldsmid Road, for the Owner and the incoming Tenant. Mr. CHARLES EDWARD GRITTON, M.S.A., Surveyor, of Brighton, London and Sidcup.

GEORGE LYNN & SONS, Brighton (*accepted*) . £110 0 0

BRISTOL.

For Building Almshouse, Rupert Street, Bristol. Mr. E. HENRY EDWARDS, Architect, 5 Clare Street, Bristol.

H. Ridewood, Bristol	£1,725 0 0
G. E. Burton, Bristol	1,256 0 0
J. Bastow, Bristol	1,250 0 0
Stephens & Bastow, Bristol	1,225 0 0
W. Veals, Bristol	1,194 0 0
W. Cowlin & Son, Bristol	1,190 0 0
E. J. Hatherley, Bristol	1,187 0 0
G. J. Beaven, Bedminster	1,178 0 0
T. R. Lewis, Bristol	1,168 0 0
H. A. Forse, St. James, Bristol	1,160 0 0
J. E. Davis, Bristol	1,146 0 0
Eastbrook & Son, Bristol	1,138 0 0
Brock & Bruce, Bristol	1,127 0 0
C. A. Hayes, Bristol	1,125 0 0
J. Wilkins, Bristol	1,085 0 0
R. Wilkins & Sons, Bristol	1,084 0 0
W. CHURCH, Bristol (*accepted*)	1,072 0 0
J. Wren, Bristol	1,035 0 0

DERBY.

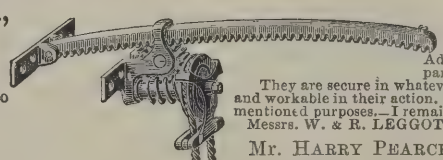
For Four Villas, situate Kedleston Road, for Miss Collumbell. Messrs. COULTHURST & BOOTY, Architects, 4 Albert Street, Derby.

J. Dickinson, Derby	£1,258 0 0
W. Walkerdine, Derby	1,184 0 0
J. PARKES, Derby (*accepted*)	1,152 0 0

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,
Is admitted to be the best ever put before the Public.
From 5s. each.
Write for REDUCED PRICE LIST and Testimonials to
W. & R. LEGGOTT,
70 Park Road, Bradford, Yorkshire.
N.B.—Size and height of window no object.

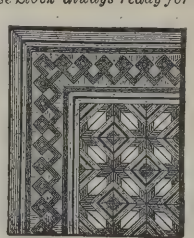


TESTIMONIAL.
BANGOR, N. Wales: September 14, 1885.
Sirs,—I have pleasure in testifying that I have used Leggott's Silen. Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.
Messrs. W. & R. LEGGOTT, Bradford.

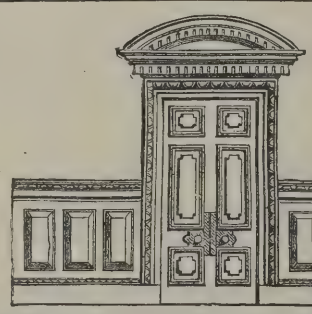
Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD.,
22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.
150,000 ft. super. in Stock, ready for Laying.
RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.
Immense Stock always ready for Laying.



THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction.



WOOD CARVINGS.
All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.
Estimates and Designs on Application.



ARTISTIC JOINERY.



ORNAMENTAL PARQUET.
DEAL BACKING.



Registered Trade Mark.

TO ARCHITECTS, CONTRACTORS, AND BUILDERS.
SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using
KALLKOLITH.
IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for Smoky Ceilings and for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering.
Price per Case of Eight Tins of 14 lbs. each, 40s., packing included. Sample Tins, 6s. each.
H. RANSOM & CO., 11 Queen Victoria Street, LONDON, E.C.
Agents wanted in every Town in the United Kingdom and Colonies.



Registered Trade Mark.

CROMER.

For Construction of Stoneware and Iron Pipe Sewers, with Manholes, Ventilators, &c., Cromer; and (Contract No. 2) for Cast-iron Pipe Outfall Sewer, with Iron Screw Piles, &c. Mr. J. C. MELLISS, C.E., Engineer, Old Broad Street.

Whole of the Work.

J. F. W. Bray, Great Yarmouth	£2,480 0 0
H. Vickery, Gaywood	2,337 18 6
T. Tilley & Sons, Walbrook, E.C.	2,310 18 0

Separate Tenders.—Section I.

R. Finnegan, Northampton	1,827 10 0
J. Neave, Swaffield	1,772 0 0
R. Cowdery, Newent	1,756 0 0
H. Potter, Lower Clapton	1,497 0 0
BARDELL BROS., King's Lynn (*accepted*)	1,441 0 0

Section II.

J. Neave	419 0 0
A. Dodman, King's Lynn	320 0 0
H. Potter	315 0 0
G. E. CHILD & SON, Southwold (*accepted*)	250 0 0
R. Cowdery	150 0 0

EPSOM.

For Building Cart Shed and Lamp Store at the Waterworks, Epsom. Mr. J. R. HARDING, C.E., Town Surveyor, Epsom.

Church, Coleman Street, E.C.	£489 0 0
S. Page, Croydon	425 0 0
S. Hards, Ewell	370 0 0
Knight, Finsbury	347 0 0
Wyatt, Sutton	315 0 0
J. B. Potter, Sutton	298 0 0
G. Hards, Ewell	297 0 0
Batchin, Sutton	285 0 0
W. J. Chivington, Epsom	225 0 0
J. JOSEPH, Epsom (*accepted*)	223 0 0
Trim, Thornton Heath	215 0 0

HALIFAX.

For Building Warehouse, Claremount, Halifax. Mr. JOSEPH F. WALSH, Architect, Waterhouse Chambers, Halifax. Quantities by the Architect.

Ambler & Wade, Halifax, mason and bricklayer.
J. Hanson, Halifax, joiner, &c.
C. A. Walshaw, Halifax, plumber and glazier.
John Hitchin, Halifax, ironwork.
Rushworth & Firth, Halifax, slater and plasterer.

EAST MOULSEY.

For Building Restaurant and Boathouse, East Moulsey. Mr. BURNELL-BURNELL, Architect, 22 Surrey Street, Strand.

S. Wood, Weybridge	£2,398 0 0
J. Horrocks, East Croydon	2,260 0 0
Addis, Hounslow	2,200 0 0
W. Scrivener & Co., London	2,194 0 0
Wheatley & Sons, Moulsey	2,165 0 0
Lansdown & Co., Richmond	2,163 0 0
Moir, Wallis & Co., London	2,156 2 3
E. C. Howell & Son, London	2,110 0 0
J. Smith & Sons, Norwood	2,096 0 0
C. Wall, Chelsea	1,990 0 0
W. Johnson, Wandsworth Common	1,930 0 0
POTTERTON, GOULD & CO., Hampton Court (*accepted*)	1,793 9 0

HULL.

For Construction of the Salthouse Lane Bridge, Hull. Mr. J. FOX SHARPE, C.E.

J. BUTLER & Co., Stanningley (*accepted*)	£11,500 0 0

LEICESTER.

For Building Liberal Club, Leicester.

J. A. Sharp & Sons	£5,663 10 0
T. Bland & Son	5,460 0 0
T. & H. Herbert	5,380 0 0
J. Stevens	5,325 0 0
Tyers & Yates	5,225 0 0
Kellett & Son	5,182 0 0
Hutchinson & Son	5,108 8 0
CLARKE & GARRETT, Leicester (*accepted*)	5,049 0 0

LONDON.

For Sanitary Improvements and General Repairs at 39 Eccleston Square, for Mr. Augustus C. Scovell. Mr. MARK H. JUDGE, A.R.I.B.A., Architect and Sanitary Surveyor, 8 Park Place Villas, W.

H. TOTEN & SONS (*accepted*)	£290 0 0

For Sanitary Alterations, Additions, and Improvements to Amedée Villa, Crouch End, for the Tenant. Mr. CHARLES EDWARD GRITTON, M.S.A., Surveyor, London, Brighton, and Sidcup.

HEAL & SONS, Tottenham Court Road (*accepted*).

HOLDEN & CO.'S PATENT ZINC ROOFING

WITH THEIR

PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,

Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.

Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.

ZINC AND IRON WORKERS AND COPPERSMITHS.

Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.

HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

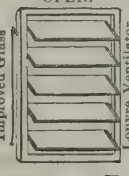
H. W. COOPER & COMPANY, LIMITED,

HEALTH EXHIBITION,



MEDAL AWARDED, 1884.

OPEN.

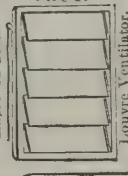


Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.

H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.

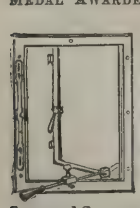
SHUT.



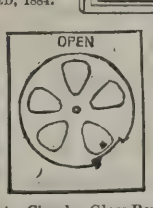
GLASS SELLERS' COMPANY EXHIBITION,



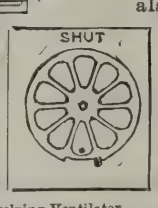
MEDAL AWARDED, 1876.

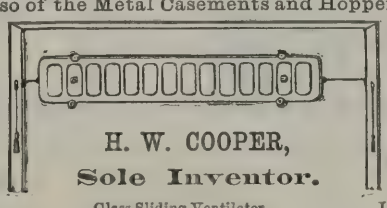


Improved Casement.

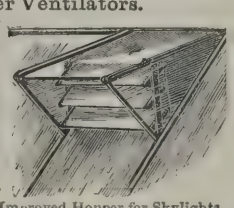


Circular Glass Revolving Ventilator.





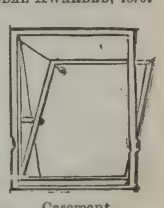
Glass Sliding Ventilator.



Improved Hopper for Skylights.



Hopper Ventilator.



Casement.

Steam Works: Little Queen St., Upper George Street, Edgware Road, W.

Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.



SPECIALITE MEDIEVAL ECCLESIASTICAL TILES.

CARTER, JOHNSON & CO., Encaustic Tile Manufactory, St. George's Works, WORCESTER.

LONDON DEPOT:
Kinson Wharf,
Albert Embankment,
LAMBETH, S.E.

20 Victoria Buildings,
Victoria Street,
MANCHESTER.

AGENTS:—
STURGEON & SMITH, Cross Lane, Eastcheap, E.C

LONDON—*continued.*

For Erecting and Finishing proposed new Premises, Nos. 26 and 27 Cockspur Street, and making Alterations and Additions to present Building in rear of same, for Mr. E. Stanford, jun. Mr. GEO. BARNES WILLIAMS, Architect. Messrs. FRANKIN & ANDREWS, Surveyors.

Holland & Hannen	£15,244	0	0
Hall, Beddall & Co.	15,164	0	0
Lang & Son	14,760	0	0
Clements	14,595	0	0
Greenwood	14,397	0	0
Conder	14,237	0	0
Roberts	14,186	0	0
Kirk & Randall	14,152	0	0
Ashby & Horner	13,990	0	0
Rider	13,978	0	0
Chappell	13,778	0	0
Higgs & Hill	13,740	0	0

For Sanitary Improvements, Alterations, and Additions at 16 Grosvenor Place, S.W., for Lieutenant-Colonel Hozier. Mr. MARK H. JUDGE, A.R.I.B.A., Architect and Sanitary Surveyor, 8 Park Place Villas, W.

Plumbing Contract.

JOSEPH HUME (*accepted*)	£350	0	0

Hot Water and Fire Services.

THOMAS BOULTING (*accepted*)	265	11	0

Drainage Contract.

SPRAKE & FOREMAN (*accepted*)	201	0	0

For Works at the King's Arms Tavern, Aldersgate Street, E.C. Mr. R. A. LEWCOCK, Architect, 88 Bishopsgate Street Within, E.C.

Gasfitter's Work.

Biggs	£87	0	0
Dix	85	0	0
Steadman	76	10	0
Christian	76	0	0
Ungar	51	16	0

Pewterer's Work.

Ungar	210	6	10
Helling	207	0	0
Sanders & Son	182	10	0

LONG DITTON.

For Building Infectious Hospital, Tolworth, Long Ditton, for the Kingston Rural Sanitary Authority. Messrs. JACOMB GIBBON & WOODROFFE, Architects, 3 Verulam Buildings, Gray's Inn, W.C. Quantities by Messrs. Northcroft, Son & Neighbour, 67 Charing Cross, W.

Webb Bros., Shepherd's Bush, W.	£12,510	14	8
E. Jarvis, Banbury	11,473	0	0
Mudie, Surbiton	10,635	0	0
T. Wheeler, Kingston	10,520	5	7
J. Jarvis, Surbiton	10,464	0	0
Adkin Bros., Surbiton	10,201	0	0
Gibbon & Son, Westbourne Grove, W.	10,035	7	0
Church & Co., Coleman Street, E.C.	9,788	0	0
Hickinbotham, Teddington	9,707	0	0
Wheatly & Son, East Moulsey	9,698	4	11
Oldridge & Son, Kingston	9,667	0	0
Botterill, Reading	9,635	10	0
O. Craske, Brompton, W.	9,609	0	0
R. & E. Evan, Peckham	9,207	0	0
Wall Bros., Kentish Town	9,120	0	0
Piller, Teddington	8,959	0	0
Sargent, Hackney	8,944	0	0
Scase & Son, Surbiton	8,930	0	0
Higgs & Hill, Lambeth	8,888	0	0
Stevens & Bastow, Bristol	8,846	0	0
Judd, Kingston	8,807	0	0
Kirk & Randall, Woolwich	8,760	0	0
Stevenson, Bishopsgate Street, E.C.	8,749	0	0
Baylis, Highbury	8,632	10	0
Collinson, Teddington	8,525	0	0
Kirk Bros.	8,480	0	0
Parker, Peckham	8,475	0	0
Turtle & Appleton, Wandsworth	8,425	0	0
Crook, Southampton	8,392	0	0
Brown & Co., Camberwell	8,390	0	0
A. & E. Braid, Chelsea	8,380	0	0
Holloway, Lavender Hill	8,335	0	0
Peters, Horsham	8,294	0	0
Johnson, Wandsworth	8,282	0	0
Knight, Morden	8,170	0	0
Harris, Sutton	8,045	0	0
Oldrey & Co, Bosworth Road, W.	7,977	0	0
CHAS. WALL, Chelsea (accepted conditionally)	7,850	0	0
J. Reynolds, Harrow	6,844	0	0

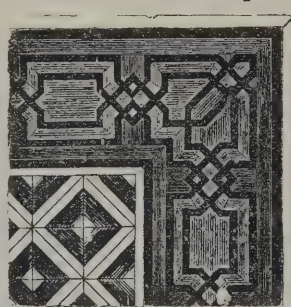
PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

PHOTOGRAPHS
OF
ARCHITECTURE
In all parts of the world,
INCLUDING a NEW SERIES of DETAILS
From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.
Our magnificent Collection is always on view at our London Galleries,
24 OLD BOND STREET, W.,
Or Selections and Lists can be had by post from
WINCH BROTHERS, Colchester.
List Free.

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.
THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

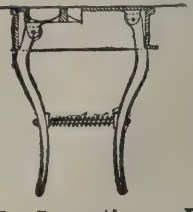
IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c. ?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered. PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

A. J. SHAW,
Gower Varnish Works, Sheffield,
MANUFACTURER OF
WOOD STAINS & VARNISHES
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.
Samples and Quotations from the Manufacturer.

THE NEW CHANDELIER.
PATENT SECRET BALANCE.
See "The Architect" of October 22, 1886, page 9.
Particulars free on application.
H. T. TALLACK, {28 Hatton Garden, London, E.C.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT. NO. 4,125.

International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.
Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

MEXBOROUGH.

For Additional Classroom, Garden Street School, Mexborough.

G. H. Smith	£165 5 8
T. Huntingdon	127 14 10
J. HEWETT (*accepted*)	122 18 9

NEWTON ABBOT.

For Alterations to Market House Inn, Newton Abbot. Mr. JAMES R. CULL, Architect, Newton Abbot.

F. Barrow, Newton Abbot	£129 0 0
H. Matthews, Newton Abbot	125 0 0
P. T. Bearne, Newton Abbot	117 19 6
HALLEY & SON (*accepted*)	105 0 0

PORTSMOUTH.

For Oak Stalls, to be fitted in the Catholic Cathedral, Portsmouth, for the Right Rev. Bishop Virtue, D.D. Mr. JOSEPH S. HANSOM, Architect, 110 Palace Gardens Terrace, Kensington.

McCullock	£465 0 0
Burns & Cates (approximately for Belgian work)	£325 to 350 0 0
Cox & Buckley	325 0 0
Heyball	295 0 0
Jones & Willis	276 12 6

ROCHESTER.

For Wood Pier at Blue Boar Head, Rochester. Mr. W. BANKS, City Surveyor.

Highest Tender	£1,200 0 0
HOCKING, Rochester (*accepted*)	760 0 0

Eight Tenders received.

SOUTH BERSTED.

For the Erection of Convent and Lodge, for the Second Order of Servite Nuns, South Bersted, near Bognor. Mr. JOSEPH STANISLAUS HANSOM, F.R.I.B.A., Architect, Kensington. Quantities by Mr. Henry Smith, Adelphi.

W. R. & C. Light, Portsmouth	£3,349 0 0
Buckle & Wheeler, Abingdon	3,244 0 0
Booker Bros., Bognor	3,224 0 0
R. & E. Evans, London	3,025 0 0

SHEFFIELD.

For New Infants' School and Young Men's Institute for St. Stephen's Parish. Mr. JOSEPH NORTON, Architect, 34 St. Philip's Road, Sheffield.

WILLIAM BISSETT & SONS (*accepted*).

SOUTHPORT.

For Thirty Cast-iron Manhole Covers, and Thirty Solid Lids. Mr. W. CRABTREE, Borough Surveyor, Southport.

Carron Co., Stirlingshire	£70 0 0
Watson, Gow & Co., Glasgow	68 5 0
Robertsons & Co., Berwick-on-Tweed	61 10 0
W. Black, South Shields	60 13 6
C. Evans, Worcester	60 0 0
J. & T. Vicars, Earlestown	59 14 9
Wildigg Bros., Coventry	57 10 0
W. P. Stewart, Blackwood	55 0 0
W. Abell, Derby	54 10 0
Exors. of F. Halbard, Burton-on-Trent	53 0 0
T. & W. Bradley, Newark-on-Trent	52 10 0
Thomson & Gilkes, Stockton-on-Tees	51 15 0
Mackenzie & Co., Edinburgh	51 15 0
E. Crapper & Co., Walsall	49 5 0
B. R. Isaac, Liverpool	49 0 0
M. Swain, Newton Heath	48 13 6
Smith, Patterson & Son, Blaydon-on-Tyne	48 12 4
D. Parsons & Sons, Pensnett	48 12 4
J. Pendleton & Co., Liverpool	48 12 3
Exors. of Daniel Clarke, Carlisle	48 0 0
The Coalbrookdale Dale Co., Shropshire	46 8 9
F. Silvester & Co., Newcastle-under-Lyme	45 0 0
J. Smeaton, Son & Co., London	45 0 0
R. Bradley & Co., Wakefield	41 19 9
J. Downes, Wakefield	44 10 0
Evans & Brownell, Cannock	44 2 6
T. Smith & Co., Blaydon-on-Tyme	42 0 0
F. C. Barker & Co., London	41 19 9
Jukes, Coulson, Stokes & Co., London	38 5 0
Brookfield Foundry Co., St. Helens	36 10 0
J. E. Hamsworth & Co., Dewsbury	35 0 0
J. Robinson, Attercliffe	35 0 0
G. Ghatton, Little Lever	33 0 0
J. Lees, Gomersal	33 0 0
J. Ball, Ormskirk	33 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper,
Drawing Paper, Sectional Paper,
Mounted Papers,
Continuous Papers, Pencils, Pens, &c.
&c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES
WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

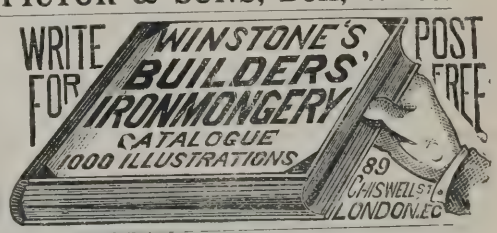
BEST BATH STONE.
CORSHAM DOWN } SUMMER DRIED.
FARLEIGH DOWN }
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

SIMPLEX LEAD GLAZING
For ROOFS, ********
****** SKYLIGHTS &
HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR
ILLUSTRATIONS, TESTIMONIALS & FULL
***** PARTICULARS (SENT POST FREE). *****

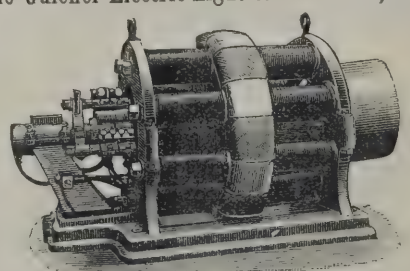
PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*
MONK'S PARK
MP.
TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

The Gulcher Electric Light & Power Co., Ld.



GULCHER DYNAMO.
Electric Lighting by either Arc or Incandescent Lamps for Public Buildings, Factories, &c.
BATTERSEA FOUNDRY, LONDON, S.W.

SOMERSET.

For Sanitary Improvements and New System of Drainage at Sutton Court, for Sir Edward Strachey, Bart. Mr. MARK H. JUDGE, A.R.I.B.A., Architect and Sanitary Surveyor, 8 Park Place Villas, W.

EDWARD COLSTON (*accepted*) £257 15 0

SOUTHEND.

For Improvement Works, Clarence Street. Mr. F. R. TULLOCH, Surveyor, Southend.

W. Spendelow, Southend	£386 0 0
Storey & Carter, Southend	299 16 8
A. Woolagate	299 4 0
Farthing & Lorrimer, Clapham	290 0 0
J. B. Howard, Prittlewell	269 19 11
J. DARK & SON, Southend (*accepted*)	235 10 0

SWINDON.

For Erection of Manager's Residence and Coal Store, for the Swindon Gas and Coke Company. Mr. W. H. READ, Architect, Corn Exchange, Swindon.

	House.	Coal Store.
Wilkins & Sons, Eynsham, Oxon	£530 0 0	£197 0 0
Wiltshire, Swindon	420 0 0	210 0 0
Barrett, Swindon	412 0 0	184 0 0
Turvey, Wroughton	388 10 0	204 10 0
WILLIAMS, Swindon	420 0 0	*182 0 0
PHILLIPS, Swindon	*395 0 0	235 0 0

Architect's estimate, 585*l*.

* Accepted.

For Alterations at No. 13 Fleet Street, Swindon, for Mr. H. J. Deacon. Mr. W. H. READ, Architect, Corn Exchange, Swindon.

BARRETT, Swindon (*accepted*).

For Making Alterations and Additions to the Malthouse, Stratton St. Margaret, near Swindon, Wilts. Mr. WILLIAM DREW, Architect, Swindon.

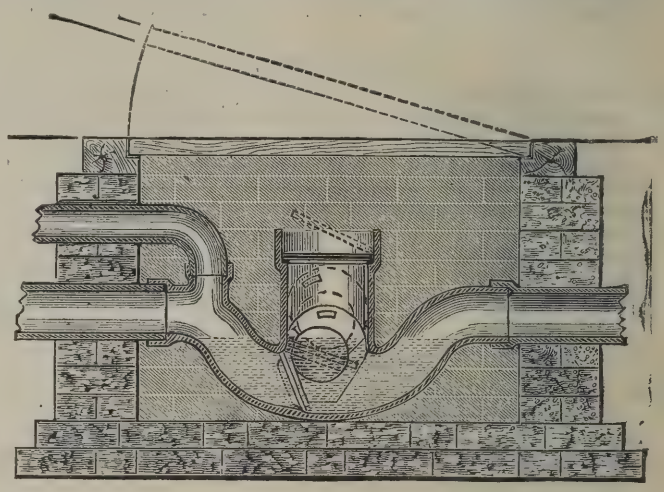
H. LOOKER, Stratton (*accepted*).

No competition.

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

NOTES ON NOVELTIES.

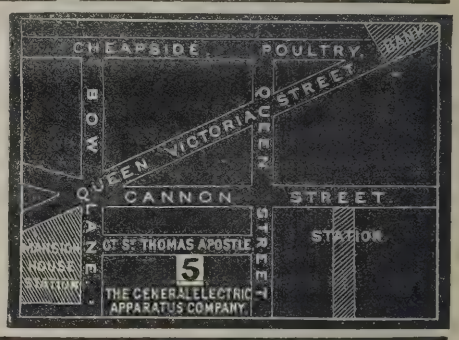
A Sanitary Sewer Gas Trap.—It is claimed for this patent that it meets the demand for a thoroughly sanitary trap—that is to say, it completely shuts off gas from the dwelling. This will be more clearly understood from the appended illustration, the main feature of which is the valve intercepting the escape of all miasma, and being perfectly air-tight. It also prevents back water in main sewer, whether from rain, tides, or other defects, from flooding cellars and basements. The illustration shows the flushing-gate and tide-gate, by which a continual flushing with waste water is going on, thus effecting ventilation



at the same time, and preventing any accumulation of matter. This patent, in short, isolates houses from main sewer—a most important consideration with sanitary authorities. With a trap like this in general use, it would be impossible to hear of main sewers bursting and penetrating dwellings, which is now so commonly the case. We have inspected this patent of Messrs. Titus & Hinksman's, and consider it a sound improvement. It has been brought to this country from America quite recently, but has already been adopted by the Board of Health and other authorities. The sole London

MAHOGANY & HARD WOODS.
ROBERT GARRARD & CO., 206 BETHNAL GREEN ROAD, LONDON, E.
Contractors to Railway and Rolling Stock Companies.
Large Stocks of thoroughly-seasoned Mahogany Teak, Wainscot Oak, and Walnut for Counter Tops, Handrails, Stair Treads, &c. Mahogany, Cedar, and Teak Panel Dry Pine, Whitewood, Ash, Birch, &c., in all thicknesses and widths. Prepared Flooring and Matching in Pitch Pine, Teak, Oak, &c.
LOGS, Mahogany, Teak, Walnut, Sawn and Hewn Pitch Pine, and other Log Timber, supplied in large or small quantities from Stocks kept at the Docks.
Telegraphic Address—"ACAJOU, LONDON."

Telegraphic Address: "ELECTRICITY," *LONDON.* *Telephone No. 1887.*
THE GENERAL ELECTRIC APPARATUS CO.
ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE
Works: BOW and SOUTH HACKNEY. (*Back of the Mansion House Station*), E.C.
ELECTRIC BELLS.
Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.
The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.
Electric Light Instruments, Fittings and Glassware.



IMPORTANT.—To Specialists, Manufacturers, and Others.
Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.
THE ARCHITECT AND CONTRACTOR'S COMPENDIUM
And Specialist's Directory for 1887.
EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.
An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, **the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory.** Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this **at a cost less than half that of sending out one circular.**
The minimum **guaranteed circulation** of the **Compendium** is 3,000 copies, but the actual circulation will probably reach a much higher figure.
Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent **Ink-Photo** process, specimens of which are to be seen weekly in *The Architect*. The **Compendium** will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, **without block**, from **any** drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.
An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.
Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridge Street, London, E.C.
London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

agents are Messrs. Goodman & Co., of 72 Bishopsgate Street, E.C., a well-known firm of brick merchants, under whose influence the trap will, no doubt, prove a decided success.

TRADE NOTES.

MESSRS. EDGAR KEELING, TEALE & Co., art metal-workers, of 14 Elm Street, Gray's Inn Road, W.C., have received an order from the directors of the Union Bank of Australia, to supply about 100 feet of polished brass desk rails for their London premises opposite the Bank of England, recently altered and enlarged under the superintendence of Mr. McGoymour Cuthbert, A.R.I.B.A., of Queen Street, Cheapside. The door furniture, &c., and a quaint wrought-iron grille in the vestibule, are also supplied by the same firm.

THE mosaics covering the entire north wall of Chester Cathedral, contributed by Mrs. Platt, formerly of Dunham Park, have been finished. The execution of these wall pictures has been in progress some time, in a series of panels specially constructed for them. One or two have been placed in position many months, and others more recently. The full series of eight pictures of scriptural subjects are arranged in pairs, with a smaller narrow portrait panel between. The figures are life-size. The mosaics are the work of Messrs. Burke & Co., of London and Paris.

THE IRON INDUSTRY OF GERMANY.

A DESPATCH, dated October 25 last, has been received from Sir E. B. Malet, Her Majesty's Ambassador at Berlin, enclosing the following report on the present condition of the iron industry of Germany :—

The iron industries of Germany have been for some time in a very depressed condition, prices being very low, owing to the keen competition which exists between the German producers for the retention of the home market in which they are being undersold by foreign competitors. Prices have been steadily falling during the last few months, and there is every probability of their reaching a lower level yet.

The competition is chiefly on the part of English and Belgian firms who are accepting contracts at ruinous rates in order to retain a hold of the German market. Three months ago the Altona rail contract was given to a German firm (Krupp of Essen) only after it had reduced its estimates to the level of the English offers, 117 marks a ton, and in September the English firm of John Cockerill, established near Liége, offered to provide 5,000 tons of rails for the left Rhine Railway at the rate of 101 marks per ton, while the German offers varied between 104·50 and 107·50 marks. A year ago the average price of rails per ton for home contracts was 130 marks ; fifteen months ago it was 144 marks, which shows how great has been the fall in the value of iron. The reports from the Rhenish Westphalian iron district contain loud complaints as to the little demand for native ore. It is stated that the Westphalian firms cannot go on producing iron for the money, and that this is one of the worst summer seasons they have known ; there is talk of discontinuing the working of some of the mines. The competition of Spanish raw iron seems to be severely felt, owing to the low rates of freightage.

Railway material is in little demand, and the price of steel rails is so low by reason of foreign competition, that most of the steel manufacturers are only working five or six shifts weekly against thirteen formerly. This depression in the steel industry causes Bessemer iron to be neglected. The production of pig iron by the Rhenish Westphalian and Nassau furnaces during August was 93,944 tons against 97,158 tons during the same month last year.

The machine, waggon, and boiler works report no progress ; pipe foundries and the rolled ironworks are rather better employed, and the rolled wire business seems also to be looking up a little, but most of the works in this district are now being carried on at a loss.

From the Silesian iron district come likewise general complaints as to the unsatisfactory state of the iron trade, and as to the ruinous competition which now exists, which forces prices down to an abnormally low level. Two years ago the Vulcan ironstone mines ceased working, and now what was once considered a very prosperous mine, the Bergfreiheitsgrube, has been closed. The competition of Westphalia is keenly felt in this district, and the export of rolled iron to Austria and Russia has much fallen off of late.

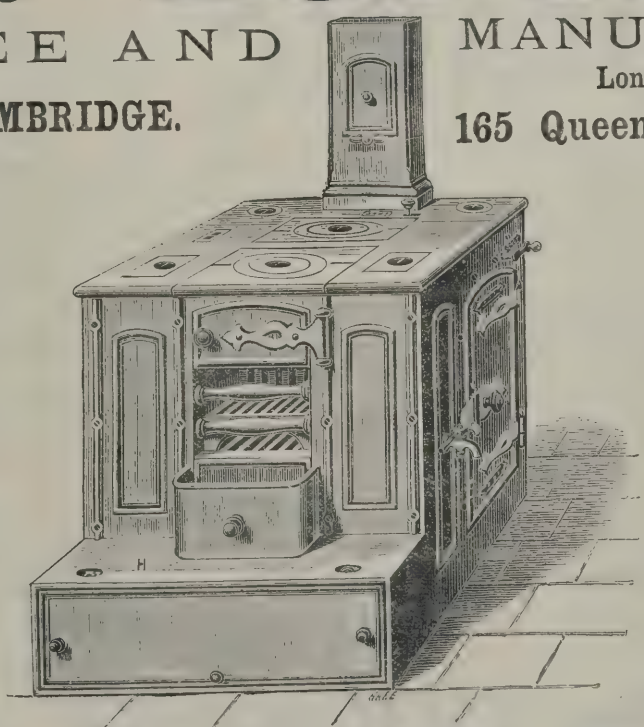
It is said, however, that during the last few weeks some large transactions have taken place in pig iron, by which affairs have rather improved, and recent reports say that for the moment foundries are fairly well employed, but prices are still so low that the pig-iron producers have agreed to limit the production of pig iron to the present amount, about 7,000 tons

E. LOFTS,

PATENTEE AND MANUFACTURER,

Hills Road, CAMBRIDGE.

London Show-rooms:
165 Queen Victoria St., E.C.



OPEN FIREPLACES
FOR
DRAWING-ROOMS,
DINING-ROOMS,
BED-ROOMS,
&c.

HALL STOVES
FOR
CHURCHES, CHAPELS,
BOARD SCHOOLS,
SHOW-ROOMS,
RAILWAY STATIONS,
HALLS OF MANSIONS,
HOTELS, &c., &c.

COOKING-RANGES.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Stove.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case ; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort, they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use ; they are neat, strong, and easy to understand ; will burn any kind of coal or rubbish ; consume their own smoke ; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

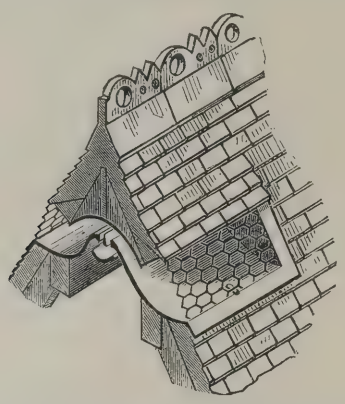
Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge.

a week, and not to put any more furnaces in blast for a year. At present the Donnersmarckhütte has two furnaces out of five in work, the Julienhütte two out of four, the Tarnowitzerhütte one out of four, and the Gledwitzerhütte one out of two.

BOYLE'S LATEST IMPROVED CONCEALED ROOF VENTILATOR.

MESSRS. ROBERT BOYLE & SON, Limited, have introduced an adaptation of their latest improved form of the self-acting air-pump ventilator (1882 patent), to be employed in a concealed form as shown in accompanying diagram. It is intended, how-



ever, only to be employed where it is impracticable or deemed unadvisable for æsthetic reasons to use the ordinary turret form of ventilator, and is provided to meet such cases, as being a simple means of securing a change of air without disagreeable draughts, which usually accompany ordinary and imperfect methods of ventilation. The modification, as shown in the diagram, is so arranged that it utilises by direct action any wind which impinges upon it, and so loses none of its force, as is the case where a complicated arrangement of pipes is used, which obstructs the wind and nullifies its aspirating power, owing to the amount of friction and the angles which have to be contended with. Any arrangement of this kind must necessarily be of the simplest description and free from angles or pipes, which will cause undue friction, otherwise it can only be a ventilator in name, as any vitiated air which may pass through it will certainly not be due to its action.

The concealed roof ventilator operates by the action of the wind passing in at one side, over the central slits, and out at the other side. In its passage it draws the vitiated air out of the building through the slits. It is free from downdraught and impervious to rain or snow. It can be constructed to suit either open or ceiled roofs. This ventilator is recommended as being the most powerful, reliable, cheapest, and safest to use of any of its class, and it can be made any size to suit all kinds of buildings; but it is pointed out by Messrs. Boyle that as ventilators of this class cannot be fully operative except when the wind is in certain directions, it is liable to the objection which applies to every form of concealed roof ventilator, that there will be certain periods, according to the direction of the wind, when its power as an exhaust will be reduced, and for this reason the ordinary turret form of the air-pump ventilator is recommended in preference where it can at all be employed, as it acts with equal efficiency with the wind blowing from any direction.

With the concealed roof ventilator, as with all other extraction ventilators, adequate provision must be made for the admission of fresh air to insure its effective action.

WOOD PAVING IN EDINBURGH.

A MEETING of the Streets and Buildings Committee of the Edinburgh Town Council was held on Friday last, when a report on the state of the carriageway at Forrest Road was brought under discussion, and it was resolved to recommend the Council to lift the wood and replace it with whinstone blocks. Chambers Street was also referred to, and the recommendation upon it was that whinstone crossings should be laid at each end of that thoroughfare. It appears that the wood has proved much more expensive than whinstone, and it is not likely that any of the carriageways in Edinburgh will again be laid with it. It is just twelve years since Forrest Road was laid with wood, and its condition is now such that it is absolutely necessary it should be repaired. On account of its unendurable nature the Committee have determined that if possible wood shall not again be resorted to, but that whinstone, which usually lasts for twenty years, should be used instead.

Equitable

One Premium returned every Fifth Year to those who have made no Claim.

FIRE INCOME (all Home Business) £66,778
FUNDS £98,969

ACCIDENT CO.
INCOME ... £21,264 | FUNDS ... £36,528

Fire & Accident Offices

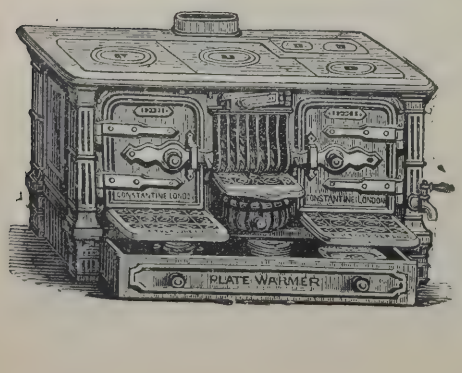
ACCIDENT POLICIES, Free from vexatious conditions, and INSURING CAPITAL SUMS in the event of PERMANENT DISABLEMENT, as well as DEATH by Accident and Allowances during TEMPORARY DISABLEMENT, are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE GUARANTEE AND ACCIDENT COMPANY LIMITED.

FIRE POLICIES, COVERING DWELLING-HOUSES and HOUSEHOLD FURNITURE; FARM BUILDINGS and FARMING STOCK; SHOPS and STOCKS-IN-TRADE, CHURCHES, CHAPELS, and SCHOOLS, and all other risks of ordinary Hazard are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE FIRE INSURANCE COMPANY LIMITED.

For information as to Agencies, apply to the
SECRETARY, EQUITABLE OFFICES, 11 & 13 ST. ANN STREET, MANCHESTER,
Or to the RESIDENT SECRETARY at the various Branches:—

London ... ... 69 Lombard Street, E.C.
Glasgow ... ... 101 St. Vincent Street.
Birmingham ... ... Midland Buildings, 2 New Street.
Dublin ... ... 18 Dame Street.
Liverpool ... ... 11 Tithebarn Street.
Newcastle ... ... 1 St. Nicholas Buildings.
Belfast ... ... 6 Royal Avenue.

A HOUSEHOLD TREASURE.
75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S
PATENT "TREASURE"
COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*
Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.
N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

CHURCH OF ST. MARY WOOLNOTH, E.C.

THIS church, after having been closed for some time past, was reopened on Sunday last. The noisome effluvia arising from the vaults beneath the church, and penetrating into the building itself, rendered it imperatively necessary that some effectual steps should be taken to remedy the evil. Accordingly, under the direction of Mr. F. C. Penrose, the entire surface under the vault arching has been covered with a system of iron joists and concrete, upon which has been laid asphalte in two thicknesses, viz., ½-inch polonceau and ½-inch seyssel, the asphalting being executed by Messrs. Pilkington & Co., of 15 Fish Street Hill, E.C. Messrs. Holland & Hannen were the general contractors, Mr. Gathercole being clerk of works.

THE LIVERPOOL EXHIBITION AWARDS.

A FURTHER glimpse of the way in which some of the juries of the late Liverpool Exhibition were organised was afforded by the bankruptcy proceedings of a Mr. John Jones before the registrar of the Liverpool Bankruptcy Court. Mr. Jones's debts amounted to 217*l.* 5*s.* and his assets to 5*l.* The examination was adjourned, but in the course of it the debtor said that years ago he was in partnership with his uncle as a builder, and then had a capital of 500*l.*; but the business failed, the uncle died, and he was left without any means. He had since held situations as a clerk; his last engagement was on the work of levelling the site for the Liverpool Exhibition. A month before and a month after the opening he earned about 3*l.* a week in commissions from dealers in building materials, &c., and since then about 35*s.* a week. He sold goods in the exhibition for certain exhibitors, taking persons to the stalls to see the goods, and also was paid by two or three for keeping their stalls clean and in order, for which purpose he employed a boy. The Official Receiver: Have you acted in any other capacity in the Exhibition? The debtor: Just recently, sir, I acted as a juryman in the department of building materials, &c. He went on to say that he believed he was nominated by several firms in London, Birmingham, and other places, and the executive committee notified his appointment to him. He acted as juror for materials he was selling, and for any sort of building materials. He considered that quite consistent with fairness. He did not inform the executive committee that he was also a salesman for the goods in reference to which he was to act as juror, and also a servant of certain exhibitors. The Registrar: I am glad that the debtor has answered in that way. I am quite sure that no committee of gentlemen would ever think of appointing a man who they knew was a servant in the same department in which he was to act as a juror. This, however, is not quite the place for investigating that question. I think it would have been much better if the debtor had informed the committee what his position was. It was most reprehensible conduct not to have done so, since it destroyed all faith in the verdicts of jurors so appointed.

A COMMERCIAL MUSEUM FOR WOLVERHAMPTON.

IN pursuance of their scheme for the establishment of a commercial museum in connection with the Wolverhampton Chamber of Commerce, the council of that body have just applied to the Secretary for Foreign Affairs that he would instruct Her Majesty's consul at Madrid to procure and transmit to the Wolverhampton Chamber a full collection of the locks in common use in Spain other than those of English make. The council also desire to be informed at what prices the locks can be bought from the makers, and whether such prices include delivery into Spain and the Customs duties. The council express their willingness to defray the cost entailed if in the opinion of the Secretary for Foreign Affairs the expense is not one which can be properly borne by the Government. It is explained by the council to Lord Iddesleigh that the purpose of the museum is to enable the manufacturers and artisans of the district to clearly understand what is the nature of the competition with which they have to contend in foreign and colonial markets. His lordship has agreed to the proposal.

THE EDINBURGH DEAN OF GUILD COURT.

A PAPER was read at the last meeting of the Edinburgh Architectural Association by Sir James Gowans, Lord Dean of Guild of Edinburgh, on "The Aims and Purposes of the Dean of Guild Court." The Guild Court of Edinburgh was constituted by an act of the Town Council, of date March 3, 1584, and ratified by Acts of Parliament. It consisted then of seven persons, of whom four were merchants and three tradesmen, who were also guild brethren. The powers of the Dean of Guild Court were, in his opinion, if fairly applied and maintained, sufficient to secure the erection of sound and efficient

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER SEVEN HUNDRED ENGRAVINGS OF DIFFERENT PERIODS, WITH DESCRIPTIONS
BY PAUL ROUAIX.

"This large and sumptuous book is issued by the publishers of *L'Art*, a journal which we have frequently referred to as being one of the best publications of its kind in Europe. The French Librairie de l'Art has been known for long in connection with works treating of the fine arts, and *Les Styles* is certainly equal to anything we have ever seen of the kind, and by far superior to the vast majority of similar works issued in this country. There is something about the atmosphere of France which confers refinement of taste in everything relating to designs, and so pronounced is the national aptitude for discovering beauty and symmetry, that the very fact of a book coming from across the straits is generally a sufficient guarantee of the artistic excellence of the contents.

"M. Rouaix treats of many species of decoration, commencing with that in vogue amongst the ancient Egyptians, and proceeding in regular order of date with the Etruscan, Greek, Byzantine, Roman, Gothic, the peculiar ornamentation of the Renaissance, and of the times of Louis XIII., XIV., XV., and XVI. Before each division the author introduces a short historical introduction, and afterwards, by means of a series of beautifully executed prints, illustrates the prevailing fashion of the time. For this purpose he has levied contributions on examples of architecture, carving on wood, suits of armour, bas-reliefs, tapestry and embroidery, mural painting, mosaical work, and a host of other subjects, including caskets and chalices. In fact, anything that can be called artistic and assigned with certainty to a particular era is represented, the result being an exhaustive and exceedingly pretty production."—BOOK LORE.

Beautiful plates. Examples of the finest colour printing, and for variety and grace of design they could scarcely be surpassed. Decorators might gain many hints both for designs and schemes of colour by a study of this excellent publication."—GRAPHIC.

Single Number, 5*s.*; Complete Series, 12 Numbers (by Subscription), £2 8*s.*

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

LONDON: GILBERT WOOD & CO. 175 STRAND

houses, and also very completely to control all sanitary matters connected therewith. While they in Edinburgh had such control, the misfortune was, he thought, that there was no general law for Scotland, equivalent to what they possessed, and this led him to say that there clearly ought to be a Health Act for the whole country in harmony with the best sanitary science as practised at the present day, and that above all there ought to be a Minister of Health who would have a seat in the Cabinet. Speaking more particularly of the aims and objects of the Court, he said it would not be very difficult to prove that the public themselves were the creators of the cheap shoddy buildings so much complained of. There appeared to be in some people an instinctive craving for cheap things. If bearing the semblance of the costly and superior article, so much the better. The builder was a shrewd man, as a rule, and watched public leanings, and felt the public pulse. He knew the price that would be obtained for his houses, and his plain duty was to adapt his outlay to the price expected. The visits of a vigilant inspector were intensely disagreeable where, for example, the foundations were laid in an insufficient manner; where his mortar was an admixture of mud and sand, with a sprinkling of lime; where the wooding of the structure was insufficient, and the cover of the slating was inadequate; where the drains and plumber work were badly arranged or of faulty materials. It was an infliction in such a case for tests to be applied and certificates demanded before a sale could be effected. He regarded the properly-applied functions of a Dean of Guild Court as having a paramount influence on the quality of the article which the public received for its money in purchasing the house. He then drew attention to what the Dean of Guild Court required before authorising the erection of new houses and buildings or the alteration of old ones, special reference being made to sanitary and lighting arrangements. He suggested that in the better class of houses it would be well worth while to have the gas and water-pipes so arranged as to form a decorative feature on the walls of the apartments, and in every case at least to be exposed so as to be readily accessible. He considered that their Police Act was far too moderate in its requirements as regarded open space in the rear of houses. Its minimum standard was not to be less than half the area of the building itself, and it was surprising to see how the minimum was tenaciously adhered to, as if it were challengeable should more be conceded. The only effectual remedy would be to have the minimum standard increased, as was contemplated in the proposed general Police Act, where the standard of one-half became three-fourths of the building area. Other two important functions devolving upon the Court were the protection of private rights and interests and the protection of public interests. Although the building trade during last year was by no means brisk, they had 861 cases before the Court, being an average of over 16 cases for each of the 52 Court days. Of these 515 were new applications, and in all 391 warrants had been granted, of which 106 were for new buildings. In conclusion, he said that the aims of architects and of the Dean of Guild Court were one and the same. They had laid upon their shoulders the responsibility of preventing any marring or disfigurement of the architectural fame and amenity of their noble city, and of maintaining and extending the same in proportion as her boundaries were enlarged. In such a work as this the Dean of Guild Court's best efforts and architects' best talents must be enlisted.

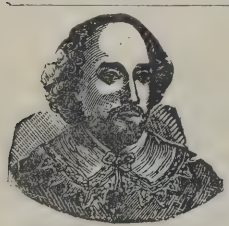
BIRMINGHAM MASTER BUILDERS' ASSOCIATION.

THE annual dinner in connection with the Birmingham Master Builders' Association was held on the 18th inst., at the Great Western Hotel. Mr. J. Bowen (president of the Association) presided, and there was a large attendance.

Mr. C. H. Barnsley, in submitting "The Town and Trade of Birmingham," praised the town for its cleanliness and sanitary arrangements, which he said were due to the excellent supervision of the Town Council. Owing to that the town was healthier than it otherwise would have been, and the death rate was lower than that of almost every other large town in the kingdom. The Town Council, he believed, had honestly and nobly carried out the letter and spirit of the motto of the town, "Forward," and they deserved the gratitude of the inhabitants for the earnestness with which they worked for the benefit of the town. During the past thirteen years great improvements had been effected in Birmingham. The Improvement Scheme had found a large amount of work for the artisans, and the noble buildings—both public and private—with which the town was studded, had been the means of giving employment to large numbers. He deplored the present depression of trade, and the fact that the prices for the work done were so low. Out of 123 towns in Great Britain from which reports had been received only eight reported that the building trade was fairly good or improving, the others reporting that it was bad or very bad. Unfortunately for the trade,

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

PARKINSON'S
BEST QUALITY LOWEST PRICES
WET & DRY
COTTAGE LANE CITY Rd LONDON.
GAS METERS

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W
Designs and estimates on application.

the contractors and builders of Birmingham had had very little opportunity of boasting; but that was due chiefly to those people who had contracted for the work at unremunerative prices, if not actual losses. Such a state of things as that was calculated to destroy all genuine and legitimate competition, and that was greatly to be regretted. He hoped, however, the time was not far distant when they would be able to congratulate each other on a great improvement in trade, and the fact that they could command very much better prices. Mr. J. W. Bond responded.

The Chairman proposed "Success to the Birmingham Master Builders' Association," remarking that the present was a time when they must not only wish success to the Association, but work earnestly in aid of the objects for which the Association was established. The question of the wages of the operatives was an important one, and they were looking forward to an arduous task in dealing with the matter. Almost every trade association was successful in regulating the prices connected with the trade, but hitherto the Builders' Association of Birmingham had been unable to do that. They ought, therefore, to put themselves in a position to be able to do it. Of course, in attempting that they would have many difficulties to overcome; but if the contractors of Birmingham came to a definite understanding not to take work under a certain rate—a rate at which the work could be produced—then it would be to the advantage of all concerned. He often thought the Association should lay down a code of rules for the guidance of the trade, and he hoped it would not be long before they did so. He was glad to see that the Association was awaking to the difficulties and responsibilities of the trade, and he trusted that a great improvement would soon be effected. The members did not object to competition so long as it was healthy and fair, but he did not think a great deal of the competition in the town had been healthy and fair. He hoped, however, that unfair competition would soon be a thing of the past in Birmingham, and that every member would act more in the interest of the trade generally than had been the case hitherto. The operatives banded together in their own defence, and the masters should do the same. In his opinion it was a question whether a great deal of the work produced of late was worth the money it cost to produce in the open market. If that were so, there was certainly something wrong, and the sooner they endeavoured to find a remedy the better. They suffered a great deal from foreign competition, but he was sure they could do the work as well, if not better, than their foreign competitors. They did not ask for large profits. They were prepared to take the minimum amount of profit, but many of them, he was glad to say, would not accept contracts at a less price than the work could be done for. In conclusion, he expressed a hope that on the wages question the operatives would meet the masters in the same spirit in which they would be met, for if they did he felt sure they would be able to reason together and come to an understanding, which would be best for all parties concerned. Councillor Loughton, Mr. A. Edwards, and Mr. J. M. Bayley responded. The other toasts were, "The National Association of Master Builders of Great Britain," "The President," "The Vice-President and Officers," and "The Visitors."

LIVERPOOL MASTER BUILDERS' ASSOCIATION.

THE annual banquet of the Liverpool Master Builders Association was held on the 18th inst., and was attended by about one hundred gentlemen. Mr. James Leslie, the president of the Association, presided, and was supported by Messrs. J. B. Smith, Isaac Morris, G. E. Grayson, E. S. Kirby, F. W. Hornblower, Blease, J. H. Farmer (town clerk of Bootle), W. N. Blair (surveyor of Bootle), Thorburn (surveyor of Birkenhead), Huntington (Lancaster), J. C. White, T. Cook, F. N. Holme, Green, J. S. Jones, R. Jones, W. Tomkinson, C. Tomkinson, G. Woods, Forde, Nobbs, W. Knox (secretary), J. Tanner, C. Tanner, J. E. A. Rogers, Johnson (Wigan), Beaulard (Bradford), Belshaw, Rothwell, and Chisnall (St. Helens).

After the customary loyal toasts had been drunk,

Mr. C. Tomkinson proposed "The Mayors and Corporations of Liverpool, Birkenhead, and Bootle."

Mr. J. B. Smith, in responding, said there was no doubt that the interests of Liverpool, Birkenhead, and Bootle were not altogether identical. He had always thought that the interests of Liverpool had to a great extent been sacrificed to those of Birkenhead. It was perhaps rather a matter of controversy, but unquestionably there had been an enormous amount of money sunk in Birkenhead, which if it had been stopped years ago might have made Liverpool now very much of a free port. That must always be a matter of regret even to those who lived on the other side of the water. With reference to Bootle he would also say that he thought it a pity that Bootle was not incorporated with Liverpool. It was a very curious fact that the most valuable part of the trade of

FIRE BRICKS.
E. BOWEN, Fire Brick Manufacturer, Stourbridge.
Manufacturer of Best Stourbridge Fire Bricks, and Cement Fire Clay, Gas Retorts, Muffles, &c. Fire Bricks and Blocks for the Highest Heats, for Iron Blast Furnaces, Forge, Rolling, Puddling and Steel Furnaces, Pottery, Bottle, and Flint Glass Furnaces, Roasting and Refining Furnaces, Chemical Works, Coke Ovens, &c., Boiler Seating Blocks, Flue Covers, Locomotive Bricks, Tuyères, Steel Runners, Grate Backs.
Special Sizes and Shapes made to Engineers' Drawings.
Prices Quoted to any Port or Railway Station.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

GLAZED BRICKS.
OATES & GREEN, Halifax.
GLAZED BRICKS (White and Coloured), Special Salt Glazed Bricks, Sanitary Tubes, Glazed Earthenware Sinks, Cattle, Sheep, and Pig Troughs, Horse Mangers, Patent Automatic Trough Closet, Patent Flush Tank, Channelling for Stables and Yards, Salt Glazed Bricks for Stables, Sewers, &c. Ventilating Bricks, Patent Ventilating Gullies and Traps, Garden Edging, Patent Chimney Pots and cure for Down Draughts, Patent Drain-Cleaning Rods.
Six Prize Medals. Copies of Testimonials sent if required.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

BLUE BRICKS.
THE KETLEY BRICK COMPANY,
MANUFACTURERS OF STAFFORDSHIRE BLUE BRICKS,
Kingswinford, near Dudley, Staffordshire.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

DRAIN PIPES.
Lime, Cement, Bricks, Slates, Laths, Hair, Sand, Plaster, Stable Paving Bricks, Wall Copings, Channel Bricks, Blue and Red Ridges, Red Plain Tiles and Pan Tiles, Closet Pans and Traps, Drain Pipes, Bends, Junctions, &c., all sizes. Chimney Pots, Red and White, Fire Bricks, Lumps, Tiles, Fire Clay. Prices on Application.
R. CULL & SON'S STORES,
RAILWAY ARCHES,
Corner of LONDON ST., & BRADY ST.,
Near BETHNAL GREEN STATION.
CHIEF OFFICE:—72 PALMERSTON BUILDINGS, OLD BROAD STREET, E.C.

G. BARKER and CO. Established 1863.—The BANK, No. 35 Mark Lane, London.
Current accounts. Special advantages.
Deposits received at the following rates:—
3½ per cent. on demand.
4 per cent. seven days' notice.
4½ per cent. fourteen days' notice.
5 per cent. thirty days' notice.
6 per cent. three months' notice.
Interest payable quarterly. Extra bonus for 12 complete months. Pamphlet and further particulars on application

EDWARD SMITH & CO
MAKERS OF EVERY DESCRIPTION OF PLAIN AND ORNAMENTAL FLOOR AND WALL TILES : MOSAICS :
E S C
EMBOSSED AND INCISED TILES, ETC., RED & WHITE TERRA-COTTA PRESSED BRICKS, ETC., ETC., ETC.
COALVILLE. LEICESTERSHIRE.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES:
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices: 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

NASH & HULL,
LETTER
MANUFACTURERS
WRITERS AND ENGRAVERS.
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE
MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.

VOLUME XXXV. OF THE ARCHITECT.
handsomely bound in Cloth, Gilt Lettered, price 12s. 6d.
Office: 175 Strand, London, W.C.

Liverpool had now left Liverpool, and had centred in Bootle. That seemed a very unfortunate circumstance, and he should have preferred seeing Liverpool and Bootle represented by one mayor and one corporation. As chairman of the Health Committee of the Liverpool Corporation, he could say the Committee had always had the most friendly feeling towards the master builders of Liverpool. They considered that to a very great extent their interests were identical, and the Committee had always endeavoured to work with the master builders in the most friendly way possible. He trusted such a relationship would continue to exist.

Mr. James Pendleton, in submitting the toast of "The National Association of Builders," remarked that the Association was comprised principally of representatives from about forty or fifty of the large towns in the country. It was supported by subscriptions from those towns, and he was happy to say that Liverpool had even contributed more last year to the Association than London. The Association had done a great deal for the building trade, and they in Liverpool had cause to thank the representatives of the National Association for the trouble they had taken in representing them in London and other places where important deliberations had taken place, which had resulted beneficially to the trade.

Mr. J. C. White responded, and said he believed if the objects of the National Association were better known it would be hailed with enthusiasm all over the country. It would have a very great power for good and very little or no disposition for evil. The Association as yet was in its infancy, being only eight years old, and for the last two or three years had gone through bad times. He hoped the Association would go on and prosper, and had no doubt that in time it would become an exceedingly powerful organisation.

Mr. E. Kirby next gave "The Liverpool Master Builders." He said the Liverpool Master Builders' Association deserved all the sympathy it could get from the Architectural Society and architects individually in the town of Liverpool. He need hardly remind them that Liverpool had twice chosen one of the members of the Association as its chief magistrate. He expressed the hope that the new year would see the clouds roll by, especially as applicable to the building trade.

Mr. W. Litt, who responded, said that ever since the Liverpool Master Builders' Association was formed twenty-one years ago it had endeavoured to act purely on the defensive, and not to injure in any way the interests of the working-classes. Their object was to guide a business which they considered most important not only for a district, but for the nation at large. In every scientific improvement the builders had endeavoured to act well up to the times and to assist in bringing those improvements to bear in the buildings of the day.

The remaining toasts included "The Architects, Surveyors, and Civil Engineers," "The Iron Trade and Kindred Associations," and "City and Trade of Liverpool."

BERMONDSEY MORTAR.

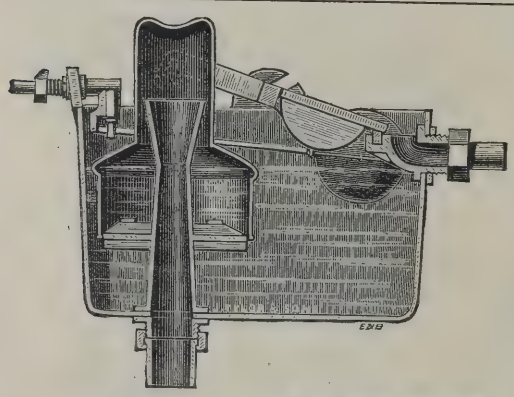
RECENTLY the inspector of nuisances of the parish of Bermondsey reported to the Vestry that sediment taken from the public sewers was being used by a builder as mortar in the construction of houses being erected in Long Lane, Bermondsey. Owing to the offensive smell arising from the stuff the inspector, considering it injurious to health, ordered its removal. The Vestry instructed the clerk to write to the Metropolitan Board of Works upon the subject, as it was stated that the contractor for cleansing the sewers under their control was in the habit of selling the refuse taken from the sewers to builders, who used it for mortar. The vestry clerk has now received a letter from the Metropolitan Board to the effect that they have given strict injunctions to their contractor to refrain in future from the objectionable practice.

THE SANITARY REGISTRATION OF BUILDINGS BILL.*

SANITATION is in the air, though the public mind may be slow to realise the truth of the adage that cleanliness is next to godliness, and that in reality sanitation is the science of cleanliness, and a science which becomes of importance in proportion to the density of the population.

With the growth of population there has grown a sense of the need of giving more attention to the science of cleanliness, and at present we have a mass of sanitary legislation which, while failing to secure satisfactory conditions with regard to the removal of refuse from our towns, at the same time gives greater powers to local authorities than they have hitherto exercised.

* A paper by Mr. Mark H. Judge, read at a meeting of the Society of Medical Officers of Health, November 19, 1886.



BEAN'S PATENT DIRECT-ACTING VALVELESS WASTE-PREVENTING CISTERNS.

These Waste-Preventers are simple in construction and rapid and powerful in action. The working parts have been improved and are well balanced. The arrangements for charging the siphon are such that a slight pull by hand is all that is necessary to cause the immediate and automatic discharge of the contents of the Cistern.

THE CHIEF ADVANTAGES are—(1) the direct-acting method of charging the siphon, by which the full flush is obtained at once; (2) simplicity of construction; (3) no valve in the bottom of the cistern to cause leakage; (4) no tight-fitting parts to corrode or get out of order; (5) no waste incurred by fastening the "pull"; (6) insures a rapid and regulated flush without holding down the pull.

SOLE MAKERS— PRICES AND PARTICULARS ON APPLICATION.

J. TYLOR & SONS,
SANITARY AND HYDRAULIC ENGINEERS AND BRASSFOUNDERS,
2 NEWGATE STREET, LONDON, E.C.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

As an instance of the great powers conferred by Parliament on the local authorities with regard to sanitary matters, I have only to refer to the Metropolis Local Management Act of 1855, under which Act the London vestries have absolute authority to regulate the sanitary arrangements of every house or building, whether erected before or subsequent to the passing of the Act, provided there be a public sewer within 100 feet of such house or building.

These powers were, and are to this day, greater than public opinion would tolerate the exercise of, and therefore to a large extent the Acts under which they have been granted have been dead letters. Indeed, they have been less operative than more modest provisions would have been, for, as a chain is only as strong as its weakest link, so a law which is never put, nor even attempted to be put, into operation in its entirety is thereby made more difficult of application in every respect.

According to the 73rd section of the Metropolis Local Management Act, the vestries of London are not only responsible for the public sewers and house drains, but for the sanitary arrangements generally, including "fit and proper sinks, water-supplying pipes, cisterns, and apparatus." I say that the vestries are responsible for these things, because the Act in question empowers them to insist on these arrangements being such as they shall deem to be satisfactory.

Similar powers are conferred upon local boards of health under the Act of 1875, but it is modified by the supervision of the Local Government Board.

In spite of the existence of these great powers, and in spite of the increasing interest which the public are taking in regard to the sanitary conditions under which they live, the fact remains that our towns are in a lamentable state so far as the sanitation of our dwellings is concerned, and surely there is no body of men more capable by their training and experience to help us to the remedy than the Medical Officers of Health, whose duty it is to inquire into the causes, origin, and spread of diseases, with a view specially to protect the public against the dangers of those of an infectious nature.

That the present law has failed to secure reasonably healthy dwellings in our large towns is admitted on all sides, but never more forcibly than last year, when Lord Salisbury's Government introduced the Housing of the Working Classes Bill, with the provision that :—

> Whereas by existing law there is implied a condition on letting a furnished house that it is reasonably fit for human habitation, and it is expedient to extend such implication to the letting of unfurnished houses ; be it therefore enacted that, in any contract for letting for human habitation an unfurnished house, or part of an unfurnished house, there shall be implied a condition that the house is in all respects reasonably fit for such habitation ; and in the event of a breach of such condition as above-mentioned, in the case either of a furnished or unfurnished house, or any part thereof, any inmate of such house who suffers any loss or injury to health or otherwise in consequence of such breach, shall be entitled to recover damages from the person responsible for such breach.

The need of legislation in this direction for the purpose of improving the sanitary condition of our large towns was soon made manifest by the opposition this proposal met with from those large building societies which finance the worst class of speculating builders, and which are thus interested in a vast amount of property—property which it is to be feared is not reasonably fit for human habitation.

The Government gave way to the opposition, and when the Act became law this bold attempt to prevent the adulteration of houses had dwindled down to the following :—

> In any contract made after the passing of this Act for letting for habitation by persons of the working classes a house or part of a house, there shall be implied a condition that the house is at the commencement of the holding in all respects reasonably fit for human habitation. In this section the expression "letting for habitation by persons of the working classes" means the letting for habitation of a house or part of a house at a rent not exceeding in England the sum named as the limit for the composition of rates by Section 3 of the Poor Rate Assessment or Collection Act, 1869, and in Scotland or Ireland 4*l*.

This would seem to suggest that except when let to persons of the "working classes," houses may or may not be reasonably fit for human habitation, and thus it is more than ever necessary that something should be done to remedy the existing state of things.

We protect the citizen from having his coffee adulterated with chicory, yet we allow him to mix his pure coffee with poisoned water, and to drink his beverage in an atmosphere which is charged with sewer gases, thus leaving him in the delusion that in return for rent he is receiving the protection from disease which a house should afford.

The Sanitary Registration of Buildings Bill is a legislative attempt to protect the community against unsanitary dwellings. It is to be brought before the House of Commons early next session by Dr. R. Farquharson, M.P., and may be briefly

ASCHERBERG PIANOS,

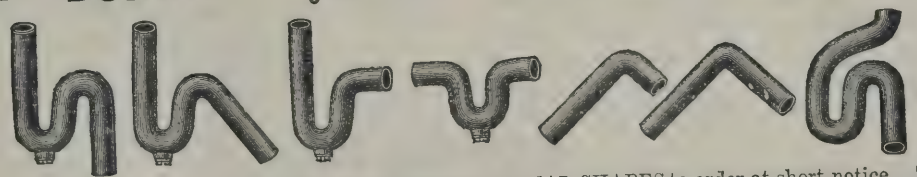
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS. PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING,. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET, KING'S CROSS, W.C.

described as an effort to secure the maximum advantage with the minimum of officialism.

The principle on which the Bill is based is the same as that on which the Vaccination Acts are administered, viz, the enforcement of a State regulation for the public benefit, while at the same time leaving individual citizens freedom in the matter of carrying out the same.

I hold strongly to the opinion that there is no need for a compulsory inspection of all dwellings by public officers, indeed, I believe that it is not desirable that the sanitary arrangements of our dwellings should invariably be handed over to the tender mercy of a public official.

Apart from the question of the money cost to the community which an official inspection and supervision would involve, I am not prepared to advocate that owners and occupiers of property should be relieved of their proper responsibility, though I am ready to admit that such inspection and supervision might for the moment greatly improve the sanitary condition of our large towns, but, I would ask, at what cost? And here I do not mean at what money cost, but refer to the hindrance to sanitary progress which would result even if the best present system of sanitation were stereotyped in every town in England.

The provisions of the Sanitary Registration of Buildings Bill are very simple. They are :—

1. That the Act shall come into operation in January, 1888, in all towns in England of 50,000 inhabitants and upwards, and in such other districts in the United Kingdom as may choose to adopt it.

2. The authorities entrusted with carrying out the Act are the same as those charged with the administration of the Public Health Acts.

3. Each authority shall appoint a sanitary registrar, whose duty it shall be to issue certificate forms for buildings, such forms to be returned in the same way as the vaccination papers issued on registration of births.

4. These certificates will declare that the buildings to which they refer are in a satisfactory sanitary condition, and shall be signed or sealed by some one of the following persons or corporations, viz. :—

Members of the Royal Institute of British Architects and members of the Institution of Civil Engineers, who are in practice as architects, surveyors, or civil engineers; also architects or civil engineers who have been in practice five years at the passing of this Act and who register their names accordingly with the Local Government Board before January 1, 1888; also by sanitary associations incorporated by license of the Board of Trade; medical officers of health; and medical practitioners qualified in sanitary science; also by the surveyors and engineers of local authorities so far as their own districts are concerned, and such other persons as the Local Government Board may authorise.

5. Where the owner or occupier wishes it, he may call in the services of the surveyor or engineer to the local authority to certify his house, but in that case he is to pay a fee to the local authority for the services rendered. This provision appears to me to be eminently just, unless every householder is to have the professional services of a surveyor or engineer at the public expense.

6. After January 1889 it is to be unlawful for any dwelling-house, school, hotel, hospital, or other building to be occupied unless and until a certificate as described is deposited with the local authority.

7. A penalty is provided in case of the issue of a false certificate, and the wilful issue of a false certificate is made a misdemeanour; penalties are also provided for letting or occupying a house without a certificate.

These are practically the whole provisions of the measure. They almost speak for themselves, and I commend them to the serious consideration of medical officers of health whose great influence I hope will be exerted on their behalf.

All whose opinions are worth consideration recognise the fact that serious imperfections exist in the sanitary arrangements of dwelling-houses, and are alike earnest in their desire to amend them. All are not, however, agreed as to the best means to be adopted to bring about the sanitary reform desired. Some would make it the business of the State to design and regulate the sanitary arrangements of every dwelling-house, though as yet no one has ventured to go so far in the direction of paternal government as to suggest that the State should relieve individuals of their responsibility to be clean and decent in the use of these sanitary arrangements. On the other hand, there are those who think that the State should have no right to inquire into the sanitary condition of any private property, and that it should in no way interfere with those who choose to reside in dwellings of the flimsiest description, with refuse from Covent Garden and Billingsgate for foundations, and drains only cut off from the sewage tanks of Barking, when they cease to fulfil their purpose and become elongated cesspools instead of conduits for the removal of excreta and other house refuse.

BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586.
Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617.
Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

In my opinion these extreme views are a mistake. I think that in this, as in all other matters, the rule of liberty will be found the best preserver of the public well-being, which, correctly understood, includes the well-being of the individual. Where drains and sewers are public property, the responsibility for their proper maintenance admittedly rests in the State, or its representative, the local authority of the district. Any citizen who may be injured in consequence of the unsanitary condition of such public drains or sewers, should, I think, have right of action against any authority through whose neglect the unsanitary condition is proved to have been caused. On the same ground I would urge that in all cases of private drains and sanitary arrangements, the responsibility for their proper maintenance should rest in the owner (or occupier when he stands in the place of the owner), and that the public authority should only have right of action in so far as the condition of the property may be directly injurious to the public health.

That the sanitary arrangements of dwelling-houses should be of one uniform pattern, or that the internal economy of our houses ought to be submitted to the censorship of a public official cannot be desirable—in fact, I feel that we have gone too far in this direction already. In support of this opinion, I venture to relate a recent experience I have had of this desire for uniformity. In a London suburb, not six miles from Charing Cross, I provided the well-known short-flushing rim Hopper closets, with lead traps where connected to soil-pipes, and with stoneware traps where connection could be made direct with the stoneware drain. This short Hopper is admitted to be one of the best forms of closet; so much is this the case that a diagram of it is given in the model by-laws of the Local Government Board. Though the closets I provided thus specially satisfied the requirements of the model by-laws, they did not meet with the approval of the local surveyor, who, by the way, is a very different individual to the district surveyor. My client was building the houses in question to let, he refused to fight the local surveyor, and the short Hoppers, which had been fixed, were removed, and wretched so-called "wash-out" closets substituted. To understand how unsatisfactory this interference may be, I have only to add that, in spite of this insistance on a particular pattern of closet, this local surveyor had no idea of insisting that the house drains should be properly disconnected from the public sewer.

In referring to this case I have no desire to specially blame the local surveyor, who probably first began to study the duties of his office when he entered upon a career to which the united wisdom of his local board thought fit to call him; irrespective altogether of the fact that however intelligent he might be, his past training and experience had in no way fitted him to fulfil the duties which are not easy to those who have been specially instructed in them. Neither must we be too hard on the local board itself. Unfortunately, too few of the better educated members of the community seek to serve it on local boards. No men can give more than their best, and what I wish to suggest is not that the members of our local boards are unworthy public servants, but that they have not the qualifications which might warrant the legislature in handing over to them the right to regulate the internal sanitary arrangements of our homes.

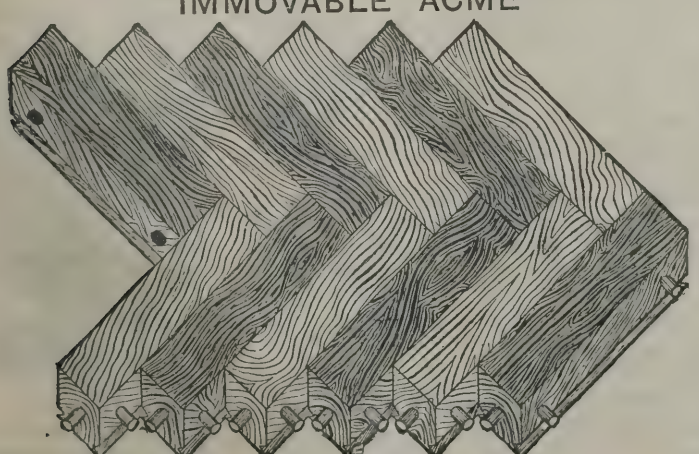
Many sanitary reformers desire to see the law with regard to compulsory sanitation strengthened, and by this they mean that the local authorities should have greater powers given them. In this demand I cannot join, though I would gladly welcome reform which would strengthen the law. At present the powers which the local authorities might exercise are, as I have already pointed out, considerably greater than any local board does exercise with any consistency, and it is this want of consistency in the enforcement of the Public Health Acts which has made them so inoperative. Too much has been attempted, and too little done. Regulations have been made and builders have been told that a variety of things must be attended to, but in too many cases local boards and their officials have been content with framing regulations and giving orders. They have failed in the essential thing, viz., in seeing that builders and others obey.

I would strengthen the law by minimising its demands to essentials, and by insisting on its absolute enforcement. I would increase the responsibility of the individual, but in so far as the public authorities pretend to interfere I would make it a real interference, and in every case where the law was not complied with there should be some punishment meted out to those responsible for the breach.

The Sanitary Registration of Buildings Bill does not, however, make any attempt in the direction of the very important work of amending and modifying existing sanitary laws. The Bill only deals with the one question of sanitary registration, and asks that it should not be lawful for any building to be occupied until it is certified as reasonably fit for habitation. This is a principle which I feel sure will meet with the approval of the Society of Medical Officers of Health, and I trust, therefore, that your support will be given to the Bill.

THE ÆOLUS WATERSPRAY
SYSTEM OF
HEATING, COOLING, & VENTILATING
IS THE
CHEAPEST AND BEST.
For Particulars apply to
MANAGER, 235 HIGH HOLBORN, LONDON, W.C.
Applications for Agencies invited.

"IMMOVABLE ACME"



WOOD-BLOCK FLOORING.

INTERNATIONAL EXHIBITION, LIVERPOOL.
GOLD MEDAL,
The ONLY and HIGHEST Award for
WOOD-BLOCK FLOORING
(W. DUFFY'S PATENT),
"Immovable Acme."
M. C. DUFFY & SON,
Chief Office: 66 Storks Road, London, S.E.

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

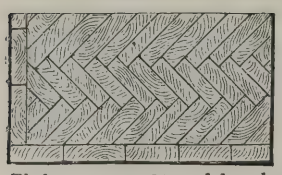
SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

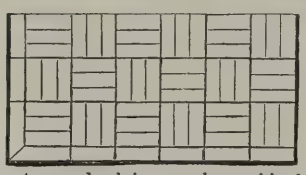
THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

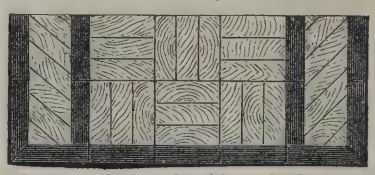
NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

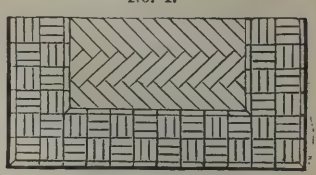
NOW BEING LAID THROUGHOUT THE KINGDOM.

PATTERNS.

No. 1. 

No. 2. 

No. 3. 

No. 4. 

Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

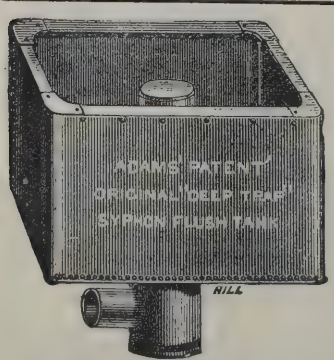
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL	**St. Philip's Marsh.**	**READING**	**Caversham Road.**
EXETER	**Basin Head.**	**DUBLIN**	**14 St. Andrew's Street.**
SOUTHSEA	**Beaufort Road.**	**MANCHESTER**	**20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

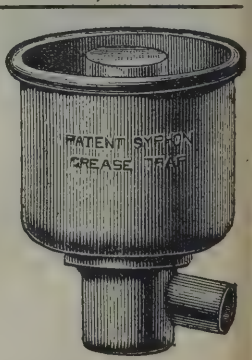


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
" FLUSH SYPHONS for Sewer Flushing.
" FLUSH LATRINES for Barracks, Schools, &c.
" FLUSH URINALS " " "
" TROUGH CLOSETS " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, November 26, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, DECEMBER 3, 1886.

EDITORIAL NOTICES.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested as much as possible to make their communications brief. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

THE ARCHITECT
AND
CONTRACT REPORTER.

ADVERTISEMENT SCALE.

	£	s.	d.
For Two Lines and under (eight words to the line)	0	2	6
For every Additional Line	0	0	6
For Quarter Page	2	10	0
For Half Page	4	10	0
For a Page	8	8	0
For 1 inch deep by 2½ wide	0	7	6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & CO., 175 *Strand, London, W.C.*

COMPETITIONS OPEN.

CAERLEON.—Dec. 3.—Plans are invited by the Governors of Williams's Schools for the erection of Schools, Master's House, &c. Mr. J. Gibbs, 24 Bridge Street, Newport. Mon.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

KILBURN.—Jan. 31.—Designs are invited by the Willesden Local Board for the Erection of Public Offices, Dyne Road, Kilburn. Cost, 6,000*l.* Premiums of 50*l* and 25*l.* Mr. O. Claude Robson, Surveyor, Hampton House, High Road, Kilburn.

LONDON.—Designs are invited by the Committee of Management, Colmbrook Orphan Asylum, for proposed Orphanage. Premiums of 300 guineas and 100 guineas. Mr. Nevil Sinclair, 18 Princess's Street, Great George Street, Westminster, S.W.

CONTRACTS OPEN.

ARDROSSAN.—Dec. 20.—For Construction of Wet Dock, Outer Tidal Basin, Entrance Channel, Quay Walls, and other Works at the Harbour. Mr. John Strain, C.E., 154 West George Street, Glasgow.

ARMOY—For Building Spire to Church Tower. Rev. J. W. D'Evelyn, The Rectory, Armoy, Ballymoney.

ASHOVER.—Dec. 6.—For Enlargement of Hydropathic Establishment. Mr. T. Blackwall, Architect, Ashover.

BALLAGHADERRIN.—Dec. 15.—For Converting Military Barracks into Constabulary Barracks. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

BARKING CREEK.—Jan. 7.—For Channels, Pier and Jetty, Engine and Boiler Houses, Workshops, Store-shed, Superintendent's House, and Workmen's Cottages, at Northern Main Drainage Outfall. Mr. J. E. Wakefield, Spring Gardens, S.W.

BARNET.—For Building Pair of Small Semi-detached Villas. Messrs. Blake & Farrar, 186 New North Road.

BELFAST.—Dec. 7.—For Building Two Semi-detached Villas at the Knock. Messrs. Young & Mackenzie, Architects, Donegall Square East, Belfast.

BINGLEY.—Dec. 13.—For Erection of Stables and other Buildings, Formation of Roads, &c., Heathfield. Messrs. Milnes & France, Architects, Bradford.

BIRSTALL.—Dec. 10.—For Building Mill Chimney. Mr. M. Sheard, Architect, Branch Road, Batley.

BLACKBURN.—Dec. 7.—For Construction of Railway Bridge and Retaining Wall. Mr. J. H. Stafford, Secretary, Hunt's Bank, Manchester.

BLAINA.—Dec. 6.—For Building Offices and Store-room with Yard, for the Nantyglo and Blaina Local Board. Mr. Alexander Mitchell, Surveyor, Chapel Street, Blaina, Mon.

BLANDFORD.—Dec. 3.—For Building Vicarage House, Tarrant Monkton. Mr. W. T. Fletcher, Architect, Wimborne.

BRISTOL.—Dec. 28.—For Building Nine-floor Granary, Prince's Wharf—Brick Walls, Timber Roof Slated, Concrete Floors, Steel and Iron Columns and Girders. Mr. J. W. Girdlestone, C.E., Engineer's Office, Cumberland Basin, Bristol.

CARLINGHOW.—Dec. 8.—For Construction of Mill Dam. Mr. Walter Hanstock, Architect, Branch Road, Batley.

CASTLEFORD.—For Supplying and Fixing Two 7-inch open Lift Pumps; also Boiler. Mr. H. H. Broadbent, Clerk to the Local Board, Castleford.

CROYDON.—Dec. 6.—For Erection of Iron Railings on Yard Walls at Workhouse. Mr. F. Webb, Surveyor, Coombe Road, Croydon.

DEWSBURY.—Dec. 3.—For Building Shop and Workshop, Tithebarn Street. Messrs. W & D. Thornton, Architects, Oates Street, Dewsbury.

DROGHEDA.—Dec 18.—For Erection of Bank Buildings for the Belfast Banking Company. Mr. P. J. Dodd, Architect, William Street, Drogheda; Mr. J. M'Dermott Bermingham, Surveyor, Royal Insurance Chambers, Dame Street, Dublin.

DUNDEE.—Dec. 4.—For Enlargement of Board School, Victoria Street. Mr. J. H. Langlands, Architect, 81 Murray Gate, Dundee.

DUNOON.—Dec. 11.—For Construction of Intake, By-wash Channel, &c., Filter and other Works. Mr. J. Collie, Burgh Surveyor, Dunoon.

EALING.—Dec. 13.—For Erection of Slipper Baths and other Buildings. Mr. Charles Jones, C.E., Local Board Offices, Ealing.

GALWAY.—Dec. 8.—For Additions to Claggan Coastguard Station. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

HASTINGS.—Dec. 8.—For Alterations and Additions (principally plumbing work) to Board Schools. Messrs. Elworthy & Son, Architects, 101 London Road, St. Leonards-on-Sea.

INDIA OFFICE.—Dec. 7.—For Carriage Ironwork and Ironwork for Bridges. The Director General of Stores, India Office, Whitehall, S.W.

ISLAND OF ARRAN.—Dec. 15.—For Constructing Timber Quay, Approach Road, &c., Loch Ranza. Messrs. Stevenson, C.E., 84 George Street, Edinburgh.

KINNERTON.—Dec. 18.—For Building Bridge over Sandy Lane Brook. Mr. W. Newton, Surveyor, Pentrobin, Buckley, Chester.

KIRKHAM.—Dec. 6.—For Building Goods Warehouse. Mr. Thomas H. Carr, Fleetwood.

LEEDS.—Dec. 3.—For Heating Chapel, Schoolroom and Vestries. Mr. S. L. Armatage, St. John's Grove, Leeds.

LONDON.—Dec. 6.—For Cast-iron Water Mains and Special Castings. The Engineer, Southwark and Vauxhall Water Company, Sumner Street, Southwark, S.E.

LONDON.—Dec. 16.—For Alterations and Additions to Old Workhouse and Infirmary, St. John's Hill, New Wandsworth. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

LONDON.—Dec. 16.—For Building Casual Wards adjoining New Workhouse, Wandsworth. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

NEWARK.—Dec. 6.—For Alterations at the Infirmary, Bowbridge Lane. Mr. W. Newton, Clerk to the Guardians, Union Offices, Middlegate, Newark.

NEWQUAY.—Dec. 4.—For Building Two Houses. Mr. F. Snell, Fore Street, Plymouth.

NORTH SUNDERLAND.—Dec. 8.—For Building Shop and Houses. Mr. George Reavell, jun., Architect, Bailiff Gate, Alnwick.

NOTTINGHAM.—Dec. 9.—For Cast-iron Socket and Spigot Gas Mains and Special Pipes during 1887. Mr. L. Wright, General Manager, Gas Offices, George Street, Nottingham.

ORMSKIRK.—Dec. 7.—For Building Brick Gasholder, Tank, and Sulphate House. Mr. J. Martin, Manager, Gas Offices, Ormskirk.

OTTERBOURNE.—Dec. 14.—For Building Seven Cottages. Mr. W. Matthews, Waterworks Engineer, Southampton.

PAIGNTON.—Dec. 8.—For Building Church. Mr. W. G. Couldrey, Architect, Paignton.

PONTYPRIDD.—Dec. 8.—For Galvanised Wrought-iron Ashbins for Street Purposes. Mr. E. C. Spickett, Clerk to the Rural Sanitary Authority, Pontypridd.

POPLAR.—Dec. 3.—For Enlargement of Postal Sorting Office. The Secretary, H.M. Office of Works, 12 Whitehall Place, S.W.

ROTHERHAM.—Dec. 11.—For Building Workhouse Infirmary. Mr. G. T. Barras, Clerk, Union Offices, 7 Howard Street, Rotherham.

SHEFFIELD.—Dec. 7.—For Cloak Rooms for Board Schools. Mr. J. F. Moss, Clerk to the School Board, Sheffield.

SMETHWICK.—Dec. 6.—For Building Corridor, &c., at Public Hall. Messrs. Harris, Martin & Harris, Architects, 119 Colmore Row, Birmingham.

SOUTHAMPTON.—Dec. 7.—For Enlargement of Sholing Girls' School. Mr. W. H. Mitchell, Architect, Portland Street, Southampton.

ST. HELENS.—Dec. 7.—For Cast-iron Pipes (800 tons). Mr. Gaskin, C.E., Town Hall, St. Helens.

STRATHPFEFFER.—Dec. 4.—For Building Dwelling-house. Mr. W. C. Joass, Architect, Dingwall.

STRATHSPEY.—Dec. 4.—For Additions and Alterations, Knockando House. Messrs. A. & W. Reid, Architects, Elgin.

THE LIZARD.—Dec. 10.—For Building Eight Coastguard Cottages at Cadgwith. The Director of Works Department, Admiralty, 21 Craven Street, Charing Cross, W.C.

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

TENDERS.

ABINGDON.

For Construction of Gas Works, with Plant, Abingdon.

R. Dempster & Son, Elland, Yorks	£8,656 0 0
R. Laidlaw & Son, Glasgow	8,490 0 0
T. Piggot & Co., Birmingham	8,239 0 0
R. & J. Dempster, Manchester	8,150 0 0
C. & W. Walker, London	8,130 0 0
S. CUTTER & SON, London (*accepted*)	7,759 0 0

Offices, Show-rooms, Manager's House, &c.

G. Chandler, London	£1,106 0 0
J. Wheeler & Son, Wantage	1,085 0 0
T. Barrett & Son, Abingdon	979 0 0
T. H. Kingerlee, Oxford	935 0 0
Brasher & Son, Wallingford	895 0 0
Wilkins & Son, Ensham	889 0 0
G. THATCHER, Abingdon (*accepted*)	740 0 0

BATLEY.

For Stable Buildings, Gardener's Cottage, Billiard-room, &c., Upper Batley, for Mr. M. Lobley. Mr. W. HANSTOCK, A.R.I.B.A., Branch Road, Batley.

Fothergill & Schofield, Batley Carr, joiner	£239 5 0
Jessop, Batley, plumber	46 14 0
Metcalf & Lockwood, Staincliffe, plasterer	35 1 5
Thornton, Heckmondwike	33 7 0

Masonry and brickwork independently.

BRADFORD.

For Building Sunday School and Classrooms, Holme Lane, near Bradford. Mr. S. ROBINSON, Architect, Tyrrel Street, Bradford.

S. Thornton, mason.
Wilkinson, joiner.
Booth & Son, plumber.
Wheater Bros., plasterer.
A. Hill, slater.
J. Wallace, painter.

BOURNEMOUTH.

For Building Shop Premises, Gervis Road, Bournemouth. Mr. H. E. HAWKER, M.S.A., Architect, Town Hall Chambers, Bournemouth.

W. Hoare	£2,179 0 0
McWilliam & Son	2,095 0 0
F. Hoare & Son	2,065 0 0
George & Harding	1,959 0 0
S. Brown	1,907 0 0
F. Walden	1,880 0 0
Jenkins & Son	1,859 0 0
Jones & Son	1,771 0 0
LUCAS & COSSER (*accepted*)	1,740 0 0

For Building Block of Offices, Gervis Road, Bournemouth. Mr. H. E. HAWKER, M.S.A., Architect.

Vine	£2,210 0 0
Lucas & Cosser	2,149 0 0
MANNELL (*accepted*)	1,910 0 0
Bevan	1,889 0 0

For Building Stables, Branksome Park, Bournemouth. Mr. H. E. HAWKER, M.S.A., Architect.

Lucas & Cosser	£541 0 0
McWILLIAM & SON (*accepted*)	492 0 0

CARDIFF.

For Fitting-up Bar in new Premises, Crwys Road, Cardiff. Mr. C. RIGG, Architect, 24 High Street, Cardiff.

W. GREEN, Cardiff (*accepted*).

DAWLISH.

For Sea Wall and Promenade to Bathing Cove, Dawlish. Mr. J. E. DELBRIDGE, Surveyor, Dawlish.

J. M'Kay, Bradford, Yorkshire	£3,954 6 8
W. Gibson, Exeter	3,883 0 0
Hill & Co., London	3,229 0 0
S. Friend, Dawlish	3,068 0 0
W. C. Hawking, Dawlish	2,445 0 0

	Concrete in Mass.	Concrete Blocks.
J. Pickthall, Yeovil	£2,599 0 0	£2,120 0 0
R. D. Early, Dawlish	2,549 0 0	2,249 0 0
Pickthall & Sons, Merthyr Tydfil	2,211 0 0	2,313 0 0
Hill & Co., Plymouth	2,149 0 0	2,644 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

FLAT BRICK FIRE-PROOF FLOORS.


LONDON, 1874.


LONGITUDINAL SECTION.


BRUSSELS, 1876.

THE BEST as well as the CHEAPEST Fire-proof Floors yet introduced. Their small cost makes them specially suitable for artisans dwellings, residential flats, offices, chambers, and private houses.

They are constructed with hard-burnt bricks, laid flat, and bonded on the upper face with tough concrete 3 inches thick; and by the method of laying all iron is protected from the action of fire.

Experiments show a resistance to load and impact greater than furnished by the ordinary concrete floors. No thrust is transmitted to the walls, as in all arched construction, the walls being tied in and strengthened.

The floors are practically noiseless, the different densities of the concrete, brick and plaster, with the air space above, intercepting the sound vibrations.

The brick soffit forms a capital key for the plaster, and no laths or counterceiling are necessary, but for high-class work wood blocks are introduced in the soffit, to which the ordinary lath and plastering or fibrous plaster is fixed This also provides a second air space, and furnishes the most perfect sound-resisting floors known.

They are not affected by water, acids, or alkalies, and they may be fixed during the progress of the building, thus dispensing with the use of internal scaffolding.

The concrete being tough instead of friable, the boarded finish may be nailed down without the use of sleeper joists. It is recommended to use an inch strip as a sleeper fillet. This will provide ventilation, and space for gas and water-pipes.

The depth of the finished floor is 6 to 9 inches only, and when the saving on this head is taken into account, the cost does not exceed that of the ordinary combustible timber floor of corresponding strength.

HOMAN & RODGERS,

Engineers and Patentees,

17 GRACECHURCH ST., LONDON, E.C., & 13 DAWSON ST., MANCHESTER.

WORKS: RATCLIFF, LONDON, E., & HULME IRONWORKS, MANCHESTER.

Homan's Patent Girders, Rolled Joists, Cast-iron Columns, Roofs, Bridges, and every kind of Constructional Ironwork.

London Telephone, No. 1,026. Registered Telegraphic Address—"HOMAN RODGERS, London" "NAMOH, Manchester."

DARENTH.

For Re-paving, Re-painting, Re-taping and Re-cording Venetian Blinds of Six Patients' Blocks, at the Asylum for Imbeciles, Darenth, Kent, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. HARSTON, Architects, 15 Leadenhall Street, E.C. Quantities supplied.

C. Willmott	£288	6	0
T. A. Bone	250	0	0
Fuller Bros.	217	2	6
F. G. Wenborn	195	11	0
Collyer & Son	194	15	0
C. J. Batstone	186	5	10
Suffling & Sons	186	0	0
W. J. Sandford	180	0	0
A. J. Shingleton	179	10	0
Gibbs, Flew & Co.	170	0	0
F. S. Smith	163	5	0
Tidmarsh & Sons	155	0	0
C. J. Shaw	152	0	0
W. Hitchcock	149	10	0
J. Hitchcock	145	0	0
J. Williams	140	0	0
F. Clarke	139	13	9
F. D. James & Son	139	0	0
W. Meredith & Son	135	0	0
D. Westlake	130	0	0
R. Saxby & Son	119	0	0
W. Furniss	119	0	0
SAXBY BROS., 40 Northcote Road, Clapham Junction (*accepted*)	108	10	0

DARLINGTON.

For Alterations and Additions to Gurney Pease Memorial Board Schools, Darlington, and Building Infant School. Mr. THOMAS W. ROBSON, Architect to the Darlington School Board. Quantities by Mr. H. T. Neilson, Darlington.

G. Marshall, brick, stone, plaster, and cement floor.
J. Hewitt, joiner work.
Emmerson & Smith, plumber and glazier.
T. Wanless, slating.
J. Law, painter.
Total, 1,093*l.* 7*s.* 7*d.*
All of Darlington.
Ventilation, heating, and gasfitting not included.

DUBLIN.

For Building Six Labourers' Cottages for the North Dublin Union. Mr. W. H. BYRNE, Architect, 22 Suffolk Street, Dublin.

R. Sexton, Kingstown	£635	0	0
M. MORAN, Dublin (*accepted*)	599	0	0

EASTBOURNE.

For Building Private School, Eastbourne, Sussex, for Mr. A. M. Wilkinson. Mr. F. G. COOKE, Architect, Trinity Chambers, Eastbourne. Quantities by Mr. C. Stanger, Surveyor, 21 Finsbury Pavement, London, E.C.

T. Peerless	£4,945	0	0
Harding	4,638	0	0
Langley	4,560	0	0
Wood	4,445	0	0
Cornwell	4,371	0	0
M. Martin	4,350	0	0
T. Martin	4,290	0	0
H. Noakes	4,176	0	0
Backhurst	4,014	0	0
Dore & Son	3,945	0	0

All of Eastbourne.

GODALMING.

For Additions, Alterations, and Repairs to Hurtmore Bottom, Godalming, for Mr. R. Burman. Mr. MERVYN EDWARD MACARTNEY, M.A., Architect, 52 Berkeley Square, W. Quantities by Messrs. Evans & Deacon, 1 Adelaide Street, Charing Cross, W.C.

R. Pink	£1,123	0	0
Foster & Dicksee	1,122	0	0
Maides & Harper	1,088	0	0
F. Milton	1,048	0	0

HUNSLET.

For Building Four Houses, Hunslet. Mr. W. H. BEEVERS Architect.

Accepted Tenders.

J. Pickard, Leeds, brickwork	£262	10	0
J. James, Hunslet, joiner	130	12	0
W. Holdsworth, Leeds, plasterer	34	0	0
S. E. Heavysides, Leeds, slater	21	0	0
J. Watson, Leeds, plumber	18	0	0

PHOTOGRAPHS
OF
ARCHITECTURE
In all parts of the world,
INCLUDING a NEW SERIES of DETAILS
From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.

Our magnificent Collection is always on view at our London Galleries,
24 OLD BOND STREET, W.,
Or Selections and Lists can be had by post from
WINCH BROTHERS, Colchester.
List Free.

PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY
MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.

SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
☞ *Legal and Commercial Stationery.*

CONTRACTS.
THE LONDON GUARANTEE & ACCIDENT COMPANY (Limited) issue Bonds as security on behalf of Contractors or Builders for the due performance of Government, Municipal, or other Contracts of every description, at moderate rates. On application, leave will be given to send in the Company's name as surety with any Tender, no charge being made unless the bond is ultimately required. For terms, &c., apply to the Office, 10 Moorgate Street, London, E.C.
The Bonds of this Company are accepted by the several Government Departments.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c.?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

WRIGHT & CO.'S PATENT FIREPROOF FIXING BLOCKS FOR WALLS AND FLOORS.
Awards 1886. "Certificate of Merit" from the Sanitary Institute of Great Britain at York. "Highly Commended" at the Firemen's Exhibition, Westminster Aquarium.
Improved fixing, sounder work, no extra cost. Extensively used for High Class Works by leading Architects, Engineers, Contractors, H.M. War Department, &c. Our new illustrated pamphlet, post free, containing full particulars, with numerous recent references, including opinions from Arthur W. Blomfield, Esq., M.A., F.R.I.B.A., J. Douglass Matthews, Esq., F.R.I.B.A., Colonel W. J. Stuart, Commanding R.E. Department, Chatham; Basil Champneys, Esq., B.A., R. J. Withers, Esq., and many other leading architects; also recommendations from practical clerks of works, well-known contractors, &c., who have always used our patent fixings with the greatest success.
WRIGHT & CO. 3 Westminster Chambers, Victoria Street, London, S.W.
Telegraphic Address: Fixing, London.
Works:—Gosport, Hants, and at Carnforth, Lancs.

BEST BLUE PENNANT STONE,
For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.
Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.
Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.

Wycombe Stone for Building, Pitching, Kerbing, &c.
We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.
Samples of either Stone and full particulars on application.
THOMAS FREE & SONS,
Naphill, High Wycombe.

THE NEW CHANDELIER.
PATENT SECRET BALANCE.
See "The Architect" of October 22, 1886, page 9.
Particulars free on application.
H. T. TALLACK, 28 Hatton Garden, London, E.C.

GRUNDY'S PATENT WARM-AIR VENTILATING FIRE GRATE.
The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.
TESTIMONIALS.
"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.
"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,
"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."
"6 John Street, Bedford Row, W.C.:
"December 16, 1885.
"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,
"R. S. LANDER, F.R.I.B.A.
"To Mr. John Grundy."
From James Garry, Esq., Architect, West Hartlepool, July 1884.
"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."
From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.
"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."
Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."
Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road London.—Works: TYLDESLEY, near Manchester.
Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmo Place, Edinburgh.

LEIGH.

For Construction of Sewer, Leigh, Rochford.

N. KEMP (*accepted*)	£125 0 0

LONDON.

For Building Engine-house, Boiler-house, Chimney Shaft, Workshop, Storesheds, and Works in connection therewith, at Pumping Station, Isle of Dogs, Poplar. Sir J. BAZALGETTE, Engineer.

B. G. Badham & Co.	£23,982 0 0
C. Wall	21,000 0 0
Kirk & Randall	18,122 0 0
Down	18,050 0 0
B. E. Nightingale	17,900 0 0
B. Cook & Co.	17,868 0 0
Brass & Son	17,400 0 0
W. Webster	17,345 0 0
Mowlem & Co.	16,666 0 0
PERRY & Co. (*accepted*)	16,100 0 0
Church & Co.	14,326 0 0

For Paving Carriageway (4,000 square yards approximately), Lambeth Road.

G. G. Rutty, Bromley-by-Bow	£2,666 13 4
Mowlem & Co., Millbank	2,500 0 0
E. & H. Beevers, Southwark	2,450 0 0
Turner & Son, Chelsea	2,433 6 8
BIGGS, Birmingham (*accepted*)	2,300 0 0

For Paving Carriageway, Swan Place, Old Kent Road (700 square yards).

Turner & Son, Chelsea	£218 15 0
Mowlem & Co., Millbank	210 0 0
E. & H. Beevers, Southwark	210 0 0
Biggs, Birmingham	192 10 0
HIRST, London, E.C. (*accepted*)	172 1 8

For Additional Playground, Board School, Southampton Street, Camberwell.

W. Oldrey & Co.	£344 0 0
J. Channon	340 0 0
J. Holloway	310 0 0
G. Bash	295 0 0
J. W. Roy	283 0 0
R. Mayo	259 0 0
T. Bendon	249 0 0
W. Johnson	248 0 0

LONDON—*continued.*

For Enlargement of Board School, Oldridge Road, Balham. Mr. T. J. BAILEY, Architect.

J. & C. Bower	£7,690 0 0
T. L. Green	7,613 0 0
J. Bentley	7,551 0 0
F. Higgs	7,548 0 0
H. Hart	7,438 0 0
Wall Bros.	7,437 0 0
Howell & Son	7,260 0 0
W. Downs	7,233 0 0
Stimpson & Co.	7,140 0 0
C. Wall	7,140 0 0
S. J. Jerrard	6,940 0 0
W. Johnson	6,800 0 0
J. Holloway	6,700 0 0

For Enlargement of Board School, Woolmore Street, Poplar. Mr. T. J. BAILEY, Architect.

J. Holland	£7,556 16 5
F. & F. J. Wood	7,445 0 0
W. Oldrey & Co.	7,294 0 0
H. L. Holloway	6,994 0 0
Wall Bros.	6,921 0 0
C. Cox	6,687 0 0
C. Wall	6,618 0 0
W. Johnson	6,567 0 0
Stimpson & Co.	6,453 0 0
Atherton & Latta	6,350 0 0
J. Holloway	6,344 0 0

For Building Shelter Shed at Board School, Harwood Road, Fulham.

G. Lyford	£295 0 0
C. Humphrey	248 18 6
A. Martin	240 0 0
C. Wall	232 0 0
H. Pickersgill	220 0 0
Webb & Rosser	209 0 0
Holden & Co.	199 10 0
J. Holloway	198 0 0
J. Channon	198 0 0
W. Oldrey & Co.	187 0 0
G. R. Earsdon	187 0 0
Cowley & Drake	166 0 0
W. Johnson	164 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper,
Drawing Paper, Sectional Paper,
Mounted Papers,
Continuous Papers, Pencils, Pens, &c.
&c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES
WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
CORSHAM DOWN, FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

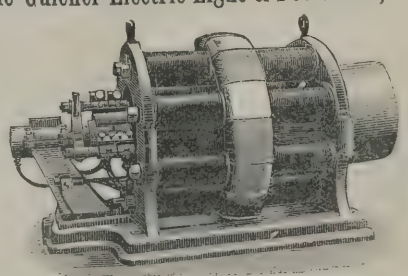
STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

SIMPLEX LEAD GLAZING
For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

PERMANENT EXHIBITION OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.



I. SUMSION, *Quarry Owner,*
MONK'S PARK
MP.
TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

The Gulcher Electric Light & Power Co., Ld.

GULCHER DYNAMO.
Electric Lighting by either Arc or Incandescent Lamps for Public Buildings, Factories, &c.
BATTERSEA FOUNDRY, LONDON, S.W.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

LONDON—*continued.*

For Building Board School, Dennett's Grove, Lambeth. Mr. T. J. BAILEY, Architect.

J. Bentley	£10,753 0 0
T. L. Green	10,208 0 0
J. & C. Bower	10,069 0 0
F. Johnson	9,696 0 0
F. Higgs	9,684 0 0
Kirk & Randall	9,444 0 0
Howell & Son	9,425 0 0
Wall Bros.	9,407 0 0
Stimpson & Co.	9,353 0 0
H. Hart	9,224 0 0
W. & F. Croaker	9,136 0 0
W. Downs	9,129 0 0
C. Cox	8,990 0 0
J. Holloway	8,970 0 0
W. Johnson	8,962 0 0
Atherton & Latta	8,900 0 0
S. J. Jerrard	8,839 0 0
H. L. Holloway	8,794 0 0
C. Wall	8,778 0 0

For Sundry Works at Haverstock Hill Board School.

W. Oldrey & Co.	£600 0 0
G. R. Earsdon	597 0 0
W. A. Rhodes	517 0 0
Wall Bros.	491 0 0
W. Johnson	473 0 0
Cowley & Drake	434 0 0

For Works to Board Schools.

Dalgleish Street.

J. Webb	£244 0 0
A. Martin	238 0 0
W. Oldrey & Co.	231 0 0

Aldenham Street.

Williams & Son	12 10 0
B. Curtis	8 14 0
W. Hornett	5 11 0

Tennyson Road.

J. Holloway	34 0 0
Holloway Bros.	32 10 0
H. Walkley	30 0 0
W. Johnson	28 0 0

Moreland Street.

E. H. Sargeant	£91 9 6
C. Dearing & Son	80 0 0
J. Grover & Son	78 0 0
T.W. Smith & Son	77 0 0
Pritchard & Son	73 0 0

Dalgleish Street.

B. E. Reed	36 1 6
J. Driscoll	32 10 6
Atherton & Latta	28 0 0
B. Curtis	21 7 0
J. T. Robey	21 0 0

LONDON—*continued.*

For Works to Board Schools.

Ben Jonson School.

F. & F. J. Wood	£198 0 0
Atherton & Latta	139 0 0
H. Vincent	124 0 0
T. Dowling	124 0 0
B. E. Reed	111 0 0
E. H. Sargeant	102 10 0
T. Cruwys	100 0 0
Davis Bros.	98 0 0
Troughton & Co.	95 5 0
N. Richards	93 0 0

Station Road.

Williams & Son	110 0 0
W. Goodman	99 15 0
Grover & Son	94 0 0
McCormick & Son	84 0 0
Pritchard & Son	78 0 0
Stevens Bros.	51 0 0

Garratt Lane.

Lathey Bros.	73 0 0
Richens & Mount	59 0 0
J. Holloway	57 10 0
W. Johnson	56 0 0
A. Boon	53 0 0
H. Walkley	49 0 0

Bonner Street.

F. & F. J. Wood	89 0 0
R. Poole	75 0 0
J. T. Robey	73 10 0
G. Flaxman	64 0 0
J. F. Sargeant	49 10 0
Tait & Co.	39 0 0

Creed Place.

Davis Bros.	51 10 0
J. H. Lyon	49 10 0
S. J. Jerrard	43 0 0
Holding & Son	34 10 0

Bowling Green Lane.

Dearing & Son	20 0 0
Grover & Son	19 10 0
Williams & Son	19 0 0
Pritchard & Son	15 0 0
B. Curtis	12 5 0

Essex Street.

Pritchard & Son	£81 9 0
H. L. Holloway	79 0 0
F. & F. Wood	78 0 0
McCormick & Son	69 0 0
Palmer & Co.	69 0 0
J. F. Sargeant	65 0 0
J. T. Robey	59 0 0
E. J. Coombe	59 0 0
Tait & Co.	49 0 0

Shepperton Road.

Grover & Son	39 0 0
T.W. Smith & Son	38 0 0
J. F. Sargeant	33 0 0
Dearing & Son	30 0 0
Pritchard & Son	25 2 6
B. Curtis	23 5 0

St. Clement's Road.

Pardoe & Son	18 10 0
W. Martin	16 18 0
W. Oldrey & Co.	16 16 6

Marlborough Street.

B. E. Nightingale	105 0 0
W. H. Castle	67 0 0
Knight & Walden	59 10 0
W. Hornett	58 0 0
Davis Bros.	53 0 0

Farrance Street.

B. E. Reed	16 9 0
Atherton & Latta	14 0 0
B. Curtis	10 13 0

Blackheath Road.

E. J. Pike	14 17 6
Manning & Co.	14 0 0
J. Thomas & Co.	11 7 0
Albion Iron and Wire Co.	10 0 0
Jeffrey & Co.	9 18 6

Cranbrook Road.

J. F. Sargeant	38 0 0
F. & F. Wood	31 0 0
C. Howard	28 14 9
B. Curtis	25 17 6

MAHOGANY & HARD WOODS.

ROBERT GARRARD & CO., 206 BETHNAL GREEN ROAD, LONDON, E.

Contractors to Railway and Rolling Stock Companies.

Large Stocks of thoroughly-seasoned Mahogany Teak, Wainscot Oak, and Walnut for Counter Tops, Handrails, Stair Treads, &c. Mahogany, Cedar, and Teak Panel Dry Pine, Whitewood, Ash, Birch, &c., in all thicknesses and widths. Prepared Flooring and Matching in Pitch Pine, Teak, Oak, &c.

LOGS, Mahogany, Teak, Walnut, Sawn and Hewn Pitch Pine, and other Log Timber, supplied in large or small quantities from Stocks kept at the Docks.

Telegraphic Address—"ACAJOU, LONDON."

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

IMPORTANT.—To Specialists, Manufacturers, and Others.

Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.

THE ARCHITECT AND CONTRACTOR'S COMPENDIUM

And Specialist's Directory for 1887.

EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.

An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, **the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory.** Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this **at a cost less than half that of sending out one circular.**

The minimum **guaranteed circulation** of the **Compendium** is 3,000 copies, but the actual circulation will probably reach a much higher figure.

Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent **Ink-Photo** process, specimens of which are to be seen weekly in *The Architect*. The **Compendium** will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, **without block**, from **any** drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.

An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.

Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridge Street, London, E.C.

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

MAIDENHEAD.

For Building Three Cottages, Cox Green, near Maidenhead. Mr. J. RICHARD DAVISON, Architect, Elmdale, Frances Road, Windsor. Quantities not supplied.

W. Gilroy, Maidenhead	£595 0 0
W. Woodbridge, Maidenhead	563 0 0
J. Blay, White Waltham	520 0 0
W. H. Vevers, Maidenhead	498 0 0
J. Martin, Maidenhead	496 0 0
Snell & Co., Maidenhead	445 0 0
E. Edwards, Maidenhead	410 0 0
R. BISHOP, Windsor (*accepted*)	358 0 0
J. Perryman, Old Windsor	325 0 0

PORTSMOUTH.

For High Altar and Baldachino in the Catholic Cathedral, for the Right Rev. Bishop Virtue, D.D. Mr. JOSEPH STANISLAUS HANSOM, F.R.I.B.A., Architect, 110 Palace Gardens Terrace, Kensington, W.

GEORGE PORTER, Chelsea (*accepted*)	£840 0 0

SOUTH SHIELDS.

For Alterations to House, No. 53 Green Street, South Shields, for Mr. James Kirkley. Mr. HENRY GRIEVES, A.R.I.B.A., Architect, South Shields.

R. Greaves, South Shields	£196 11 0
J. & W. Gilfillan, South Shields	190 0 0
D. Lawes, South Shields	190 0 0
E. Anderson, South Shields	185 16 5
W. Wilson, South Shields	185 0 0
S. SHERIFF, South Shields (*accepted*)	160 0 0

UXBRIDGE.

For Building Cart-shed and other Works at the Waterworks, Uxbridge Moor. Mr. GEORGE EVES, Architect, High Street, Uxbridge.

Ward, Uxbridge	£159 0 0
Hendy, Uxbridge	146 10 0
Kearly, Uxbridge	129 0 0
Wilson, Uxbridge	125 0 0
Hardy, Cowley	118 0 0
Briant, Uxbridge	114 5 0
White & Brooks, Southall	112 0 0

WEST HARTLEPOOL.

For Building House in Victoria Road, West Hartlepool. Mr. R. DUNIPACE, Architect, Central Hall, West Hartlepool.

Accepted Tenders.

H. Suggitt & Son, bricklayer and mason	£401 0 0
T. Beetham, joiner	290 0 0
Hardy & Longford, plumber, &c.	114 10 0
T. Cook, plasterer	108 0 0
G. & W. H. Carter, slater	49 0 0
T. W. Stokell, painter	18 0 0
Total	£980 10 0

Whole Tenders.

R. Watt, West Hartlepool	£1,163 16 0
J. Bulmer, Hartlepool	1,116 0 0
J. G. Robson, West Hartlepool	1,096 4 6
H. Suggitt & Son, West Hartlepool	1,020 0 0

TRADE NOTES.

MESSRS. WHEATLEY KIRK, PRICE & GOULTY will, on December 7, 8, and 9, sell by auction the valuable modern machinery and entire contents of the Alliance Engineering Works, at West Drayton, near Uxbridge, Middlesex, comprising the fixed and loose plant, finished brickmaking machinery and tools, stock, stores, &c. The leasehold premises are for disposal, and may be either purchased outright or rented on lease. The premises comprise over one acre of land subject to an annual ground rent of 33*l.*, and held for an unexpired term of thirty-two years. This includes the free use of the canal dock. Erected thereon are:—Substantial machine shop, 110 feet by 35 feet wide; foundries, smithy, pattern shop and stores offices, &c. The premises are held under two separate leases, which can be inspected at any time upon applying to the auctioneers. The situation is a very desirable one for residential purposes, and its proximity to London, together with favourable canal and railway communication, point it out as an economical and admirable place for any firm doing a London trade. Particulars may be obtained from Messrs Wheatley Kirk, Price & Goulty, 52 Queen Victoria Street London, E.C., or Albert Square, Manchester.

Equitable

One Premium returned every Fifth Year to those who have made no Claim.

FIRE INCOME (all Home Business) £66,778
FUNDS £98,969

ACCIDENT CO.
INCOME ... £21,264 | FUNDS ... £36,528

Fire & Accident Offices

ACCIDENT POLICIES, Free from vexatious conditions, and INSURING CAPITAL SUMS in the event of PERMANENT DISABLEMENT, as well as DEATH by Accident and Allowances during TEMPORARY DISABLEMENT, are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE GUARANTEE AND ACCIDENT COMPANY LIMITED.

FIRE POLICIES, COVERING DWELLING-HOUSES and HOUSEHOLD FURNITURE; FARM BUILDINGS and FARMING STOCK; SHOPS and STOCKS-IN-TRADE, CHURCHES, CHAPELS, and SCHOOLS, and all other risks of ordinary Hazard are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE FIRE INSURANCE COMPANY LIMITED.

For information as to Agencies, apply to the

SECRETARY, EQUITABLE OFFICES, 11 & 13 ST. ANN STREET, MANCHESTER,

Or to the RESIDENT SECRETARY at the various Branches:—

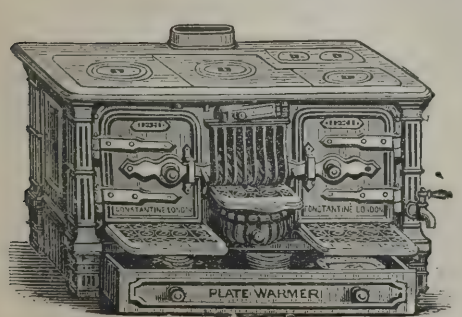
London ... ... 69 Lombard Street, E.C.
Glasgow ... ... 101 St. Vincent Street.
Birmingham ... ... Midland Buildings, 2 New Street.
Liverpool ... ... 11 Tithebarn Street.
Newcastle ... ... 1 St. Nicholas Buildings.
Belfast ... ... 6 Royal Avenue.
Dublin ... ... 18 Dame Street.

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S

PATENT "TREASURE"

COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

THE Consumers' Economic Water Softening and Purifying Company, Limited, notify that letters of allotment and regret will be posted on Friday next.

REDISCOVERY OF NUMIDIAN MARBLE.

ALL traces of the Numidian marble quarries were lost during the decline of the Roman empire, and lately rediscovered. These magnificent marbles are now coming into extensive use. It may, therefore, possibly interest our readers to have a short account of them, their different varieties, and a list of the buildings in ancient Rome in which they have been employed. This is derived from the report of the British Consul at Algiers, Colonel R. L. Playfair, as it is at once authoritative, exhaustive, and most interesting, supplementing it with some more recent details. Thirty-four kilomètres north-east of Oran, on the high road to the port of Argan, is the small village of Mefessour; a branch road to the north-west leads (two kilomètres) to the still smaller village of Kléber. Above this rises the imposing mountain called Djebel Oronsse on the maps, a corruption no doubt of Djebel Er-Roos, "Mountain of the Capes," but generally called by the colonists "Montagne Grise," from its arid, grey appearance. This chain of hills, the highest point of which is about 2,000 feet above the sea, stretches in a north-easterly direction from Cape Aiguillo on the west to Cape Carbon on the east, and includes Cape Ferrat, nearer to the latter than to the former. These have no doubt given the mountain its Arabic name. The central part of the range forms an elevated plateau, almost perfectly level, with a superficies of 1,500 or 2,000 acres; it has hardly any soil or vegetation—nothing, in fact, to hide from the most superficial observer that it is an uninterrupted mass of marble and breccia, the largest and the finest, perhaps that the world contains. This is, indeed, none other than the celebrated Marmor Numidicum, so highly prized in ancient Rome. These immense quarries were the exclusive appanage of the Roman emperors, and their actual locality was kept a profound secret by the massacre of the slaves employed to extract the marbles, and at last was entirely lost sight of in the troubles which followed in the decline and fall of the Roman empire. The name implies that it was found in North Africa, but it is also misleading, and, till the discovery of Signor del Monte, some were tempted to search for it rather within the limits of the ancient Numidia than in this remote corner of Mauritania Setefensis. Signor del Monte belongs to a family which has for generations been employed in the extraction of marble at Carrara. Being without fortune, he came to Algeria in his youth, shortly after the conquest of that country by the French. Signor del Monte has obtained a concession of this mountain for a long series of years, and on very favourable terms, and in addition to his freehold he has also obtained all the land round about in which there is any chance of marble being found, so that the entire acquisition amounts to 14,000 acres, and this avoids the possibility of competition. The whole of this immense area is one uninterrupted mass of marble and breccia. All over the surface may be seen depressions, showing where the ancients have been at work, thus marking the sites of the Roman quarries, and these to a great extent indicate the position of the different varieties.

ART IN TEXTILE DESIGN.

A SERIES of lectures arranged by the Textile Industries Committee of the Yorkshire College on "Art in Design," was begun on Wednesday in the chemical theatre of the college, by Mr. Lewis F. Day, Cantor Lecturer to the Society of Arts. The subject was "The Anatomy of Pattern," and those which are to follow deal with the distribution of ornamental design, the fitness of ornament, and the study of design. The series has been arranged with the object of extending a knowledge of fine art among the students of the weaving and designing school, in connection with which classes for drawing are also to be established. Mr. Day's lectures come as an introduction to the course.

Mr. Day said that pattern came of repetition. Many a pattern bore on the very face of it evidence that it had grown out of the necessity of repetition. They saw this very plainly in the chequer, which was the product of plaiting; in the lozenge or diamond pattern, which was anticipated in the meshes of the simplest form of netting; in the herring-bone or zigzag, which was derived from basket-work. Even the elaborate interlacing ornament of Arab art was based upon an arrangement of cross lines very much as might be seen in the common cane-bottom chair. It was more than probable that some mechanical necessity gave rise to all geometric pattern. Certainly it was impossible to plait, net, knit, weave, or otherwise mechanically make without producing pattern. It might be so

E. LOFTS, Patentee & Manufacturer,

Hills Road, CAMBRIDGE. London Show-rooms, 165 Queen Victoria St. E.C.,

OPEN FIREPLACES

FOR

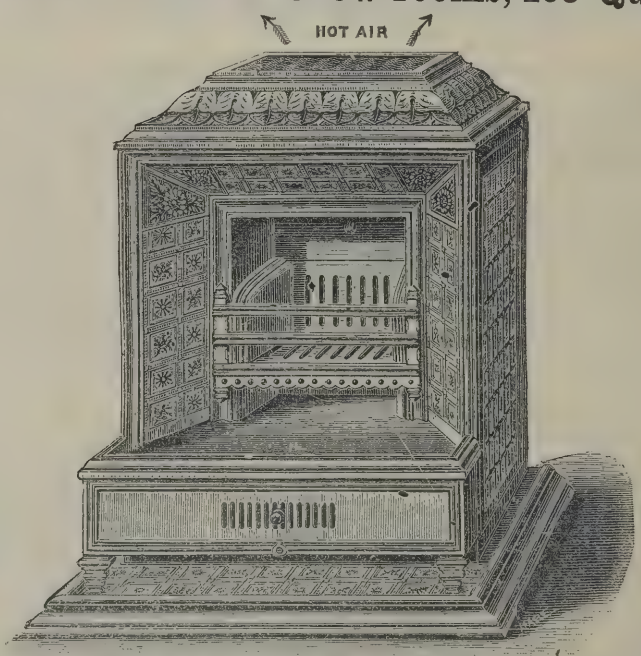
DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES,



HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS, &c., &c.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Stove.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort, they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; **consume their own smoke**; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge

small, as it often was in weaving, that the warp and the weft were invisible to the naked eye, but it was there, and all that remained was to efface it as much as possible, and to make the best of it. Out of the determination to make the best of it had grown much of the most beautiful pattern work. To neglect this course of inspiration, therefore, to say nothing of the attempt to suppress it, would seem to be wasteful to the last degree. The very repetition of parts produced pattern, so much so that wherever there was ordered repetition there was pattern. Any form repeated at regular intervals produced a pattern as surely as the recurrence of sounds would create rhythm or cadence. The distribution of the parts need not be regular. The wave marks on the sand, the veins of marble, the grain of wood, the crystallisation of the breath on the window pane, the very features of the human face resolved themselves into pattern.

There was room for speculation whether, with a view of escaping this danger, or anticipating it rather, the designer first took to the deliberate use of those masks and grotesque heads which form so prominent a feature in ornamental design. The popular idea of the process of ornamental design was that the artist had only to sit down before a piece of paper, and, spider-like, spin out the fancies that might crowd his fertile imagination. Indeed, there was scope in design for all his fancy; but he was no Zeus that ornament should spring, Minerva-like, full-grown from his brain.

Ornament was patiently built up on lines inevitable to its consistency—lines so simple that to the expert it was not difficult to lay bare its very skeleton, and to classify the pattern work according to its structure; to show affinity between groups to all appearance dissimilar, and, indeed, to point out how few were the varieties of skeleton upon which all the variety of effect was framed. For a man to make a repeating pattern without regard to its logical construction—as though in his domain there should be no skeletons—would be, from his (the lecturer's) point of view, a profoundly foolish thing; but, more than that, it was impossible. He might design a unit in which there was no repetition and no formality, but, the moment he repeated the unit, the very order of its repetition proved to be the cupboard, if he might say so, in which the skeleton would be found. It might be imagined that by designing in some such haphazard fashion the artist would secure to his design a freedom of line and an absence of formality not readily obtained by adopting the more systematic method; but this was not by any means so. If a design were above the level of insignificance, there must be in it some dominant feature, which, when many times repeated, would appear more prominent than ever. It was to these features that the eye would be irresistibly drawn; it was the lines they took in relation one to another which would assert themselves. If lines had not been taken into consideration, it was not to be expected that they should come out satisfactorily, and as a matter of experience they always came out awry. All must have suffered more or less from wall-paper and other patterns in which certain ill-defined but awkward stripes impressed themselves upon them, and they might have imagined that this effect of stripes came from working upon vertical, horizontal, or diagonal lines. But it was much more likely the result of not working upon definite lines at all. A designer who knew his business would make sure of lines not in themselves offensive, and would also counteract a tendency to stripes in one direction by features diverting the attention otherwards, and would so clothe any doubtful line that there would be no fear of it asserting itself, as in its nakedness it might—he saw the danger, and was forewarned against it. The mighty man of valour who disdained to be trammelled by any such incumbrance was without defence against contingencies practically certain to arrive. The overwhelming odds were that the petty considerations he had despised would be quite enough to wreck any venture he had dared in defiance of them.

Since, then, it was practically inevitable that there should be definite lines in ornamental design, seeing that if they did not arrange for them they arranged themselves, it was the merest common sense to lay down those lines to begin with, and, in fact, to make them the skeleton or framework upon which they built up their pattern. The lecturer then proceeded to "dissect" certain designs shown, and explained the extensive use to which certain lines might by modification and variety be put, and in the course of his observations said that probably the vast order of patterns constructed upon cross-lines was the first in point of time, as it arose inevitably out of the very primitive art of plaiting. They had not done away with construction when they had succeeded in keeping the scaffolding out of sight. It was the equilateral triangle which was the most useful factor in design. Once they had the equilateral triangle they had only to group the units to get the hexagon (a group of six triangles), the star (a group of twelve), and other shapes. Their scope was thus immensely widened, they having the basis of an infinity of geometric patterns, such as were found in Byzantine mosaic work and in

ASCHERBERG PIANOS,

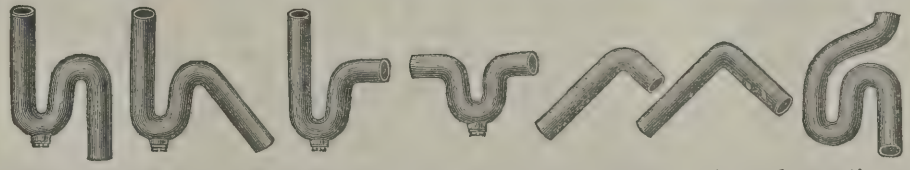
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS. PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING, No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET, KING'S CROSS, W.C.

its Moresque derivatives. The octagon was not a unit which would of itself form a diaper, as the hexagon would; it was only in connection with the square, diamond, or other four-sided figure that it would repeat. Nevertheless, this new series gave varieties of radiated patterns, as witness the elaborate interlacings of the Arabs, all of which, even the most magnificent, were closely related to the seat of a common cane-bottomed chair. In certain Arab patterns where this ultra-elaboration of lines was employed, it appeared almost as if a new principle had been introduced, but upon analysis the designs resolved themselves into the elements already referred to. Pentagons formed a very respectable diaper, especially if enriched with five-pointed stars. Shapes of any kind might be put together to form a pattern, but the lines on which they were arranged or into which they faced must be those laid down, which were, indeed, the basis of all possible pattern.

For further variety in design they must resort to the circle, but it, however, must be struck from centres corresponding to the points of intersection of lines such as had been described; and in so far it was only one of the innumerable arbitrary shapes that must be so arranged. Whether the idea of flowing forms first grew out of the circle was of no great consequence. It was more than probable than instinct preceded geometric principles. Many of the common flowing patterns might be deduced from angular motives. However, the circle was familiar to man from the moment he first saw the sun or moon as discs in the sky, and the first pattern traced by man's hand may have consisted of circles. The circle with its segment, the curve and its compound the spiral, assumed extreme importance when they came to the consideration of the scroll. Having shown how the combination of straight lines and curves would do so much for the designer, he said that the Japanese sometimes went so far as to interrupt the pattern, wiping out a bit here and there, and thus anticipating the softening effect that age might impart. The basis of all repeated patterns was geometric, and it was therefore essential that the designer should be acquainted with simple geometric principles, as it was that a figure draughtsman should have some knowledge of superficial anatomy. The designer had not merely to invent pretty patterns, but such as could be conveniently worked. The lines mapped out for him by the conditions of his work were in most instances not just those which beauty had decreed. It was very unsafe to dogmatise as to the origin of a pattern, as there were always so many ways in which it might have been suggested. All things considered, the most useful skeleton to work upon was the diamond. It was on the basis of the diamond that "drop" patterns were most readily designed. The "drop" was a design by means of which the designer was enabled without reducing the scale of his work to minimise the danger of unforeseen horizontal stripes, a danger which was imminent when repeats occurred always side by side on the same level. It was only by experience that a designer learned to know what might or might not be done within given lines. Many a notion turned out to be practically quite unamenable to the conditions under which the craftsman worked. Yet there was relief in the very variety of the efforts expected, and in the presence of difficulties ingenuity was excited. A designer must have pugnacity and enjoy tackling a tough problem. A man proved himself a designer, not because he had somehow arrived at a design, but inasmuch as out of unpromising material and untoward circumstances he could shape a thing of beauty.

THE LIVERPOOL EXHIBITION.

A REPORT on the late Liverpool Exhibition has been sent to the guarantors from the executive council. According to it the total amount received from all sources was 131,000*l.* It is anticipated that the deficit will be over 15,000*l.*, exclusive of certain contingent claims from building contractors. The chief causes of so large a deficit are ascribed to the unexpectedly increased cost of dealing with the difficulties of the site and in the important fact that the area of the building was enlarged, by the addition of the machinery annexe and the concert-room, from about 32,000 square yards, as at first intended, to nearly 47,000. There was further much additional expense caused by the great delay in the work of levelling the land, undertaken by the Corporation, and numerous details of expenditure brought about by the extended character of the Exhibition. In spite of the want of financial success, the executive council consider that the results of the Exhibition, as such, have been so satisfactory that it would be a matter of regret to entirely abandon the building, and they therefore requested the honorary secretaries, in conjunction with Mr. G. Gordon Hake, the general superintendent, to prepare a report embodying a scheme for another Exhibition, if it should be determined to hold one. This report shows that instead of a capital expenditure of

ELECTRIC LIGHTING!

The Thomson-Houston System of Arc Lighting,
The Edison-Swan System of Incandescent Lighting,
} GOLD MEDAL Awarded—
International Inventions Exhibition, 1885.
Edinburgh Exhibition, 1886.

ESTIMATES FREE ON APPLICATION TO

LAING, WHARTON & DOWN,

8 & 9 HOLBORN VIADUCT, and 110 & 111 SAFFRON HILL, LONDON, ENGLAND.

VOLUME XXXV. OF THE ARCHITECT.

HANDSOMELY BOUND IN CLOTH, GILT LETTERED. Price 12s. 6d.

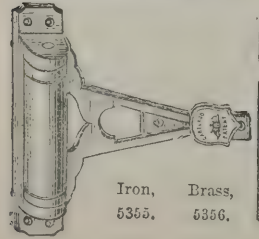
OFFICE: 175 STRAND, LONDON, W.C.

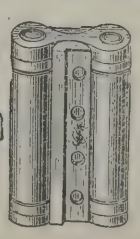
MELBOURNE INTERNATIONAL EXHIBITION, 1880, THE GOLD MEDAL
In addition to FIRST-CLASS HONOURS, was awarded to

JAMES CARTLAND & SONS,

Cabinet Builders and Naval Brass Founders,
BIRMINGHAM.
London Show-rooms: 40 Holborn Viaduct, E.C.
The extent, variety, quality, and finish of articles manufactured at this establishment cannot be excelled.

CARTLAND'S PATENT HELICAL, CLIMAX DOOR SPRINGS & HINGES


Iron, 5355. Brass, 5356.

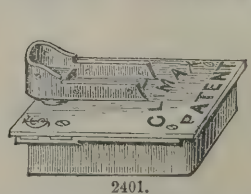

DOUBLE ACTION, Iron, 5353. Brass, 5354.

CAUTION.

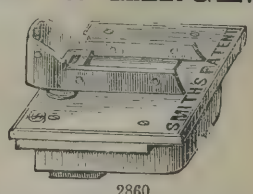
Ironmongers, Builders, and others are requested to see that the Trade Mark is on each Spring, as the Patentees are informed that spurious imitations of the

"CLIMAX SPRING HINGES"

are being sold, which have neither the Power or Durability of Cartland's Patent Climax Door Springs and Hinges.



2401.



2860

Pattern Books, both full size and Miniature, containing every information, may be obtained through any Merchant or Factor on application. All Goods for Export are carefully packed in Cartoon Boxes, and distinctly labelled with orange-coloured labels, bearing our Trade Mark as above.

86,000*l.*, incurred this year, it would probably not be necessary to spend more than 25,000*l.* at the most on the same account another year. The honorary secretaries and superintendent in their report recommend the holding of an Exhibition for two reasons, viz., in order to take advantage of the capital expenditure already incurred, and in order to provide means for celebrating the Jubilee year in Liverpool. It is, therefore, proposed to make the Exhibition at once local and imperial.

Among the features contemplated are a collection illustrative of engineering and mechanical science since Her Majesty's accession, as applied to practical purposes, laying down as a principle that the exhibits would be typical ones, and affording to exhibitors such accommodation in the way of space as they have not been able to obtain in former exhibitions, the object being to secure a comparatively small number of really representative exhibits rather than a great number of small ones. It is also proposed to have an Emigration Court, in order to introduce colonial works, and another illustrative of war.

To impart a local character, it is suggested that a large section might be appropriated to Liverpool tradesmen. Special character might possibly be given to this section by constructing a street inside the building, the houses in which might illustrate the progress of street architecture in Queen Victoria's reign, while the shops below would be available for ordinary business purposes. In view of the fact that the remainder of the Exhibition would be made up of loan collections, the result would be that no other sales whatever would be made, and this rule should be absolutely adhered to. By these means, the objection to the Exhibition on the ground of encouragement given to dealers from abroad and from a distance, to the prejudice of local tradesmen, would be entirely removed.

There should be no foreign section whatever. In its stead there might be a section devoted to Lancashire relics, illustrative of the history and archæology of the county. There are rich stores from which to draw such a collection, never yet, we believe, brought together.

It is proposed to erect an old Lancashire village against the three sides of the building in the lower gardens, consisting of typical reproductions taken from the old towns and villages in the county, the whole of the centre space being laid out so as to form a broad promenade, in the centre of which would be reproductions of two old market-places. The letting of shops in the old village to Liverpool tradesmen would more an cover the cost of the erection, and it would be proposed to sell nothing in them except fruits, ices, flowers, and suitable merchandise.

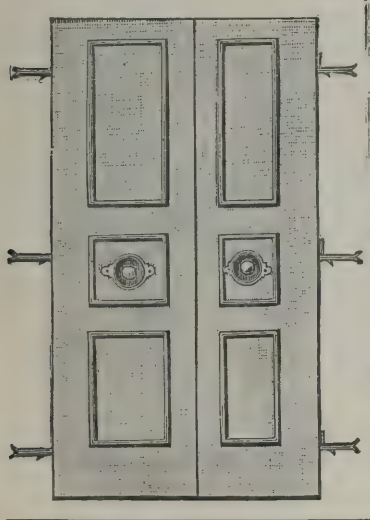
The gardens would be improved, and the latest arrangements introduced for the display of the electric light and fountains. The committee consider that the Exhibition would not interfere with the one to be held in Manchester. A *pro forma* balance-sheet of the contemplated Exhibition is made out, in which the receipts are put down at 134,773*l.*, and the outlay and contingencies at 80,300*l.*, leaving an estimated surplus of 54,473*l.*

The principal guarantors appear to be favourable to the proposed Exhibition, but as there are over eight hundred to be consulted some days must elapse before there is a decision. Mr. Ellis Lever, of Manchester, has offered to become a guarantor to the extent of 1,000*l.*, provided a section is reserved for exhibits of every kind of invention, appliance, and apparatus having for their object the prevention of accidents and the saving of human life on land or water and in mines.

At the meeting of the Liverpool Town Council on Tuesday, the Council, however, decided to inform the guarantors that they cannot assent to the holding of another Exhibition.

THE ROYAL ALBERT HALL.

A SPECIAL meeting of the Royal Albert Hall Corporation was held in the west theatre of the hall on Tuesday, to consider the draft of the supplemental charter for which an application is to be made to Her Majesty. Mr. H. C. Rothery presided, and there was a large attendance. The Chairman stated that until the previous night he had been under the impression that there was to be strong opposition to the supplemental charter. Their annual income at present was only 1,500*l.*, while 5,500*l.* was required for the ordinary expenses, the difference of these two sums being obtained by the seat rate (2*l.* per seat). There were no funds with which to meet any extraordinary expenses, and the stringency of the existing charter prevented the Council from accepting offers which would provide them with funds and enable them to do all that they wanted to do for the corporation and the seatholders. The changes proposed by the Council were therefore necessary. By the courtesy of Mr. Murdoch and Colonel Prendergast he had become acquainted with the general tenour of their amendments. Having carefully looked into them, he thought they contained scarcely anything which the Council would not accept. They thought it



WALTER JONES,

MAGNET WHARF, BOW BRIDGE, E.,

MANUFACTURES EVERY DESCRIPTION OF

WROUGHT-IRON FIRE-PROOF DOORS, FLOORS,

GALVANISED SHEETED DOORS,

WROUGHT-IRON GATES, SASH RAILING AND HEAVY FORGINGS.

APPLY FOR PRICES.



COLES, STEWART & CO.,

STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

undesirable to go into the history of the seat rate, no new powers being asked for in the supplemental charter in connection with that matter. The next amendment was on the 9th clause, which related to the acquisition by the Corporation of land belonging to the Commissioners for the Exhibition of 1851, and of the conservatory and other buildings thereon, and provided that the hall and premises might be appropriated to public and private meetings, theatrical entertainments, concerts, balls, or any other entertainments for the amusement and recreation of the people, and any other similar use approved by the Council and assented to by the president. Objection was taken to the introduction of the word "theatrical." It seemed to be thought that the Council were going to convert the Albert Hall into a theatre, but it was only proposed to adapt the two small theatres for such purposes. By the next amendment it was proposed to omit subsection 3 of clause 10. That clause authorised the Council—(1) to let the hall and premises for any of the purposes sanctioned by the proposed charter; (2) to arrange with individual members of the corporation for the exchange, purchase, renting, or temporary user of their boxes or seats; and (3) to make arrangements for the application of profits arising from the hall, &c. The Council were disposed to concur in the objection to the last section that it savoured too much of speculation. What, however, they wanted was simply to have the power of applying any money resulting from the extended use of the hall and premises towards embellishing them. Clause 11 provided that the corporation in general meeting, might, by resolution, empower the Council to exclude the members of the corporation for a number of days not exceeding ten in any one year from the hall and premises when used for private meetings or entertainments. He did not understand that the clause was objected to, but that further explanation was required. Well, they could not ask any one to hire the hall for a large sum of money, say for a supper or a ball, if there was the risk of 600 or 700 persons coming in to participate in either free. The Council therefore asked for the power to exclude the seatholders on those special occasions. He concluded by moving a resolution for agreeing to the draft charter, and giving effect to the amendments mentioned.

A protracted discussion followed, in the course of which Mr. Murdoch said he thought an effort might be made to reduce the expenses. The hall would certainly be made more popular, but the confidence of the seatholders had been greatly shaken by the action of one of the members of the Council, if not more, it having been suggested that the place might be turned into a music-hall, with drinking bars all over the place. With regard to letting the hall for balls, great care would have to be exercised by the Council as to the character of the balls.

Colonel Prendergast strongly dissented to the place being used for any of the purposes of a music-hall.

The Chairman said that the Council had never had any such idea.

Ultimately, the clauses of the charter having been dealt with *seriatim*, and various amendments discussed, clause 9 was amended by prohibiting any part of the premises from being let for political meetings or the large hall for theatrical representations, and clause 10 was amended by striking out sub-section 3. The draft charter was then approved, with a few dissentients.

EXPORT DUTIES ON TIMBER IN FINLAND.

THE following modifications, according to the *Moniteur Belge* of October 18 last, have been introduced into the Customs regulations and tariff of Finland:—

By a decree of June 19 last, customs dues levied upon the export of sawn wood have also been applied to the following articles, and will remain in force until the end of the year 1890:—

Planks, joists, battens, and other sawn wood at least 6 feet in length, $1\frac{1}{5}$ penni per Finnish cubic foot, or, if the exportation consists of a full cargo, 1 marc per ton register.

Sawn pieces of wood of a length not exceeding 6 feet, $\frac{1}{2}$ penni per cubic foot, or, if the exportation is by sea, 50 pennis per ton register for complete cargoes.

The following timber will continue to be free from duty:—

Firewood and other timber simply sawn.

Splints which do not exceed 3 inches in width and 2 inches in thickness.

Pieces of planks and joists not exceeding 2 feet in length.

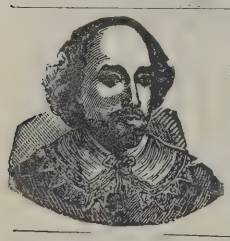
Beams, sawn blocks, wood for building, poles, and other common wood, at least 6 feet in length, $1\frac{1}{5}$ penni per cubic foot, and other similar wood, at least 6 feet in length, $\frac{1}{2}$ penni per cubic foot.

Telegraph poles, sleepers, lathwood, pit-props, hand-levers, hand-spikes, &c., are to be free of duty.

For squared wood the cubic contents will be calculated

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



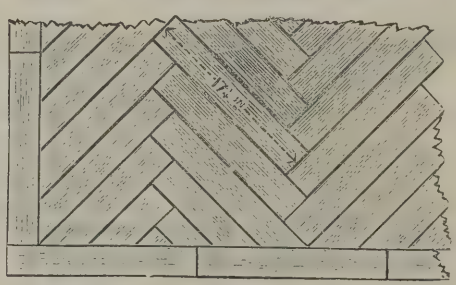
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,
TRADE W MARK
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11s. 6d. per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month Sample of 10 blocks sent on receipt of 1s. 7d. in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1¼×4½ Dry Wainscot Oak, 51s. 9d. per square; 1×4½ ditto, 45s.; 1¼×4 Pitch Pine, 26s. 6d.; 1×4 ditto, 22s 9d. IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmill:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone 3,188
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings Deals, &c.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.
Office: 175 Strand, London, W.C.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

according to the mean length, breadth, and thickness, and for rounded wood the length and the diameter of the cut end, including the bark. If there is any difficulty resulting from the adoption of such a method of calculation, the dues must be charged and collected according to the measurement given by the exporter and confirmed by the bill of lading.

THE WENHAM COMPANY.

THE WENHAM COMPANY, Limited, have just issued a revised complete catalogue or illustrated price list of the Wenham patent lamps. These lamps have for their object the production of a pure, brilliant, and economic light by a new system of burning coal gas, in which the illuminating power is enormously increased without the aid of enriching materials. Another noteworthy advantage is that the Wenham lamp sheds its light all around and downwards, unobstructedly, the flame being below all opaque fittings. The principal advantages of the Wenham system, summed up, are :—Great economy in consumption of gas, great purity, intensity and steadiness of light, absence of downward shadow, security against fires, being recommended by insurance companies, and, lastly, they can be used as ventilating lights. As to economy in consumption of gas, it is needless to say that gas bills are no trifling part of the yearly expenditure, and anything that will lessen this expense is a great boon ; and this is the more acceptable seeing that so brilliant an increase of light accompanies the decrease in consumption of gas, or, in other words, the lessened amount of the gas bill. In the testimonials selected as examples of many received by the company, the writers, who have the Wenham lamps in use, note with satisfaction the excellence of the light and the great economy in consumption of gas ; and at the Duval restaurant of Messrs. Spiers & Pond, where the Wenham lamps have been substituted for electric light, the secretary, Mr. A. M. Lloyd, writes that by the adoption of the Wenham patent ventilating gas lamps in place of the electric light, they have obtained as good a light at a greatly reduced cost, and have also improved the ventilation. Further, as to consumption and illumination, there are the tests by Professor Foster, M.A., &c., Lecturer on Chemistry and Physics at Middlesex Hospital, formerly Gas Examiner to the Metropolitan Board of Works, and by Dr. Wallace, Ph.D., &c., Gas Examiner to the City of Glasgow, which are given in detail.

No comment is required on such advantages as are derived from the absence of downcast shadows and from security afforded from fire risks. Anything will be welcomed that will prove a safeguard against the risks incidental to systems of lighting. As to the advantage of the gas lamps in regard of ventilation, and as to the deleterious effects of ordinary gas-lighting on health, also to property, through damage to decoration, works of art, &c.—hardly too much can be said. Gas-lighting, there can be no doubt, is most undesirable unless the products of combustion are eliminated, and absolute immunity from a most insanitary and destructive evil secured. Furthermore, the elimination of these injurious products will also set in action a system of ventilation that necessarily insures a sweet and healthy atmosphere by carrying off all vitiated air.

Before examining in detail the long list of lamps in various styles and differences in detail, which fit them for all uses, from what may be called everyday purposes up to the larger and more elaborate requirements, one or two examples may be described as typical of the system forming the distinctive features of the patent gas lamps. Thus the Wenham patent ventilating gas lamps are designed to secure a pure atmosphere without heat or smoke, with a brilliant light superseding those of sun-burners, and keeping the upper stratum of air below the ceiling as pure as in any other part of the room. A No. 1 lamp, consuming from 6 feet to 8 feet of gas per hour, will efficiently light a room 15 feet by 15 feet; No. 2, from 9 feet to 11 feet of gas, a room 20 feet by 20 feet ; No. 3, from 12 feet to 14 feet of gas, a room 24 feet by 24 feet ; and No. 4, using from 20 feet to 24 feet of gas, one of 30 feet by 30 feet. The following is descriptive of the section on next page :—

A is an iron ceiling box to fix between the joists. B is the exit pipe or chimney of lamp delivering the products of combustion into the iron box A. D is gas supply. C is a flue pipe made of sheet iron leading into a chimney or vertical shaft. E is a packing of non-conducting material to prevent any radiation of heat from the pipe or box (silicate cotton answers the purpose well, and is easily applied). By this system only a single flue pipe need be used, which can be fixed at a small cost.

If it is not practicable to get a pipe from centre of ceiling into a chimney owing to the joists crossing, a pipe may be conveyed under the ceiling and covered by an ornamental zinc moulding, a "dummy" moulding on the other side being added for the sake of symmetry, if desired.

All the ventilating lamps are made with separate supply for

FIRE BRICKS.
E. BOWEN, Fire Brick Manufacturer, Stourbridge.
Manufacturer of Best Stourbridge Fire Bricks, and Cement Fire Clay, Gas Retorts, Muffles, &c. Fire Bricks and Blocks for the Highest Heats, for Iron Blast Furnaces, Forge, Rolling, Puddling and Steel Furnaces, Pottery, Bottle, and Flint Glass Furnaces, Roasting and Refining Furnaces, Chemical Works, Coke Ovens, &c., Boiler Seating Blocks, Flue Covers, Locomotive Bricks, Tuyères, Steel Runners, Grate Backs.
Special Sizes and Shapes made to Engineers' Drawings.
Prices Quoted to any Port or Railway Station.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

GLAZED BRICKS.
OATES & GREEN, Halifax.
GLAZED BRICKS (White and Coloured), Special Salt Glazed Bricks, Sanitary Tubes, Glazed Earthenware Sinks, Cattle, Sheep, and Pig Troughs Horse Mangers, Patent Automatic Trough Closet, Patent Flush Tank, Channelling for Stables and Yards, Salt Glazed Bricks for Stables Sewers, &c. Ventilating Bricks, Patent Ventilating Gullies and Traps, Garden Edging, Patent Chimney Pots and cure for Down Draughts, Patent Drain-Cleaning Rods.
Six Prize Medals. Copies of Testimonials sent if required.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

BLUE BRICKS.
THE KETLEY BRICK COMPANY,
MANUFACTURERS OF STAFFORDSHIRE BLUE BRICKS,
Kingswinford, near Dudley, Staffordshire.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

DRAIN PIPES.
Lime, Cement, Bricks, Slates, Laths, Hair, Sand, Plaster, Stable Paving Bricks, Wall Copings, Channel Bricks, Blue and Red Ridges, Red Plain Tiles and Pan Tiles, Closet Pans and Traps, Drain Pipes Bends, Junctions, &c., all sizes, Chimney Pots, Red and White, Fire Bricks, Lumps, Tiles, Fire Clay. Prices on Application.
R. CULL & SON'S STORES,
RAILWAY ARCHES,
Corner of LONDON ST., & BRADY ST.,
Near BETHNAL GREEN STATION.
CHIEF OFFICE :—72 PALMERSTON BUILDINGS, OLD BROAD STREET, E.C.

G. BARKER and CO. Established 1863.—
The BANK, No. 35 Mark Lane, London.
Current accounts. Special advantages.
Deposits received at the following rates :—
3½ per cent. on demand.
4 per cent. seven days' notice.
4½ per cent. fourteen days' notice.
5 per cent. thirty days' notice.
6 per cent. three months' notice.
Interest payable quarterly Extra bonus for 12 complete months. Pamphlet and further particulars on application.

EDWARD SMITH & CO
MAKERS OF EVERY DESCRIPTION OF PLAIN AND ORNAMENTAL FLOOR AND WALL TILES : MOSAICS :
E S C
EMBOSSED AND INCISED TILES, ETC., RED & WHITE TERRA-COTTA PRESSED BRICKS, ETC., ETC., ETC.
COALVILLE. LEICESTERSHIRE.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES :
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices : 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.

LIGHTNING CONDUCTORS
W. H. BAILEY & CO.,
Albion Works, Salford, Manchester.
MAKERS OF BAILEY'S TURRET CLOCKS.

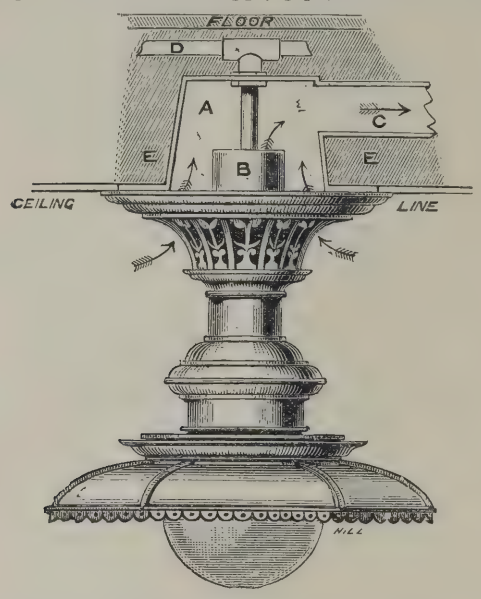
E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS,
COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

VOLUME XXXV. OF THE ARCHITECT.
handsomely bound in Cloth, Gilt Lettered, price 12s. 6d.
Office : 175 Strand, London, W.C.

a flash jet or pilot light, the advantage of which is that great economy is gained, and the lamp is always ready for use, as the flash jet is intended to be left constantly alight, the consumption of gas for which is infinitesimal. In fixing ventilating lamps it is necessary to arrange a flue pipe leading from the ceiling box into a chimney, or a vertical shaft in which there is a good up current. A gas supply pipe, fitted with adjustable



patent tap and regulator to each lamp. A $\frac{1}{8}$ iron or $\frac{3}{8}$ copper supply to the flash jet, with tap to adjust the proper quantity of gas. The flame of the flash jet should never exceed $\frac{1}{2}$ inch in length. To adjust the screw in plug of patent tap leading to the burner, so as to give the proper size of flame; and where several lamps are placed in one building and a regulator is fixed on the gas service, it is important that each lamp is properly adjusted so as to get the exact quantity of gas. This is done by regulating the screw in plug of patent tap, which should be fitted to each lamp; the space between the flue pipe, heat box and woodwork must be filled in with silicate cotton or other non-conducting packing material, to prevent any radiation of heat from the pipe or box, and, if preferred, double or treble iron outer casings can be used.

A variety of these lamps, as shown in the catalogue, are in use at the Jockey and West End clubs, mansions, libraries, &c., one of which we illustrate.

Another typical application of the Wenham system is seen in the variety of patent Wenham lamps designed for the use of



billiard rooms, to insure a brilliant and equally diffused white light, with a steady unvarying flame, consuming 18 feet of gas per hour against the 40 to 50 feet consumed by the ordinary billiard lamp, along with a superior light and removal of vitiated air. Experts, it will be seen, have spoken of the Wenham system of lighting billiard-rooms as the most perfect system yet introduced.

But to glance back, the catalogue first of all shows the Wenham lamp in plain forms, as adapted for shops, corridors, halls, staircases, warehouses, printing and other works, factories, &c., attention having been paid to render this excellent system of lighting available for everyday and utilitarian purposes in a simple and uncostly manner. What would serve the purpose of the workshop would not, however, be thought suitable for the drawing-room and dining-room. Accordingly, more tastefully designed lamps are shown. These range through varied stages of more or less elaborate design. This again is a matter of detail that more or less concerns individual tastes, and consequently any particular design that may be desired has only to be sent to the company and it will be carried out. The designs shown in the catalogue include very handsome examples, and much in the

Telegraphic Address: "ELECTRICITY," *LONDON.* *Telephone No. 1887.*

THE GENERAL ELECTRIC APPARATUS CO.

ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE

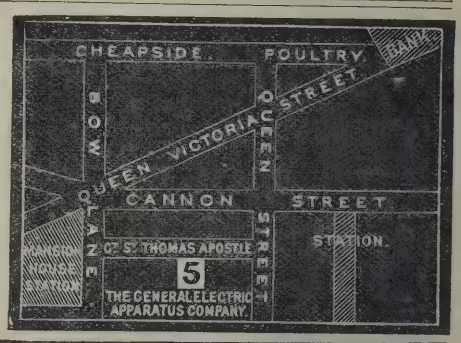
Works: BOW and SOUTH HACKNEY. (*Back of the Mansion House Station*), E.C.

ELECTRIC BELLS.

Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.

The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.

Electric Light Instruments, Fittings and Glassware.



ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustration which has appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing:—

The Bard.

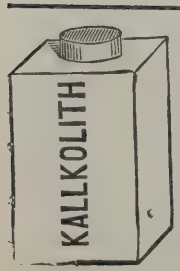
FACSIMILE OF CARTOON BY PROFESSOR MAILLART.

Size, Thirty-six Inches by Twenty-two Inches.

Price One Shilling; free by post, carefully packed inside patent roller, One Shilling and Threepence.

May be obtained from all Newsagents or Booksellers, or from the

Publishers, GILBERT WOOD & CO., 175 Strand, London, W.C.



Registered Trade Mark.

TO ARCHITECTS, CONTRACTORS, AND BUILDERS.

SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using

KALLKOLITH.

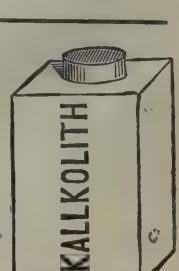
IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for Smoky Ceilings and for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering.

Price per Case of Eight Tins of 14 lbs. each, 40*s*, packing included. Sample Tins, 6*s*. each.

H. RANSOM & CO., 11 Queen Victoria Street, LONDON, E.C.

Agents wanted in every Town in the United Kingdom and Colonies.

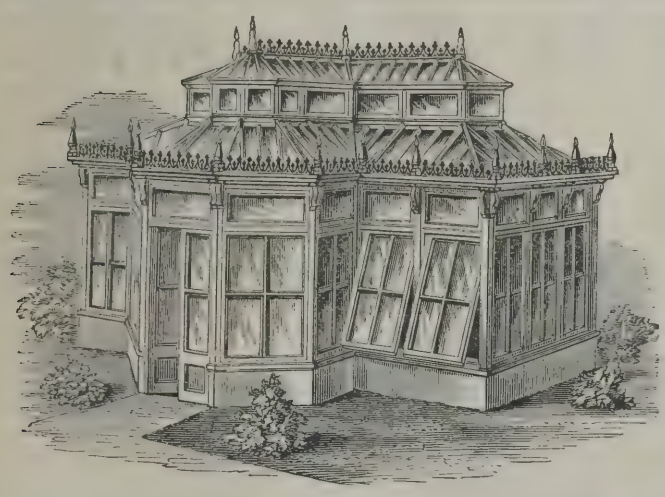
Registered Trade Mark.



way of effect can be got by the employment of ornamental glasses and shades, suggestions for which are shown on page 32 of the list. The lamps in most cases are pendant, if the ceiling lamps may be called pendant for explanatory purposes; and for room lights, halls, &c., we see examples after the ordinary hanging gaselier which terminates in the downcast Wenham light. Besides these fixed pendant lights there are sliding pendants, as for cases where it is a matter of convenience to be able to lower the lamp and raise it again after cleaning globes, shades, &c. The ordinary style of dining-room suspension lamp may be seen with the ordinary upward lights, in addition to the Wenham. Then, again, bracket lamps are shown, a bracket being used for the purpose of suspending the Wenham lamp. An ingenious table lamp is figured among other illustrations, which is practically an application of the Wenham lamp as a standard lamp. Of course it is evident that a standard is inadmissible for the Wenham lamp as far as the characteristic feature of the lamps, namely, absence of downcast shadow, is concerned, by reason of the unavoidable interposition of opaque metal fittings. Yet, as said before, this table lamp, though practically a standard, preserves its pendant character on the principle of suspension to a bracket. The fitting that carries the lamp curves upwards and outwards, and, in following the line of the curve gradually returns over the base of the support below the flame, and in this fashion gets rid of any inconvenience from downcast shadows. No doubt this design could be carried out on a larger scale to suit the requirements of exceptional circumstances or the tastes of individuals. Special attention, of course, is given to the illustration of the Wenham lamps as superseding sunlights, &c., and in their ventilating capacity, as also to the billiard lamps. The works of the Wenham Company, Limited, are in Upper Ogle Street, W. Their London show-rooms are at No. 12 Rathbone Place, W. The company have also branch houses in Paris and in Berlin. The Wenham lamps took the medal of the Sanitary Institute of Great Britain in 1884, the gold medal at the Inventions Exhibition, 1885, and the highest award at the Edinburgh Exhibition this year. The last page in the catalogue gives a list of some of the buildings abroad as well as in England where the Wenham patent lamps are in use. Among these may be mentioned the railway stations at Paddington, Liverpool Street, and Metropolitan District station, Victoria; the printing offices of the *Times*, Stock Exchange, Burlington House, Lyceum Theatre; also at colleges, hotels, clubs, galleries, business premises, &c.

FIREPROOF CEMENT.

AT the invitation of Mr. J. Thomlinson several scientific gentlemen, including engineers and builders, lately visited the premises of the Brighton and Hove Co-operative Supply Association, Brighton, for the purpose of testing the qualities of a cement which he has patented, and which is being largely used in the work of repairing and altering the interior of this building. The material, which possesses properties to which it is desirable that public attention should be drawn, is prepared at the Knothill Cement Plaster Works of Messrs. J. Robinson & Co., near Carlisle. The exact method of its manufacture is at present undisclosed, but it is known that the substance of chief importance in its composition is sulphate of lime, or alabaster, and it is to the presence of this ingredient that is due the greatest merit claimed for the invention. Sulphate of lime being a non-conductor of heat, a substance of which it is the base, is powerful to resist fire; and that the cement has this valuable quality is stated by no less an authority than Captain Shaw, who has expressed the opinion that "it would be much more effectual in preventing the spread of fire than any other of the common plasters or cements generally used in this country." Experiments have shown that heat that will fuse gold, silver, and copper fails to injure the cement. As it neither seems to expand nor to shrink when subjected to tests of that character, its use as casing for the ironwork introduced into large structures is likely, it is contended, to be very great, for the changes which intense heat produce in unprotected iron can cause disasters only second to those which are the more immediate results of fire. Other substances, such as Parian cement, have, of course, equal claims to be considered fireproof, but any approach to a general utilisation of them is rendered next to impossible by their cost. The comparative cheapness of the new cement places it within the reach of the moderately wealthy, and seems to bring within the range of practicability the hope that one day the words, "Tua res agitur, paries cùm proximus ardet," may be robbed of much of their dread significance. As a mere plastering also it has advantages, for it can be quickly applied, dries and hardens in 48 hours, and when dry presents a surface of great smoothness. As a proof of its strength, it may be mentioned that a brick an inch square can bear a strain of 550 lbs. before breaking. Hitherto the cost of producing cement from sulphate of lime has been so great that any general use of such cement could not be expected. That his invention is so much less costly Mr.



R. HOWARD,

Horticultural Works,

✠ DONCASTER. ✠

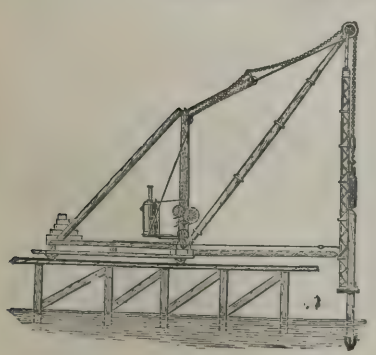
HORTICULTURAL BUILDINGS erected, with hot-water apparatus complete, in any part of the Kingdom, by experienced workmen. All the newest improvements in machinery for ventilation.

SILVER MEDAL awarded by the Society of Architects at the Architectural and Building Trades Exhibition, Sheffield, February 1886.

Also PRIZE MEDAL and CERTIFICATE, the highest and only award for excellency of Horticultural Buildings and Machinery for Ventilation, at the International Architectural Trades Exhibition, London, April 1886.

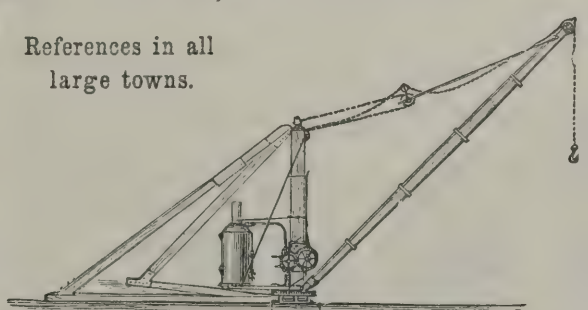
BUTTERS BROTHERS, ENGINEERS, GLASGOW.

PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.



Crane used for Piling.

References in all large towns.



SCOTCH BUILDERS' CRANES.

Large Stocks. Send for List.

FOR SALE, HIRE, OR HIRE-PURCHASE.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8	10 0
„ ¾ „	.	9	10 0
„ 1 „	.	10	10 0

Thomlinson explains by the discovery of the new mode of manufacture, and of immense beds of alabaster in the vicinity of collieries and of a first-class shipping port. The cement is already in use in many large buildings.

THE EMPLOYERS' LIABILITY ACT.

A CASE was heard last week in the Kettering County Court in which Joseph Law, a bricklayer, sought to recover 20*l.* 16*s.* from John Bellamy, a builder, being damages for injury under the Employers' Liability Act. Mr. Rawlings, for plaintiff, said the claim was for injuries received by plaintiff while at work on a scaffolding erected against some houses being built by defendant. On February 26 a carpenter went to work on the scaffolding, with the result that the combined weight broke what was called the "putlock." This let the scaffolding down, and some planks falling on plaintiff, injured him as detailed below. Mr. J. W. Dryland, surgeon, said plaintiff went to him on February 26. He was suffering from a broken collar bone and bruised shoulder. He attended him for three weeks, and on the 8th of this month he examined him. His collar bone was recovered, but he was still unable to raise his shoulder the proper height. It would most likely be well in about three months. Plaintiff told him that he had been to a bone-setter for a month, and that his shoulder was out, but he (witness) denied that the shoulder was dislocated. As a rule they got well in such accidents in something like two months. Joseph Law said his average earnings before the accident were 29*s.* 6*d.* per week, but in the winter he would not earn so much. In February he was working for defendant on some new houses which he was building. He was on the front scaffolding about seven feet from the ground. The scaffolding was put up by several men a few days earlier. Harry Bellamy, foreman to defendant, handed him the "putlock," and held it while he (witness) tied it up. He was told not to leave a hole in the wall for it. Mr. Lane here contended that if Harry Bellamy was to be brought into the question under Order 44, Rule 3 of the Employers' Liability Act, his name should have been mentioned in the plaint. This rule laid down that the plaintiff should state in ordinary language the cause of the injury, the date on which it was sustained, the amount of compensation claimed, and where the injury should have arisen by the act or omission of any person in the service of defendant, the name of such person should be given. Mr. Rawlings contended that they claimed that the accident arose from the defective nature of the materials used, and had nothing to do with Harry Bellamy. His Honour: It is monstrous to make a man liable for the mere accident unless there is any negligence. Mr. Rawlings: I am going to prove that this putlock ought not, under any circumstances, to have been used. His Honour: Then the question is who handed it out to him. Mr. Rawlings: The employer is responsible for any material handed out to his servants. His Honour: I am strongly of opinion that, according to the rule, you ought to have mentioned this putlock in your information. I have been reading over the claim, and wondered what scaffolding it meant. Your particulars are as wide of the Act of Parliament as possible, and it is quite evident, looking at the statute, that it is only fair to the master to know what he has to meet. What you must do is to take a non-suit, and bring your action again. His Honour decided that the question of costs should bide the decision in the pending case.

KAYE *v.* CHUBB & SONS.

THIS case, on which depended an important decision, came before Mr. Justice Mathew (without a jury), sitting in the Queen's Bench division of the High Court of Justice, on Wednesday, the 25th ult. Both parties to the suit are well known as lock manufacturers, and the plaintiff claims damages against defendants and an injunction for an alleged infringement of their patent for the fastening of doors, gates, lids, and windows, in the shape of a lock made on the well-known "push-and-pull" system. Mr. Aston, Q.C., Mr. Macrory, and Mr. Waugh appeared for the plaintiff; and the Attorney-General (Sir R. Webster, Q.C., M.P.) and Mr. Bunting represented the defendants. The following report of the proceedings is taken from the *Leeds Mercury*:—

Mr. Aston, in opening the case, said the plaintiff was a gentleman who for a long time had given great attention to mechanical matters, especially in connection with apparatus for fastening and unfastening doors. The letters patent in question were obtained on December 22, 1877, for improvements of the apparatus employed for fastening and unfastening doors, gates, lids, and windows. The seller's patent was still good and valid, and he should submit, when his lordship had heard the evidence, that the defendants had infringed. This was not a complicated case, and the invention was of a very simple character. Probably the only question for his lordship

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER SEVEN HUNDRED ENGRAVINGS OF DIFFERENT PERIODS, WITH DESCRIPTIONS.

BY PAUL ROUAIX.

"This large and sumptuous book is issued by the publishers of *L'Art*, a journal which we have frequently referred to as being one of the best publications of its kind in Europe. The French Librairie de l'Art has been known for long in connection with works treating of the fine arts, and *Les Styles* is certainly equal to anything we have ever seen of the kind, and by far superior to the vast majority of similar works issued in this country. There is something about the atmosphere of France which confers refinement of taste in everything relating to designs, and so pronounced is the national aptitude for discovering beauty and symmetry, that the very fact of a book coming from across the straits is generally a sufficient guarantee of the artistic excellence of the contents.

"M. Rouaix treats of many species of decoration, commencing with that in vogue amongst the ancient Egyptians, and proceeding in regular order of date with the Etruscan, Greek, Byzantine, Roman, Gothic, the peculiar ornamentation of the Renaissance, and of the times of Louis XIII., XIV., XV., and XVI. Before each division the author introduces a short historical introduction, and afterwards, by means of a series of beautifully executed prints, illustrates the prevailing fashion of the time. For this purpose he has levied contributions on examples of architecture, carving on wood, suits of armour, bas-reliefs, tapestry and embroidery, mural painting, mosaical work, and a host of other subjects, including caskets and chalices. In fact, anything that can be called artistic and assigned with certainty to a particular era is represented, the result being an exhaustive and exceedingly pretty production."—BOOK LORE.

Single Number, 5*s.*; Complete Series, 12 Numbers (by Subscription), £2 8*s.*

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

"Beautiful plates. Examples of the finest colour printing, and for variety and grace of design they could scarcely be surpassed. Decorators might gain many hints both for designs and schemes of colour by a study of this excellent publication."—GRAPHIC.

LONDON: GILBERT WOOD & CO. 175 STRAND.

would be, "Was the invention new; and if so, was it infringed by defendants?"

The Attorney-General: I think I may perhaps shorten matters by stating that the one point I make is this—whether, if the plaintiff's specification be properly construed, the defendants have infringed?

Mr. Aston said that if the Attorney-General would say that he did not intend to dispute the novelty of defendants' invention he should be very glad. Before coming to the question of whether the defendants had infringed it would be his duty to explain to his lordship what was the state of public knowledge when the invention was obtained, and he hoped to show his lordship that Kaye's lock was an improved lock compared with all that went before, and that the very elements of improvement found in plaintiff's locks were to be found in Chubb's locks.

Mr. Justice Mathew: But are the elements of improvement to be found in plaintiff's specification?

Mr. Aston: Certainly, my lord. The learned counsel went on to explain that the difference between the plaintiff's door-fastening and those in ordinary use was that, instead of the handle being turned, it was pulled on one side of the door and pushed on the other; that was to say, if the door opened towards you, you pulled the handle and the latch was withdrawn and the door was opened, and if the door opened from you, you pushed the handle and opened the door. Before the year 1877 such a fastening was never seen, and, except for one particular specification, which he would refer to, he thought he should show his lordship that the plaintiff's invention was absolutely new. A great number of specifications were relied on by the other side, but probably the Attorney-General would agree that a great many of them might be eliminated. But when they came to the specification of Mr. John Imray, the well-known engineer, it would be, no doubt, necessary for him to distinguish the plaintiff's invention from that. As far as he knew, except the particular latch proposed to be used by Mr. Imray—for he believed there was no actual use under his patent—there never had been a latch of the same character as the plaintiff's. The difference between the plaintiff's latch and Imray's latch was that in the shutting of the door in Imray's patent, the more he pushed upon the handle the more the door would not close, whereas in plaintiff's fastening pressure upon the handle caused the door to shut. The reason why the door would not shut when the handle was pressed in Imray's apparatus was that the spindle of the handle was embraced in such a way as to hold it fast and not let it go freely; whereas in th plaintiff's patent, the spindle was not embraced and held fast. That made all the difference.

His lordship: One you say would not work and the other does?

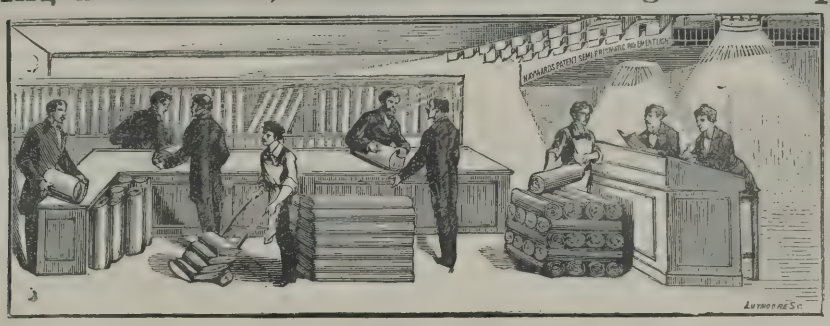
Mr. Aston: Yes. One would not work and the other does, and that makes all the difference between success and failure. He should (the learned counsel proceeded) call Mr. Imray before his lordship, and also the patentee of the invention now in question. The latter would tell his lordship that when he had made his invention he was informed of Mr. Imray's prior patent, and thereupon he went to Mr. Imray and obtained that gentleman's assistance in framing his specification, so as if possible to keep it outside of what Mr. Imray had done. He did not mean to say that if Mr. Kaye and Mr. Imray had made a mistake, the mere fact that they tried to avoid a mistake would not release the plaintiff from any consequences of it, but merely mentioned it as a fact in the case. The prior patents to Imray's were of a totally different kind; but Imray's, to some extent, was a latch of the same character. Mr. Imray would tell his lordship that he never made nor sold a single lock according to his patent, and Mr. Imray would give his explanation of the difference between his patent and the plaintiff's, and would explain the reason why his was a failure and plaintiff's a success. He believed that Imray's specification was the most formidable difficulty in his way. Referring to plaintiff's specification, the learned counsel said it set out that plaintiff did not make any general claim to the opening of latches or fastenings by a pull or push of the knob or handle, which was included in Imray's specification; but the plaintiff claimed "the construction of a latch or fastening wherein a lever, worked by the pushing or pulling of a spindle or knob, moves in one direction, only a segment or finger turning on a fulcrum and pressed in the opposite direction by a spring, so as to engage with a catchplate, substantially as and for the purposes hereinbefore set forth."

The Attorney-General said that his learned friend must not take it that Imray was the only difficulty he had to deal with.

Mr. Justice Mathew: Well, Mr. Aston had better kill Imray first.

Mr. Aston further stated that in 1882 Messrs. Chubb & Sons, through Mr. George Chubb, entered into negotiations for the purchase of the patent, and Mr. Kaye thought the negotiations were practically concluded. They fell through, however; but now the defendants were disputing the utility and novelty

HAYWARD'S PATENT
"SEMI-PRISM" PAVEMENT LIGHTS
For Lighting Basements, Cellars, and Underground Apartments.



UNDERGROUND.

Basements can be made valuable Business Premises by using Hayward's Patent "Semi-Prism" Pavement Lights.

REDUCTION IN PRICES.

5,000 FRAMES, OR STOCK SIZES, ALWAYS ON HAND.

Illustrated Price Lists and Estimates on application.

HAYWARD BROS. & ECKSTEIN,
Patent Pavement Light Works,
WORKS: UNION STREET, BOROUGH, LONDON, S.E.

of that which formerly they were prepared to buy. The defendants then set to work and made a lock which was, he contended, substantially the Kaye lock, and therefore the present action.

At this point the hearing was adjourned, the Court rising at 1.30, in consequence of a meeting of the Judges.

The case was resumed on Thursday.

Mr. John Imray, engineer and patent agent, gave evidence on behalf of the plaintiff, and deposed that plaintiff's was a novel and useful invention. It differed from his invention, patented in 1871, which was not successful. That possessed such disadvantages that it was practically useless for ordinary use, and he had never made or sold a lock constructed according to his specification. Plaintiff's lock was, however, successful. In the lock of the defendants, which constituted the alleged infringement, witness said there were the elements of plaintiff's invention. The witness was examined and cross-examined at great length as to the details of the different locks, which he explained to his lordship with the aid of models.

Mr. Aston said the Attorney-General had agreed with him that it was unnecessary to call several witnesses that he had present to support Mr. Imray, it being understood that he had such evidence.

The Attorney-General said he would admit the utility of the plaintiff's invention and its actual user.

It was further agreed that it was not necessary to call Mr. Kaye, as he only confirmed Mr. Imray, and the Attorney-General did not dispute that he was the first and true inventor of what he described in his specification.

This, therefore, was the plaintiff's case.

The Attorney-General said he had only one or two witnesses to call, and, before doing so, he would merely state that his contention was that his lordship had to put upon the plaintiff's specification a construction which would make it good, having regard to the existing state of knowledge at the time of the patent. He contended that the plaintiff was not entitled to turn a particular statement in the specification into a generality, which was what he proposed to do to prove the infringement.

Mr. Edward Alfred Cowper, consulting engineer, gave evidence on behalf of the defendants that plaintiff's invention was a combination of old parts, the novelty being in the mode in which the lever acted upon the spring. He further said that the defendants' lock was not an infringement of plaintiff's patent.

Sir G. Chubb corroborated Mr. Cowper. He admitted that his firm entered into negotiations with Mr. Kaye for the purchase of this patent, but they fell through owing to the price being too high. After the negotiations fell through he invented the lock, which it was now said was an infringement.

The Attorney-General said the plaintiff's invention was a combination of three old parts, and it was familiar knowledge that such a patent could only be infringed either by taking the same combination substantially, or a subordinate combination, which the patentee had pointed out in his specification. Mr. Kaye was no doubt entitled to the benefit of what was novel in his invention, and therefore the learned counsel did not ask that the patent should be invalidated, but he submitted that the defendant had not infringed it.

Mr. Aston having replied, contending that an infringement had been made out,

His lordship reserved judgment.

On Saturday the Court was crowded in expectation of the result of the case.

His lordship, in delivering judgment, said the action was brought for the infringement of a patent taken out by the plaintiff in 1877 for an improved method of opening and shutting doors, and the only grounds of defence upon which reliance was placed was a denial of novelty and of infringement. The object of the plaintiff's invention was to produce a ready means of opening or shutting doors by pulling or pushing a handle instead of turning it, and the mode in which this object was effected was by fixing upon the spindle between the handles a projection which was placed in contact with one end of a lever, the other end of the lever touching the segment or finger of the latch. When the handle was pushed forward the latch was thus drawn back and the door opened. When the handle was pushed back, the pressure of the lever was withdrawn from the latch, and the spring pushed the latch back into position and the door was closed. The plaintiff made no claim to the push or pull spindle, which was known before, but his claim was confined to the purposes he had described, where a lever working by the push and pull motion moved a segment or finger in one direction only, and also where the latch was pressed in an opposite direction by a spring, and so worked automatically. In support of the defence for want of novelty, reliance was placed upon letters patent granted to John Imray in 1871. It appeared from the specification filed by Imray that one of the objects of his invention was the construction of a spring, also to be worked by pulling or pushing the handles, and for this purpose the spindle was made with a groove in it,

BRYANT, POWIS & BRYANT
LIMITED,

WOOD BROKERS AND IMPORTERS,

101 LEADENHALL STREET, LONDON, E.C.
Telephone: No. 586. Telegraphic Address: "Stadacona," London.

AND 15 CANADA DOCK, LIVERPOOL.
Telephone: No. 2,617. Telegraphic Address: "Carter," Liverpool.

SPECIFICATIONS AND PRICES ON APPLICATION. ORDERS BY POST PROMPTLY ATTENDED TO.

BRYANT, POWIS & BRYANT
LIMITED,

which was attached to a lever connected with a spring. But it appeared from the evidence of the patentee (Mr. Imray) that while it was easy to open the door by his process, there was a difficulty in closing it, and this was due to the rigid connection of the lever with the spindle at the one end, and the latch at the other. The invention was of no practical utility, and the letters patent were allowed to drop. The Attorney-General argued that Imray had anticipated a part of plaintiff's apparatus by describing the spindle as being made in a groove, or in the alternative with a projection or collar upon it, and it was contended that a skilled workman would, from that specification, have produced a spindle which, like the plaintiff's, was in free contact, and not rigidly connected with the lever by means of the projection upon it. But he was satisfied that Imray's patent was not an anticipation of plaintiff's combination as described and claimed by his specification. The defendants' lock was constructed with a spindle having a projection upon it, which was in contact with one end of the lever; the other end of the lever was in free contact with the slot of the segment latch. When the handle was pushed forward the latch was drawn back and the door opened. When the handle was drawn back a similar resulted followed. It seemed to him only necessary to lay the two locks side by side to see that the mechanism was substantially identical. It made no real difference in the apparatus that the spring which operated directly upon the segment latch of the plaintiff's lock acted through the medium of the lever in a similar manner in the defendants' lock. But admitting the identity of the lock, it was argued that the plaintiff's specification did not claim the whole apparatus of the lock, but only a subordinate part, viz., in a lever movement in one direction only, and the segment or finger being pressed in the opposite direction by the spring, and this combination, it was said, defendants had not infringed. It was urged that all the defendants had done was to combine a segment latch acted upon by a spring, which had been described in letters patent granted to one Brodie in 1860, with the apparatus of Imray, patented in 1871, and that they had avoided the exact combination claimed in the specification. But his lordship did not think plaintiff's specification ought to bear this narrow construction. The claim must not be interpreted as if it stood alone. It must be read in the light of what was contained elsewhere in the specification. So dealt with it seemed to him that all the elements of the plaintiff's lock were properly claimed, and he was of opinion that the elements so claimed by the plaintiff were also contained in the apparatus of defendants' lock. His judgment, therefore, would be for the plaintiff, with costs.

Mr. Aston asked for costs on the higher scale.

Mr. Bunting said he failed to see in what respect this action was extraordinary.

His lordship said he gathered that it was a highly important case, and that a good deal depended upon the result. It certainly was not a case proved in the ordinary way, and by witnesses of the ordinary class. It was a case which needed a great deal of care and attention. He therefore thought costs should be on the higher scale.

Mr. Aston asked for a perpetual injunction against the defendants, and an order for an account of the profits they had made by their infringement to be taken.

Mr. Bunting asked that the injunction might be stayed pending an appeal.

Mr. Aston contended that there was no authority for such a course.

His lordship ultimately said he would enter judgment for the plaintiff for a nominal amount of 40*s.*, for an account of profits to be taken, and for an injunction, the latter to be suspended pending an appeal to be entered forthwith.

Judgment for plaintiff accordingly.

BUILDERS' BENEVOLENT INSTITUTION.

THE election of pensioners on the funds of this Institution took place on Thursday in last week, at Willis's Rooms, St. James's, Mr. Basil E. Peto (president) in the chair. There were two vacancies for men, for which five candidates applied. The following is the list of candidates, with the number of votes polled for each, according to the report of the scrutineers, Messrs. Stirling & Rider, viz. :—Ebenezer Robinson, Camberwell, aged 72, builder, 1,784 votes; James Picking, Clapham, aged 60, builder, 318 votes; John Emery, Kentish Town, aged 65, builder, 1,799 votes; Edward T. Roberts, Wandsworth, aged 67, builder, 786 votes; and George N. Cott, Brixton, aged 68, builder, 227 votes. John Emery and Ebenezer Robinson were therefore declared to be the successful candidates.

On the motion of Mr. T. G. Smith, seconded by Mr. Richardson, a vote of thanks was passed to the Chairman, a similar vote being also accorded to the scrutineers and others who had taken part in the proceedings.

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

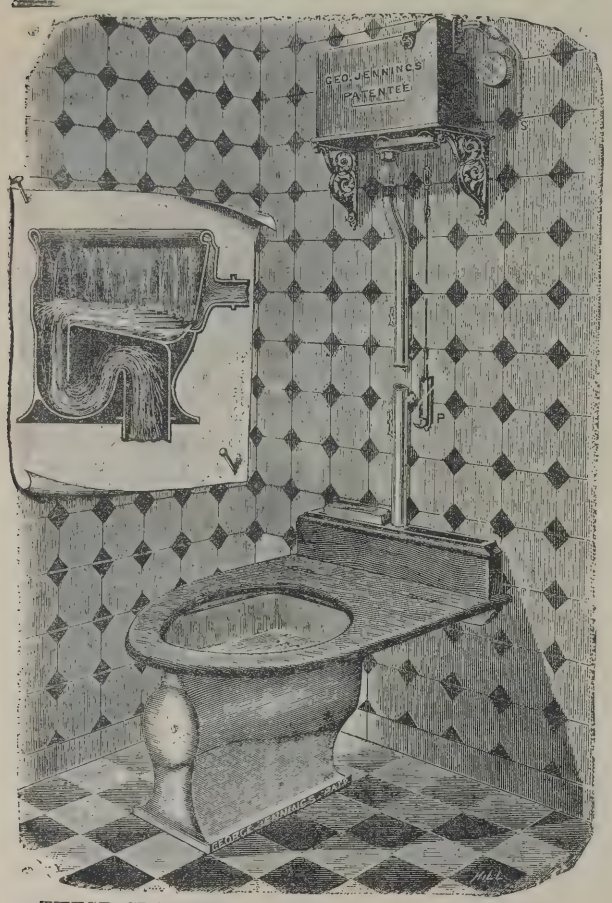
DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co^s
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS. HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST, BENTLEY PRIORY, ROYAL, LANGHAM, GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S, BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

"THE PEDESTAL VASE,"
JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham, Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1¼ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,
SANITARY ENGINEER, STANGATE, LONDON.

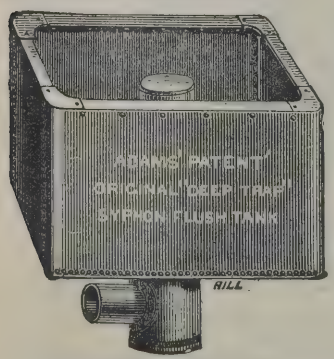
A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



ELECTRIC & PNEUMATIC BELLS.
NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.
MECHANICAL TELEPHONES. Everything for a line complete for £3.
PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

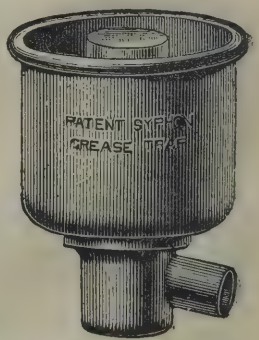


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
„ **FLUSH SYPHONS** for Sewer Flushing.
„ **FLUSH LATRINES** for Barracks, Schools, &c.
„ **FLUSH URINALS** „ „ „
„ **TROUGH CLOSETS** „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, December 3, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, DECEMBER 10, 1886.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

REGISTRATION OF PLUMBERS.

GUILDHALL, AUGUST 12, 1886.

1. In pursuance of the Resolutions of the following—
   (*a*) The Conference of Metropolitan and Provincial Plumbers held at the City and Guilds of London, Central Institute, in October 1884;
   (*b*) The General Council subsequently formed to give practical effect to the Resolutions of that Conference;
   (*c*) The Plumbing Trade of London assembled in general meeting at Guildhall, January 25, 1886.
2. A Register for Plumbers of the City of London, and a circuit of seven miles thereof, has been opened by the Worshipful Company of Plumbers.
3. The object of the Registration is to enable the public to distinguish between qualified and unqualified practitioners.
4. All applications are considered by a Special Committee of Registration, which includes Members of the General Council as well as practical Plumbers, in order that no trade interest or prejudice may operate against any Applicant, but, on the contrary, that the utmost fairness and impartiality may be secured to all.
5. Plumbers (Masters and Journeymen) established in the Trade prior to March 1, 1886, are not necessarily required to undergo any examination. Admission is granted to such Plumbers on satisfactory statement or proof of experience, according to the circumstances of each case.
6. All Applicants who cannot satisfy the Registering Committee of their experience are required to pass an examination by a Board of Examiners, composed largely of practical Plumbers.
7. No Plumber entering the trade after March 1, 1886, will be admitted to the Register unless he shall have passed an examination in the technology and practice of plumbing.
8. The Company is not connected with any Plumbers' Societies or Trade Organisations formed for other purposes, and the function of the Registering Committee is confined to distinguishing those who are fairly entitled to be registered as qualified Plumbers; the object being thus to raise the standing and efficiency of Plumbers as a body in a manner consistent with the important position they occupy in relation to the public health.
9. The Registration of the Plumbers of the London District is adopted as a preliminary step to the extension of the system of Registration throughout the Kingdom by means of Local Organisations.
10. Pending the establishment of Local Registers, Provincial Plumbers are admitted to the Company's Register on the same conditions as the Plumbers of the London District.
11. Plumbers admitted to the Register receive Certificates of Registration bearing the Company's Seal and Arms, A.D. 1568. None but the holders of such Certificates are entitled to use the letters R.P. (Registered Plumber) after their names. Lists of the names and addresses of Registered Plumbers are obtainable on application to the Company.

GEORGE SHAW, Master.

EDITORIAL NOTICES.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested as much as possible to make their communications brief. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

THE ARCHITECT
AND
CONTRACT REPORTER.

ADVERTISEMENT SCALE.

For Two Lines and under (eight words to the line)	£0 2 6
For every Additional Line	0 0 6
For Quarter Page	2 10 0
For Half Page	4 10 0
For a Page	8 8 0
For 1 inch deep by 2½ wide	0 7 6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & CO., 175 *Strand, London, W.C.*

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

KILBURN.—Jan. 31.—Designs are invited by the Willesden Local Board for the Erection of Public Offices, Dyne Road,



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

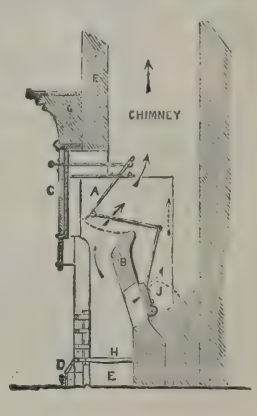
WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the Inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.

E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.



Kilburn. Cost, 6,000*l.* Premiums of 50*l.* and 25*l.* Mr. O. Claude Robson, Surveyor, Hampton House, High Road, Kilburn.

LONDON.—Designs are invited by the Committee of Management, Colmbrook Orphan Asylum, for proposed Orphanage. Premiums of 300 guineas and 100 guineas. Mr. Nevil Sinclair, 18 Princess's Street, Great George Street, Westminster, S.W.

CONTRACTS OPEN.

ARDROSSAN.—Dec. 20.—For Construction of Wet Dock, Outer Tidal Basin, Entrance Channel, Quay Walls, and other Works at the Harbour. Mr. John Strain, C.E., 154 West George Street, Glasgow.

APPERLEY BRIDGE.—Dec. 16.—For Building Wesleyan Chapel, Woodhouse Grove. Mr. H. Isitt, Architect, Queen Anne Chambers, Bradford.

BALLAGHADERRIN.—Dec. 15.—For Converting Military Barracks into Constabulary Barracks. Mr. W. B. Soady, Secretary, Office of Public Works, Dublin.

BARKING CREEK.—Jan. 7.—For Channels, Pier and Jetty, Engine and Boiler Houses, Workshops, Store-shed, Superintendent's House, and Workmen's Cottages, at Northern Main Drainage Outfall. Mr. J. E. Wakefield, Spring Gardens, S.W.

BINGLEY.—Dec. 13.—For Erection of Stables and other Buildings, Formation of Roads, &c., Heathfield. Messrs. Milnes & France, Architects, Bradford.

BIRSTALL.—Dec. 10.—For Building Mill Chimney. Mr. M. Sheard, Architect, Branch Road, Batley.

BISHOPSTOKE.—Dec. 20.—For Additions to the Prize Foods Factory and Steam Bakery. Mr. C. W. Bevis, Architect, Gloucester Chambers, King's Road, Southsea.

BOURNEMOUTH.—Dec. 14.—For Formation of the Victoria Arcade. Messrs. James H. Moore & Edward Dyke, Secretaries.

BRISTOL.—Dec. 28.—For Building Nine-floor Granary, Prince's Wharf—Brick Walls, Timber Roof Slated, Concrete Floors, Steel and Iron Columns and Girders. Mr. J. W. Girdlestone, C.E., Engineer's Office, Cumberland Basin, Bristol.

CLEATOR MOOR.—Dec. 13.—For Foundations of Stable Buildings and Garden Walls at Rheda. Mr. C. J. Ferguson, F.S.A., Architect, 50 English Street, Carlisle.

DAWLISH.—Dec. 14.—For Erection of Sea Wall and Steps, Cutting Back portions of Cliff, Lea Mount, and Forming Terrace Walk and Promenade. Mr. J. S. Delbridge, Surveyor, Dawlish.

DROGHEDA.—Dec. 18.—For Erection of Bank Buildings for the Belfast Banking Company. Mr. P. J. Dodd, Architect, William Street, Drogheda; Mr. J. M'Dermott Bermingham, Surveyor, Royal Insurance Chambers, Dame Street, Dublin.

DUNOON.—Dec. 11.—For Construction of Intake, By-wash Channel, &c., Filter and other Works. Mr. J. Collie, Burgh Surveyor, Dunoon.

EALING.—Dec. 13.—For Erection of Slipper Baths and other Buildings. Mr. Charles Jones, C.E., Local Board Offices, Ealing.

EARLSHEATON.—Dec. 11.—For Building Pavilion for Cricket Club. Mr. J. W. Allen, Charlesworth Terrace, Earlsheaton.

HACKNEY.—For Block of Buildings, Mare Street. Mr. E. Clarke, Architect, 3 Gordon Square, W.C.

HUCKNALL TORKARD.—For Building Dwelling-house. Mr. A. H. Goodall, Architect, Market Street, Nottingham.

HUDDERSFIELD.—Dec. 10.—For Building Shed to Stanley Mills, Marsh. Messrs. J. Kirk & Sons, Architects, Huddersfield.

HUDDERSFIELD.—Dec. 14.—For Building Dwelling-house, with Boundary Walls, Out Offices, &c. Messrs. J. Kirk & Sons, Architects, Huddersfield.

HUNSLET.—Dec. 11.—For Building Two Through Houses, Vicarage Estate. Mr. J. E. Leak, Architect, Hunslet.

ISLAND OF ARRAN.—Dec. 15.—For Constructing Timber Quay, Approach Road, &c., Loch Ranza. Messrs. Stevenson, C.E., 84 George Street, Edinburgh.

ISLE OF MAN.—Jan. 15.—For Making Addition to Principal's House at King William's College. The Secretary, King William's College, Isle of Man.

KINNERTON.—Dec. 18.—For Building Bridge over Sandy Lane Brook. Mr. W. Newton, Surveyor, Pentrobin, Buckley, Chester.

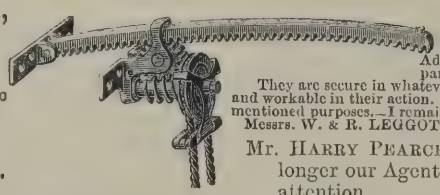
INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,

Is admitted to be the best ever put before the Public.

From 5s. each.



TESTIMONIAL.

BANGOR, N. Wales: September 14, 1885.

Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.

Messrs. W. & R. LEGGOTT, Bradford.

Write for REDUCED PRICE LIST and Testimonials to

W. & R. LEGGOTT,

70 Park Road, Bradford, Yorkshire.

N.B.—Size and height of window no object.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention.

W. & R. L.

TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD.,

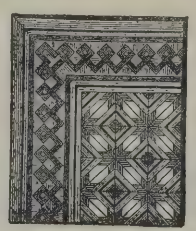
22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.

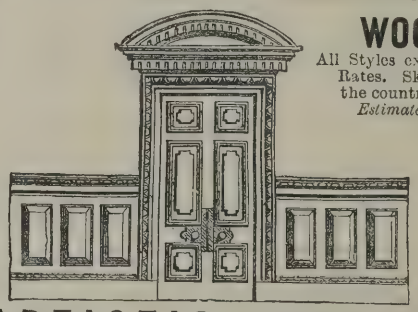
150,000 ft. super. in Stock, ready for Laying.

RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.

Immense Stock always ready for Laying.



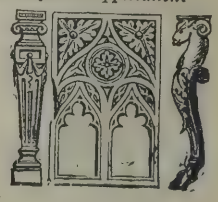
THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction.



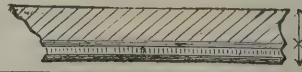
WOOD CARVINGS.

All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.

Estimates and Designs on Application.



ARTISTIC JOINERY.



ORNAMENTAL PARQUET.

DEAL BACKING.



Registered Trade Mark.

TO ARCHITECTS, CONTRACTORS, AND BUILDERS.

SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using

KALLKOLITH.

IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for Smoky Ceilings and for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering.

Price per Case of Eight Tins of 14 lbs. each, 40*s.*, packing included. Sample Tins, 6*s.* each.

H. RANSOM & CO., 11 Queen Victoria Street, LONDON, E.C.

Agents wanted in every Town in the United Kingdom and Colonies.



Registered Trade Mark.

LITTLEBOROUGH.—Dec. 15.—For Construction of Disinfecting Stove, Walls, Gates, &c., at the Wharf, Durn. Mr. F. H. Shuttleworth, Surveyor to the Local Board, Littleborough.

LONDON.—Dec. 16.—For Alterations and Additions to Old Workhouse and Infirmary, St. John's Hill, New Wandsworth. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

LONDON.—Dec. 16.—For Building Casual Wards adjoining New Workhouse, Wandsworth. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

LONDON.—Dec. 20.—For Works, General Repairs, and Alterations to Railway Station Buildings, Platforms, and similar Works, on the Railway System for 1887. Mr. J. Wilson, Engineer, Liverpool Street Station.

MONMOUTH.—Dec. 21.—For Refreshment-room at Station. The Engineer, Newport Station.

NEWCASTLE-ON-TYNE.—For Additions to Schools at St. Anthony's, near Newcastle-on-Tyne. Mr. Arthur B. Plummer, A.R.I.B.A., Architect, Cloth Market, Newcastle-on-Tyne.

NEWCASTLE-ON-TYNE.—Dec. 18.—For Building First Section of the Durham College of Science, Lax's Gardens. Mr. R. J. Johnson, Architect, 3 Arcade, Newcastle-on-Tyne.

OTTERBOURNE.—Dec. 14.—For Building Seven Cottages. Mr. W. Matthews, Waterworks Engineer, Southampton.

ROTHERHAM.—Dec. 11.—For Building Workhouse Infirmary. Mr. G. T. Barras, Clerk, Union Offices, 7 Howard Street, Rotherham.

SHERBORNE.—Dec. 13.—For Building Sanatorium for the Governors of Sherborne School. Mr. F. E. Smith, Yeovil Road, Sherborne.

STONHAM PARVA.—For Restoration of Roof of Nave of St. Mary's Church. Mr. E. F. Bisshopp, Architect, 32 Museum Street, Ipswich.

STONEHAVEN.—Dec. 24.—For Building Dunnottar Mission Church. Mr. John Young, Architect, Perth.

SUNDERLAND.—Dec. 29.—For Erection of Municipal Buildings, Fawcett Street. Mr. Brightwen Binyon, Architect, Ipswich.

SUTTON-IN-ASHFIELD.—Dec. 15.—For Alterations and Additions to Central Co-operative Stores, Market Place. Messrs. Adlington & Son, Architects, High Pavement, Sutton-Ashfield.

THE LIZARD.—Dec. 10.—For Building Eight Coastguard Cottages at Cadgwith. The Director of Works Department, Admiralty, 21 Craven Street, Charing Cross, W.C.

THIRSK JUNCTION.—Dec. 15.—For Building Engine Stable. Mr. William Bell, Architect, North-Eastern Railway, York.

WAKEFIELD.—Dec. 16.—For Alterations to Property in Kirkgate. Mr. William Watson, Architect, Barstow Square, Wakefield.

TENDERS.

AUCHNAGATT.

For Building Banking Premises, Auchnagatt.

Accepted Tenders.

W. & R. Murray, New Pitsligo, mason	£327 0 0
G. Davidson, Auchnagatt, carpenter	267 0 0
J. & J. Hutchem, Methlie, plasterer	86 15 0
J. Robertson, Ellon, slater	60 10 0
Thom & Strachan, Aberdeen, plumber	44 0 0

BINGLEY.

For Building Extensive Business Premises for the Bingley Co-operative Society. Mr. H. ISITT, Architect, Sun Bridge Road, Bradford.

Accepted Tenders.

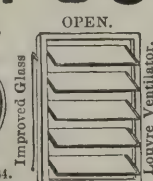
W. Forster, Bingley, mason.
A. Atkinson, Bingley, joiner.
A. Bolton, Bingley, plumber,
C. Dawson, Bingley, painter.
W. Thornton, Bingley, slater.
C. Howroyd & Sons, Bradford, plasterer.
R. Hird, Shipley, ironfounder.
Total, £3,565 11*s.* 6*d.*

BLANDFORD.

For Building Vicarage House, Tarrant Monkton, near Blandford, Dorset. Mr. WALTER J. FLETCHER, F.R.I.B.A., Architect, Wimborne, Dorset. Quantities not supplied.

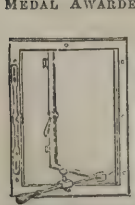
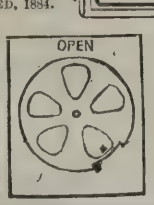
G. J. Pearcey, Poole	£1,559 10 0
D. Ridour, Wimborne	1,520 0 0
Bevan, Bournemouth	1,502 12 0
Eaton, Poole	1,480 8 0
Meader, Wimborne	1,334 0 0
Baker, Wimborne	1,305 0 0

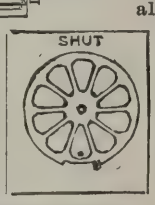
HOLDEN & CO.'S PATENT ZINC ROOFING
WITH THEIR
PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,
Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.
Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.
ZINC AND IRON WORKERS AND COPPERSMITHS.
Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.
HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

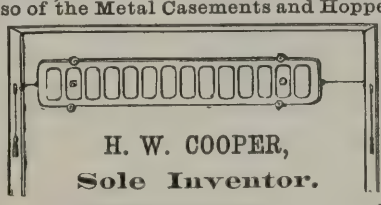
H. W. COOPER & COMPANY, LIMITED,
HEALTH EXHIBITION, MEDAL AWARDED, 1884.


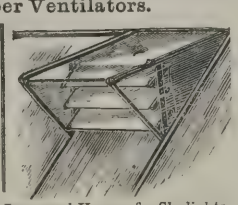
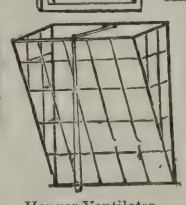
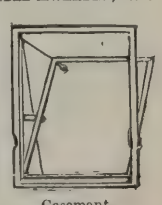
Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).
Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches, Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.
H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.


GLASS SELLERS' COMPANY EXHIBITION, MEDAL AWARDED, 1876.



Improved Casement.


Circular Glass Revolving Ventilator.




Glass Sliding Ventilator.

Improved Hopper for Skylights.

Hopper Ventilator.

Casement.
Steam Works: Little Queen St., Upper George Street, Edgware Road, W.
Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.


SPECIALITE MEDIÆVAL ECCLESIASTICAL TILES.
CARTER, JOHNSON & CO., Encaustic Tile Manufactory, St. George's Works, WORCESTER.
LONDON DEPÔT: Kinson Wharf, 34a Albert Embankment, LAMBETH, S.E.
20 Victoria Buildings, Victoria Street, MANCHESTER.
AGENTS:— T. J. STURGEON & CO., Cross Lane, Eastcheap, E.C.

BURGESS.

For Construction of Pipe Sewers (1,700 yards), and Works in connection, for the Burgess Hill Local Board.

Rowland & Son	£999 0 0
W. Langridge	989 0 0
W. Bryant	985 0 0
J. Parsons & Son	911 8 0
J. Longly	896 0 0
J. Harrison	883 0 0
CUNLIFFE, Dorking, Surrey (*accepted*)	844 15 0

CHICHESTER.

For Sanitary Improvements and Works for the Disposal of Sewage at the West Sussex, East Hants, and Chichester Infirmary. Mr. MARK H. JUDGE, A.R.I.B.A., Architect and Sanitary Surveyor, 8 Park Place Villas, London, W.

JOHN C. CHRISTIE, Aldgate (*accepted*) . . £715 0 0

COVENTRY.

For Building Infectious Wards at the Workhouse, Coventry. Mr. T. W. WHITLEY, Architect, High Street, Coventry.

MAYOR & SONS, Coventry (*amended and accepted*) £300 0 0

CLAYTON.

For Building Eight Dwelling-houses, Clayton. Messrs. MILNES & FRANCE, Architects, 99 Swan Arcade, Bradford.

Accepted Tenders.

Balmforth & Reece, Clayton, mason.
J. & J. Briggs, Queensbay, joiner.
B. Ingham, Clayton Heights, plumber.
P. Holdsworth, Great Horton, plasterer.
J. Smithies, Great Horton, slater.

EARLEY.

For the Erection of New Schools, Earley, Reading, for the Rev. C. R. Honey. Mr. W. RAVENSCROFT, Architect, Reading. Quantities supplied by Messrs. Coope & Sons, Maidenhead and Reading.

J. H. Margetts, Reading	£934 2 6
Higgs & Sons, Reading	925 0 0
S. East, Reading	905 0 0
G. Searle, Reading	850 0 0
J. Winter, Reading	850 0 0
J. Bottrill, Reading	812 12 0
J. C. Cook, Reading	784 0 0
W. H. SIMONDS*	768 0 0

* Accepted subject to a few modifications.

CORK.

For Building Malthouses, &c., Lady's Well Brewery, Cork. Mr. SAMUEL F. HYNES, Architect, 88 South Mall, Cork. Quantities by Mr. R. Evans, Cork.

E. & P. O'FLYNN, Watercourse Road, Cork (*accepted*).

EXETER.

For Supply and Delivery of 100 tons of 3-inch Turned and Bored Cast-iron Pipes, Exeter. Mr. D. CAMERON, City Surveyor, 18 Bedford Circus, Exeter.

Langley Waggon Co., Nottingham	£567 10 0
Birtley Iron Co., Birtley	535 0 0
Clay Cross Co., Chesterfield	512 10 0
G. H. W. Haley, Bradford	500 0 0
Silvester & Co., Newcastle, Staffordshire	500 0 0
H. J. Skelton & Co., London	487 10 0
Thames Bank Iron Co., London	487 10 0
T. Edington & Son, Glasgow	481 5 0
W. Macleod & Co., Glasgow	480 0 0
Coalbrookdale Iron Co., Shropshire	477 10 0
J. Oakes, London	475 0 0
T. Spittle, Newport, Mon.	475 0 0
W. H. Loveridge, West Hartlepool	475 0 0
Staveley Coal and Iron Co., Chesterfield	472 10 0
A. & J. Stewart, Glasgow	467 10 0
Willey & Co., Exeter	465 16 8
Newcome & Co., Exeter	462 10 0
Cochrane & Co., Dudley	460 0 0
R. Maclaren & Co., Glasgow	460 0 0
S. E. White, London, E.C.	460 0 0
C. S. Mallet & Co., London	458 6 8
Ashmore, Benson, Pease & Co., Stockton-on-Tees	456 5 0
Raby Vell Co., Manchester	456 5 0
C. E. Firmstone & Co., Stourbridge	450 0 0
Jukes, Coulson, Stokes & Co., London	448 15 0
J. & S. Roberts, West Bromwich	443 15 0
Isca Foundry Co., Newport, Mon.	437 10 0
J. Romans & Son, Edinburgh	437 10 0
Smith, Patterson & Co., Blaydon-on-Tyne	437 7 0
J. Ritchie, Middlesbrough	425 0 0
G. W. Dibbley & Son, London	420 0 0
Cochrane, Grove & Co., Middlesbrough-on-Tees	418 15 0
J. Gibb & Co., 99 Fenchurch Street, E.C.	410 0 0
Laidlaw & Son, Little Bush Lane, E.C.	408 15 0

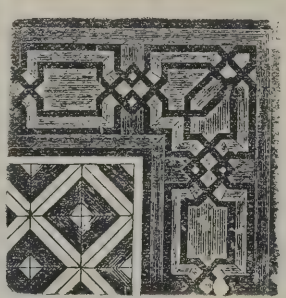
PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

PHOTOGRAPHS
OF
ARCHITECTURE
In all parts of the world,
INCLUDING a NEW SERIES of DETAILS
From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.
Our magnificent Collection is always on view at our London Galleries,
24 OLD BOND STREET, W.,
Or Selections and Lists can be had by post from
WINCH BROTHERS, Colchester.
List Free.

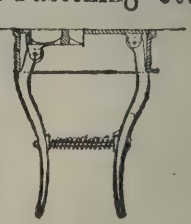
PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
Legal and Commercial Stationery.

THE NEW CHANDELIER.
PATENT SECRET BALANCE.
See "The Architect" of October 22, 1886, page 9. Particulars free on application.
H. T. TALLACK, 28 Hatton Garden, London, E.C.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c.?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered. PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.
THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT.  NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

GELLIGAER.

For Building School at Hengoed, for the Gelligaer School Board. Mr. JOHN WILLIAMS, Architect, Morgan Town, Merthyr.

H. Parfitt, Cwmbran, near Newport	£1,055 0 0
Walter Morgan & Co., Ebbw Vale, Mon.	1,044 0 0
MORGAN & EVANS, Pontnewynydd, Pontypool, Mon. (*accepted*)	877 17 0
T. Williams, Bargoed (accepted, but withdrawn)	640 0 0

GREAT CROSBY.

For Works to Myers Road West. Mr. W. HALL, Surveyor, Victoria Road, Great Crosby.

P. Palmer, Aintree	£2,260 16 0
W. Barrow, Kirkdale	2,174 6 10
Ireland & Hurley, Liverpool	2,101 12 1
T. Caterall & Co., Liverpool	2,094 1 0
L. Marr, Toxteth Park	2,088 1 6
Keating & Sons, Liverpool	1,969 19 2
W. F. Chadwick, Liverpool	1,962 6 0
P. Walkden & Co., Liverpool	1,960 0 0
D. Mulholland, Great Crosby	1,899 0 0
J. M'CABE & Co., Kirkdale (*accepted*)	1,755 5 11

HENDON.

For Building Residence for Dr. Cameron. Mr. BANISTER FLETCHER, Architect.

Blasby & Hodges	£1,700 0 0
H. J. Williams	1,500 0 0
J. P. Dome	1,350 0 0
J. Garrud	1,200 0 0
W. TOUT (*accepted*)	1,150 0 0

HERNE BAY.

For the Erection of Four Dwelling-houses at Herne Bay for Mr. D. C. Chambers. Mr. E. L. ELGAR, M.S.A., Architect, Ramsgate and Broadstairs.

E. T. C. Adams, Herne Bay	£1,250 0 0
C. Welby, Herne Bay	998 0 0
J. Newly, Ramsgate	895 0 0
T. Carnelius, Whitstable	856 0 0
T. Elgar, Ramsgate	800 0 0
Regis & Coppen, Margate	799 10 0
C. Home, Ramsgate	785 0 0
W. W. Martin, Ramsgate	719 0 0
H. MILLER, Ramsgate (*accepted*)	710 0 0

LONDON.

For Pulling Down and Rebuilding No. 12 Pancras Lane, E.C. Mr. H. H. BRIDGMAN, Architect. Quantities by Mr. F. Thomson.

C. Weeks	£1,743 0 0
Scrivener & Co.	1,549 0 0
E. Toms	1,517 0 0
Longmire & Burge	1,495 0 0
H. Burman	1,418 0 0
W. Brass	1,412 0 0
North Bros.	1,398 0 0
Colls & Sons	1,395 0 0
Patman & Fotheringham	1,363 0 0
J. R. Hunt (too late)	1,329 0 0
Wall & Co.	1,310 0 0
S. R. Lamble	1,259 0 0

For Thirteen Shop Fronts, &c., at Queen Street, E.C. Mr. H. H. BRIDGMAN, Architect.

W. H. LASCELLES & Co. (*accepted*)	£821 19 6

For Alterations to No. 1 Kingsland Green, for Mr. W. A. Wigg. Mr. BANISTER FLETCHER, Architect.

	With Zinc Roof.	With Fire-proof Roof.
H. J. Williams & Co.	£256 0 0	£269 0 0
Andrews & Roberts	199 0 0	216 0 0
Aldridge & Co.	196 0 0	223 0 0
J. Jarvis & Son	179 0 0	197 0 0
STEELE BROS. (*accepted*)	168 0 0	198 0 0

For Laying with Limmer Asphalte the Footways of Glengarry Road, Trossachs Road, and East Dulwich Grove, for the Camberwell Vestry.

BRADSHAW & Co., London and Bristol (*accepted*).

For Providing Earthenware Troughs for Water-closets at the Board Schools, East Street, Lambeth Walk.

Davis Bros.	£97 0 0
H. Mallett	95 0 0
B. E. Nightingale	84 0 0
H. Walkley	73 0 0

For Removing Gallery and Stepping Floor at the Board School, Priceton Street,

E. H. Sargeant	£32 10 0
Davis Bros.	26 0 0
Troughton & Co.	25 0 0
H. F. Vincent	24 5 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
CORSHAM DOWN, FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

SIMPLEX LEAD GLAZING

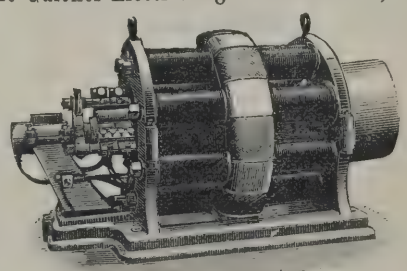
For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

PERMANENT EXHIBITION OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Application for Space can now be made to the Manager,
S. S. PHILLIPS.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

The Gulcher Electric Light & Power Co., Ld.

GULCHER DYNAMO.
Electric Lighting by either Arc or Incandescent Lamps for Public Buildings, Factories, &c.
BATTERSEA FOUNDRY, LONDON, S.W.

LONDON—*continued.*

For Sanitary Alterations, Improvements, and Additions to No. 38 Ebury Street, S.W., for Mrs. A. M. Storey. Mr. CHAS. ED. GRITTON, A.M.I.C.E., Surveyor, of London, Brighton, and Sidcup.

HOUGHTON & CO., 21 Sloane Terrace, S.W. (*accepted*).

Lowest of five tenders.

Registered plumbers only to be employed.

LYDD.

For Re-seating the Parish Church, Lydd, Kent. Mr. J. OLDRID SCOTT, F.R.I.B.A., Architect.

Burman	£2,092 0 0
Franklin	1,869 0 0
Wood & Son	1,757 0 0
Reeves	1,649 0 0
Lascelles	1,613 0 0
Foster & Dicksee	1,375 0 0
Spencer	1,336 0 0
Peat	1,322 0 0
Snow	1,313 0 0
Haylock	1,311 0 0
Martin	1,309 0 0
Haisill	1,303 0 0
Shillitoe	1,288 0 0
Rudd	1,275 0 0
Adcock	1,225 0 0
Miskin	1,225 0 0
Roome	1,202 0 0
Woolston	1,196 0 0
Escourt	1,185 0 0
Midland Co.	1,168 0 0
Dobson	1,113 0 0
Deane & Co.	1,047 0 0
Chappel	1,034 0 0
Wise	1,026 0 0
Kimberley	989 0 0
Brooks	974 0 0
Clark & Co.	958 0 0
Buckeridge	949 0 0
Letch	910 0 0
Patterton & Gould	905 0 0
Luscombe & Son, Exeter	898 0 0
Longley	790 0 0

LUDDENDEN.

For Enlargement of the Central Co-operative Stores, Luddenden, by Erection of New Shops in Three Departments, Warehouse, and Two Houses. Mr. T. LISTER PATCHETT, Architect, Halifax.

Thos. Pickles, Midgley, excavator's, mason's, and bricklayer's work.

Eli Anderson & Co., Luddenden Foot, carpenter's and joiner's work.

Wm. Alderson, Midgley, plumber's and glazier's work.

J. & T. Alderson, Luddenden, plasterer's and slater's work.

Ironfounder's work, heating apparatus, and revolving shutters—letting deferred.

LUTON.

For Erecting Houses in High Town Road, for Mr. Spickett. Mr. A. E. SMITH, Architect, Luton.

Cox Bros., Luton	£649 0 0
Parkins, Luton	598 0 0
Saunders, Luton	557 0 0
Hodge, Luton	550 0 0
Long, Luton	480 3 6
LINFIELD, Luton *	438 0 0

* Accepted at £454 with additions.

For Building Basement Stores, for Mr. S. G. Hobbs. Mr. A. E. SMITH, Architect, Luton.

Saunders, Luton	£275 10 0
Pryor, Luton	269 0 0
NEVILLE, Luton (*accepted*)	190 0 0

For Additions to the Offices of the *Luton Reporter*. Mr. A. E. SMITH, Architect, Luton.

	Without Stone Bay.	With Bay.
Rance Bros., Luton	£515 0 0	£625 0 0
Neville, Luton	512 0 0	593 0 0
Parkins, Luton	485 0 0	568 0 0
W. Dunham & Son, Luton	480 0 0	550 0 0
G. Smart, Luton	477 0 0	563 0 0
J. Linfield, Luton	450 0 0	519 10 0
G. W. Pryor, Luton	449 0 0	499 0 0
R. FORD, Luton	402 0 0	*465 0 0

* Accepted, with additions, at £549.

MAHOGANY & HARD WOODS.

ROBERT GARRARD & CO., 206 BETHNAL GREEN ROAD, LONDON, E.

Contractors to Railway and Rolling Stock Companies.

Large Stocks of thoroughly-seasoned Mahogany Teak, Wainscot Oak, and Walnut for Counter Tops, Handrails, Stair Treads, &c. Mahogany, Cedar, and Teak Panel Dry Pine, Whitewood, Ash, Birch, &c., in all thicknesses and widths. Prepared Flooring and Matching in Pitch Pine, Teak, Oak, &c.

LOGS, Mahogany, Teak, Walnut, Sawn and Hewn Pitch Pine, and other Log Timber, supplied in large or small quantities from Stocks kept at the Docks.

Telegraphic Address—"ACAJOU, LONDON."

DOOR FURNITURE, LOCKS, &c.

EDGAR KEELING, TEALE & CO.,

ART METAL WORKERS,

IRONMONGERS, MANUFACTURERS, &c

SHOWROOMS:—14 ELM STREET, GRAY'S INN ROAD, LONDON, W.C.

Designers and Manufacturers of all kinds of Art Work for Ecclesiastic and Domestic purposes in Silver Copper, Brass, and Iron.

PLEASE WRITE FOR ILLUSTRATED PRICE LIST AND ESTIMATES.

IMPORTANT.—To Specialists, Manufacturers, and Others.

Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.

THE ARCHITECT AND CONTRACTOR'S COMPENDIUM

And Specialist's Directory for 1887.

EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.

An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, **the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory.** Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this **at a cost less than half that of sending out one circular.**

The minimum **guaranteed circulation** of the **Compendium** is 3,000 copies, but the actual circulation will probably reach a much higher figure.

Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent **Ink-Photo** process, specimens of which are to be seen weekly in *The Architect*. The **Compendium** will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, **without block,** from **any** drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.

An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.

Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridge Street, London, E.C.

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

LUTON—*continued.*

For Alterations to Shop, for Mr. George Alexander. Mr. A. E. SMITH, Architect, 17 Church Street, Luton.

Parkins, Luton	£189 0 0
Mardell, Luton	181 10 0
T. & E. NEVILLE (*accepted*)	155 0 0

MAIDSTONE.

For Alterations at Corn Exchange Buildings, Mitre Stables, &c. Mr. F. C. MAY, Borough Surveyor.

A. Trendall	£1,125 10 0
J. Clements	1,050 0 0
T. J. Barden	893 0 0
G. Candler	875 0 0
R. WARD (*accepted*)	850 0 0

NEWBURY.

For Alterations and Additions to Old Mall Houses, for Mr. William Skinner (exclusive of floors). Mr. JAMES H. MONEY, Architect, The Broadway, Newbury.

G. Elms, Starcross	£390 0 0
S. Elliott, Newbury	325 0 0
E. JAMES, Newbury (*accepted*)	313 8 0

PETERBOROUGH.

For Sheds, &c., at Corporation Yard, and Stables, &c., at the Sewage Farm. Mr. J. W. WALSHAW, Borough Surveyor, Guildhall, Peterborough.

Ireson & Sharpe, Peterborough	£200 5 6
G. & D. Gray, Peterborough	174 7 0
J. Wenlock, Peterborough	166 0 0
Sibley & Hill, Peterborough	165 0 0
R. Wright, Peterborough	162 10 0
J. T. Machin, Peterborough	159 10 6
W. Coates & Son, Thrapston	155 0 0
H. HICKS, Peterborough (*accepted*)	151 15 0
Stabling.	
G. & D. Gray, Peterborough	198 0 0
W. Coates & Son, Thrapston	193 10 0
Ireson & Sharpe, Peterborough	184 0 0
J. T. Wenlock, Peterborough	180 4 0
R. Wright, Peterborough	173 0 0
J. T. Machin, Peterborough	162 0 0
H. HICKS, Peterborough (*accepted*)	135 2 0

POKESDOWN.

For Two Pairs of Small Villas, Pokesdown, Hants. Mr. H. F. J. BARNES, Architect, Towngate Street, Poole.

T. J. Tilsed, Poole	£555 12 0
E. J. Dunford, Boscombe	449 0 0
T. Head, Bournemouth	416 15 0
W. Pearcy, Jongfleet	357 0 0
W. H. Curtis, Poole	347 0 0
A. ARSPERY, Boscombe (*accepted*)	236 15 6

RETFORD.

For Building Additional Classroom to Boys' School, Ordsall, for the Retford Board School.

J. Fish	£216 6 0
E. & C. Swannack	208 0 0
G. Fenton	202 10 0
R. Mettam	202 0 0
J. Ledger	192 0 0
Bulling	190 0 0
G. Hurst	179 0 0
J. WILSON (*accepted*)	168 0 0

SOUTHPORT.

For Delivery at Southport of 60 Cast-iron Hinged Gully Grids and Frames, 21½ inches by 13 inches, to weigh each, with hinged grid and frame, 2 cwt. Mr. W. CRABTREE, Borough Surveyor.

J. Smeaton, Son & Co., London	£75 0 0
Griffiths & Co., Southport	42 0 0
Foster Bros. & Co., Preston	35 0 0
B. R. Isaac, Liverpool	31 0 0
J. Pendleton & Co., Liverpool	30 0 0
E. Brownell, Cannock	30 0 0
D. Parsons & Sons, Pensnett	29 10 0
F. C. Barker & Co., London	28 10 0
M. Swain, Newton Heath	28 5 0
Executors of D. Clark, Carlisle	27 10 0
Tickle Bros., Wigan	25 10 0
T. Smith & Co., Blaydon-on-Tyne	25 4 0
Jukes, Coulson, Stokes & Co., London	24 7 6
J. Ball, Ormskirk	22 5 0
The Douglas Forge, Wigan	22 0 0
D. Owen, Tyldesley	22 0 0
J. Robinson, Attercliffe	22 0 0
G. CHATTON, near Bolton (*accepted*)	21 17 6

THE ÆOLUS WATERSPRAY

SYSTEM OF

HEATING, COOLING, & VENTILATING

IS THE

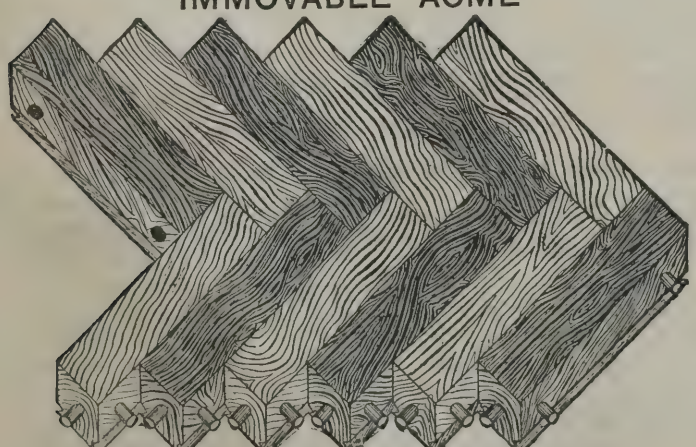
CHEAPEST AND BEST.

For Particulars apply to

MANAGER, 235 HIGH HOLBORN, LONDON, W.C.

Applications for Agencies invited.

"IMMOVABLE ACME"



WOOD-BLOCK FLOORING.

INTERNATIONAL EXHIBITION, LIVERPOOL.

GOLD MEDAL,

The ONLY and HIGHEST Award for

WOOD-BLOCK FLOORING

(W. DUFFY'S PATENT),

"Immovable Acme."

M. C. DUFFY & SON,

Chief Office: 66 Storks Road, London S.E.

STOCKPORT.

For Heating Stockport Corporation Baths by Steam Pipes.

Thomas & Taylor, Stockport	£155 0 0
R. HARLOW, Stockport (*accepted*)	136 0 1

THATCHAM.

For Building Cemetery Chapel. Mr. J. H. MONEY, Architect, The Broadway, Newbury.

		Alternative Tenders.*
W. H. Simonds, Reading	£605 0 0	£557 0 0
E. James, Reading	411 0 0	344 0 0
G. Elms, Stockcross, Newbury	383 15 0	341 0 0
H. Botsford, Newbury	349 0 0	321 0 0

* Omitting vestry and shortening chapel.

TOTTENHAM.

For Waterworks Extension, Longwater, for the Tottenham Local Board of Health. Mr. W. A. H. DE PAPE, Engineer, Tottenham.

Contract No. 2.—Compound Pumping Engines, Boilers, Pumps, &c., in duplicate.

Warner & Son, Cripplegate	£8,473 5 0
Duncan, Stewart & Co., Glasgow	6,840 0 0
Easton & Anderson, Whitehall Place	6,800 0 0
T. Watson, Burton	5,900 0 0
Renshaw, King & Co., Stoke-on-Trent	5,799 0 0
Coalbrookdale Iron Company, Coalbrookdale	5,267 0 0
Goddard & Massey, Nottingham	5,159 10 0
Gimson & Co., Leicester	5,027 0 0
Glenfield Iron Company, Kilmarnock	4,807 0 0
Lilleshall Iron Company, Thefnall	4,794 0 0
G. Waller & Co., Southwark	4,515 0 0
Wood Bros., Sowerby Bridge	3,900 0 0
H. Ainsworth, Dewsbury	3,540 0 0
Thanet, Walker & Co., Leeds (*informal*).	

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

TOTTENHAM—*continued.*

For Construction of Engine-house, Engine Foundations, Boiler-house, Chimney Shaft, Flues, Setting Boilers, Water Tower, and Works in connection therewith, Longwater. Mr. W. A. H. DE PAPE, Engineer, Tottenham.

Contract No. 3.

Cave & Son, New Barnet	£5,066 0 0
W. Downes, Walworth	4,563 0 0
P. Hart, Tottenham	4,428 0 0
Cook & Co., Battersea	4,322 15 1
G. Bell, Tottenham	4,273 19 1
Howell & Son, Lambeth	4,170 0 0
W. Bell, Saffron Waldon	4,071 7 4
Wall, Chelsea	3,970 0 0
Boyed McKinally, Walbrook	3,895 3 10
WILKINSON BROS., Finsbury Park (*accepted*)	3,648 0 0

YORK.

For Improvement Works to Belle Vue Terrace, Greenfields, Walter Street, Phœnix Street, Union Street, and Lower Ebor Street, York. Mr. G. STYAN, City Surveyor.

D. Speight, Leeds	£1,579 6 5
J. Dyson, Haxby	1,550 8 6
J. Hebdon, York	1,534 10 10
J. Clark, York	1,500 14 7
J. Galtry, York	1,497 14 4
J. Keswick, York	1,367 0 2
G. Walker, Leeds	1,313 11 7
G. Hodsman, York	1,289 7 4
PARKER & SHARP, Batley (*accepted*)	1,231 5 2
C. & J. Kilvington, York	979 15 7
Surveyor's estimate	1,315 0 0

TRADE NOTES.

WE notice that Messrs. Carter, Johnson & Co., of Worcester, have laid a very handsome tile pavement at St. Andrew's Church, Worthing, under the direction of the architect, Mr. A. W. Blomfield; also have just completed the tiling at the old church of Pentlow, Essex, which has undergone restoration, Mr. W. M. Fawcett, of Cambridge, being the architect—making in all nearly fifty churches in which their encaustic tiles have been used during the present year in England.

Equitable Fire & Accident Offices

One Premium returned every Fifth Year to those who have made no Claim.

FIRE INCOME (all Home Business) £66,778
FUNDS £98,969

ACCIDENT CO.
INCOME ... £21,264 | FUNDS ... £36,528

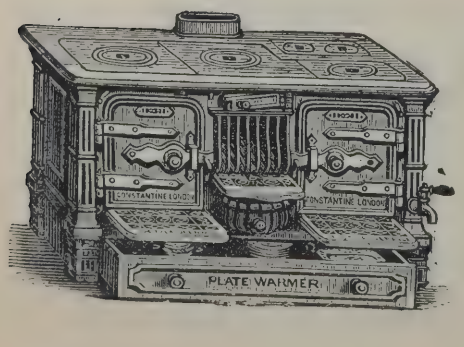
ACCIDENT POLICIES, Free from vexatious conditions, and INSURING CAPITAL SUMS in the event of PERMANENT DISABLEMENT, as well as DEATH by Accident and Allowances during TEMPORARY DISABLEMENT, are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE GUARANTEE AND ACCIDENT COMPANY LIMITED.

FIRE POLICIES, COVERING DWELLING-HOUSES and HOUSEHOLD FURNITURE; FARM BUILDINGS and FARMING STOCK; SHOPS and STOCKS-IN-TRADE, CHURCHES, CHAPELS, and SCHOOLS, and all other risks of ordinary Hazard are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE FIRE INSURANCE COMPANY LIMITED.

For information as to Agencies, apply to the
SECRETARY, EQUITABLE OFFICES, 11 & 13 ST. ANN STREET, MANCHESTER,
Or to the RESIDENT SECRETARY at the various Branches:—

London ... ... 69 Lombard Street, E.C.
Glasgow ... ... 101 St. Vincent Street.
Birmingham ... ... Midland Buildings, 2 New Street.
Dublin ... ... 18 Dame Street.
Liverpool ... ... 11 Tithebarn Street.
Newcastle ... ... 1 St. Nicholas Buildings.
Belfast ... ... 6 Royal Avenue.

A HOUSEHOLD TREASURE.
75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S
PATENT "TREASURE"
COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*
Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.
N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

THE floors of St. Joseph's Church, Blundellsands, near Liverpool, lately opened, and erected from the designs of Mr. A. E. Purdie, of London, have been laid with the patent wood-block flooring of Mr. Roger L. Lowe, of Farnworth, near Bolton.

THE registering turnstiles for the entrances of the Adelaide Jubilee Exhibition, which is to be held next year, are to be sent out from England. The pattern selected is Norton's patent, and these turnstiles are being supplied by Messrs. Le Grand & Sutcliff, of 100 Bunhill Row, E.C.

THE sale of a large stock of bricks was held last week at Dunmow. Building bricks went from 17*s.* to 30*s.* per thousand; splay and coping bricks from 35*s.* to 40*s.* per thousand; and drain pipes from 22*s.* to 54*s.* per thousand.

A NEW process for making steel pipes is now employed at Burbach. A syndicate has been formed to build works, the capital being 1,200,000 marks, of which 500,000 marks are issued to the patentee, A. Mannesmann, of Remscheid. It is proposed to apply the method to the manufacture of copper tubing. The process is as follows:—As soon as the steel is cast into the round mould a core is thrust into the steel, so that a tube is formed between it and the walls of the mould. In order to prevent cracking of this annular casting during cooling, the core is so made that it follows up the shrinkage of the steel. The steel cup thus obtained may then be rolled in an ordinary train.

THE Sewerage Committee of Aberdeen Town Council have approved of the surveyor's recommendation to lay a new sewer from Ladymill along the Links to Abercromby Jetty at the harbour entrance, which will drain in its course the irrigation farm and the large districts in Constitution and York Streets. The cost of the work is estimated at 10,000*l.*

THE Liverpool Corporation have, it is said, sold the whole of Kensington Fields by private treaty for building purposes. The property has been purchased under the conditions of a perpetual ground-rent by a number of persons, and the building operations will commence shortly. The prices obtained for the land ranged from 50*s.* to 19*s.* per yard.

WE understand that the directors of the City and Central Dwellings Co., Limited, 3 Newgate Street, E.C., have resolved to pay an interim dividend in January next at the rate of 5 per cent. per annum for the current quarter.

MR. C. H. MABEY of Storey's Gate executed the whole of the exterior carving in red Mansfield and Portland stones at the Guildhall School of Music, including the trophy panels in front and pediment over principal entrance.

THE *Ladies' Pictorial* has been fortunate this year in finding a picture that is well adapted for translation into chromolithography, and the plate of "The Young Cavalier," by M. Mordecai, from a painting which was exhibited this year in the Royal Academy, will give delight in many households. The artist has evidently studied in France, as may be judged from his skill in the use of colour.

THE prospectus of the new Leaseholders' Fund Corporation merits the attention of large and small capitalists. An undertaking which has among the directors such surveyors as Mr. Beadel, M.P., and Mr. Francis Vigers, and with a manager like Mr. Martin Vigers, has a sufficient guarantee that it is free from risk, for these gentlemen have a profound knowledge of property, and are not likely to meddle with anything that is not based on the soundest principles.

CONTRACTS FOR WATERWORKS AND LIGHTING OF BELGRADE.

THE Earl of Iddesleigh has received a despatch from Her Majesty's Minister at Belgrade, notifying that the Municipal Committee of that town have resolved to undertake works to supply it with water, and also to drain and light it. Concessions will be granted for these works, either separately or for the whole together, to the lowest bidder, and are open to public competition for four months, viz., up to the 10th (22nd) March, 1887. No model forms of contract have as yet been prepared for these contemplated works, as the Municipality desire competitors to formulate their own proposals. The population of Belgrade is from forty to forty-two thousand. The town has recently been surveyed by Austrian engineers, and photographs of the plans of the survey can be obtained for a sum of twenty francs the set, on application to M. Bogitchévitch, the Mayor of Belgrade. Her Majesty's Minister adds that the agents of any firms seeking to obtain these contracts should be conversant with the German or French language.

FRENCH LIBRARY OF ART.

JUST PUBLISHED. Handsomely bound in Cloth, Broché, 24*s.*; Relié, 28*s.*

LES STYLES.

OVER SEVEN HUNDRED ENGRAVINGS OF DIFFERENT PERIODS, WITH DESCRIPTIONS.

BY PAUL ROUAIX.

"This large and sumptuous book is issued by the publishers of *L'Art*, a journal which we have frequently referred to as being one of the best publications of its kind in Europe. The French Librairie de l'Art has been known for long in connection with works treating of the fine arts, and *Les Styles* is certainly equal to anything we have ever seen of the kind, and by far superior to the vast majority of similar works issued in this country. There is something about the atmosphere of France which confers refinement of taste in everything relating to designs, and so pronounced is the national aptitude for discovering beauty and symmetry, that the very fact of a book coming from across the straits is generally a sufficient guarantee of the artistic excellence of the contents.

"M. Rouaix treats of many species of decoration, commencing with that in vogue amongst the ancient Egyptians, and proceeding in regular order of date with the Etruscan, Greek, Byzantine, Roman, Gothic, the peculiar ornamentation of the Renaissance, and of the times of Louis XIII., XIV., XV., and XVI. Before each division the author introduces a short historical introduction, and afterwards, by means of a series of beautifully executed prints, illustrates the prevailing fashion of the time. For this purpose he has levied contributions on examples of architecture, carving on wood, suits of armour, bas-reliefs, tapestry and embroidery, mural painting, mosaical work, and a host of other subjects, including caskets and chalices. In fact, anything that can be called artistic and assigned with certainty to a particular era is represented, the result being an exhaustive and exceedingly pretty production."—BOOK LORE.

"Crammed with admirable cuts, arranged chronologically, and grouped under headings."—ATHENÆUM.

Single Number, 5*s.*; Complete Series, 12 Numbers (by Subscription), £2 8*s.*

BEAUTIFULLY ILLUSTRATED.

FANTAISIES DÉCORATIVES.

BY HABERT DYS.

"Beautiful plates. Examples of the finest colour printing, and for variety and grace of design they could scarcely be surpassed. Decorators might gain many hints both for designs and schemes of colour by a study of this excellent publication."—GRAPHIC.

"The illustrations are nicely coloured, neatly drawn, and very spirited."—ATHENÆUM.

LONDON: GILBERT WOOD & CO. 175 STRAND.

MAINTENANCE OF STREETS.

A REPORT on the Maintenance of Streets in Towns has been prepared for the city of Rochester, N.Y., by Messrs. Aldridge, Holly & Kuichling. It contains much information on the English practice. In London, with Guernsey granite rolled macadam (original cost 1.61 dol. to 1.85 dol. per square yard), the average cost of maintenance was about 7 cents per square yard; this cost varied from 3⅓ to 50 cents, and in some cases as high as 1.00 dol. per square yard for individual cases. The average cost of repairs on London granite block, on 36 miles of streets, was, up to 1840, for blocks 6 inches wide, 2 cents per square yard per year. During eight years (1848–56) Margate Street, paved with blocks 3 inches wide, cost 7½ cents per square yard per year; and for the same street between 1848–64 the average was 9 cents. In 1854 the average cost of repairs on all London granite block pavement was 6 cents per square yard.

In Birmingham, the maximum wear of granite macadam under heavy traffic was a little less than 6 inches in one year (1853); with this one exception the maximum wear was 4 inches and the average wear 2 inches per year. At this rate the cost of maintenance was estimated at 8 cents per square yard per year. Another engineer of the same place puts the average for macadam at 23 cents and for granite block pavement at 2½ cents per square yard per year.

In Derby, Mr. E. B. Ellice-Clark in 1876, from eleven principal streets laid with granite macadam under considerable traffic, put the annual average cost of maintenance at 22 cents per square yard, and 6 cents for the average of one street laid with granite block pavement.

In Liverpool, Mr. Newland, upon nine streets laid with granite macadam, found for three years (1848–50) that the average cost was about 20⅝ cents per square yard per year; he found a minimum cost of 7½ and a maximum of 36⅝ cents per square yard.

Mr. Kuichling, in an appendix, devotes a number of pages to the cleaning and maintenance of streets. He first refers to the removal of ashes and rubbish, and attempts to impress upon householders the importance of acting in concert with the city authorities in this line, and to separate the slops or organic matter from the inorganic waste. He suggests that all combustible matter be destroyed in the kitchen range, instead of being allowed to accumulate about the premises; with such a course generally adopted the result would be a riddance of what otherwise soon becomes offensive, and the removal of a vast quantity of material that finds its way now into the sewers, gives forth noxious exhalations, and must be ultimately removed at great cost.

In speaking of the dust, mud, and dirt that so rapidly accumulates on paved and improved streets he ascribes its presence, first, to the finely-divided earthy and organic matter transported by the winds from distant points; second, to the wear in the street surface itself, which, according to a large collection of statistics, is found to range as follows :—

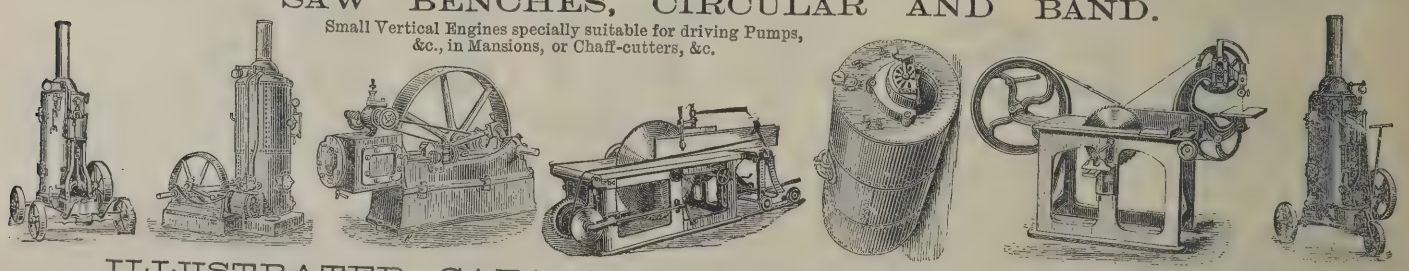
On granite pavement . .	0·05 to 0·22 inch per year.
On wood pavement . .	0·14 to 0·33 ,,
On granite macadam . .	1·00 to 6·00 ,,

As thus shown, the inferior classes of pavement create the greatest amount of mud. Third—the earth, soil, or sand which works up through the interstices of the pavement as a result of settlement from defective foundation. In gravel and macadam roadways this last is one of the principal causes of mud and ultimate destruction, and can only be remedied by careful underdrainage, which practically means re-construction. With the modern system of water-tight sewers this thorough underdrainage is especially necessary for the maintenance of any permanent roadway. Fourth—earth, dust, and organic matter is unavoidably deposited directly upon the paved street from passing vehicles or animals; and large quantities are washed by rain from unimproved into improved roadways.

The character and composition of mud accumulating upon paved streets varies greatly with the class of pavement. Dr. Letheby and others have analysed samples from London stone-paved streets, and found a complete mixture of water, comminuted stone, earthy matter, horse manure, iron from horse-shoes and wheel-tires, and fragments of leather, wood, cloth, paper, &c., in almost endless variety. Organic matter is present in greatest quantity in dry weather, and least in wet weather, thus indicating that in the latter case the abrasion of stone and iron is greatest. The average proportions of the principal ingredients of the mud are found as follows :—

	Average.	In Dry Weather.	In Wet Weather.
Per cent. abraded stone or minerals	30	41·8	79·5
Per cent. abraded iron . . .	13	41·8	79·5
Per cent. organic matter and manure	57	58·2	20·5
Total . . .	100	100	100

E. S. HINDLEY, 11 QUEEN VICTORIA STREET.
VERTICAL STEAM ENGINES, PORTABLE OR FIXED. HORIZONTAL STEAM ENGINES } WITH OR WITHOUT VERTICAL BOILERS
SAW BENCHES, CIRCULAR AND BAND.
Small Vertical Engines specially suitable for driving Pumps, &c., in Mansions, or Chaff-cutters, &c.



ILLUSTRATED CATALOGUES FREE ON APPLICATION.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d. Office: 175 Strand, London, W.C.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.
All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

Dr. Letheby also found the amount of organic matter contained in dried street mud from different London pavements was on the average :—

From stone pavement .	.	22·8 per cent. of the bulk.
From wood pavement .	.	60·0 ,, ,,
From macadam pavement	.	4·0 ,, ,,

From this statement it is seen that wood pavement yields the greatest volume of organic matter and macadam the least ; but the detritus from the latter is vastly greater per unit of area, and it makes up in quantity what it lacks in proportion.

From reports and statistics, principally foreign, the quantities of mud to be dealt with appear as follows :—For convenience these statistics were all reduced to an average roadway one mile long, 37½ feet wide, containing 22,000 square yards. The number of loads, of 1¼ cubic yards, collected weekly, per mile of roadway containing 22,000 square yards, was as follows :—

Manchester, England, macadam, average .	.	15 to 17	loads.
Manchester, England, macadam, dry weather	.	27	,,
Manchester, England, macadam, wet weather	.	81	,,
London (Bridge), granite block, dry .	.	101	,,
Liverpool, England, granite, asphalt joints .	.	15 to 27·3	,,
Liverpool, England, granite, common joints	.	27·4 to 37·9	,,
Liverpool, England, macadam, paved gutters	.	26·8 to 57·7	,,

Asphalt and wooden block develop of themselves small amounts of mud and dust, and this is also true of stone-block with cement, pitch, or asphalt joints. In Birmingham, the city engineer reports the largest amounts of mud collected daily per 1,000 square yards of pavement as follows :—

From wood pavement in one day about	.	0·33 loads.
From common granite in one day about	.	2·00 loads.
From macadam in one day about .	.	12·00 loads.

The following is given from various authorities as the average quantity of street dirt which experience has proved will form during only a few days upon properly kept roadways in large English towns :—

	1	2	3
	Square yards of road.		
On macadam one load of dirt per .	344	250	250
On granite block one load of dirt per	500	1,000	1,500
On wood block one load of dirt per .	1,666	3,000	3,000
On asphalt one load of dirt per .	4,000	—	—

The figures in columns 1 and 2 are attributed to E. B. Ellice-Clark, formerly City Engineer of Derby ; column 3 is taken from a report of the Paddington (London) vestry for 1878.

In summing up upon the foregoing it is seen that the quantity of mud accumulating upon a paved roadway during a given period is very variable. One set of authorities claims that the better the maintenance of a roadway and the oftener it is swept, the less will be the mud accumulation and cost of repairs. As Mr. Kuichling says, this proposition will hardly hold good for stone or wooden block pavement, but appears to be true for macadam. In the latter the smoother the surface is kept the obvious less wear by the wheels of heavy wagons and the less pulverised stone resulting from such abrasion. Thorough cleaning, too, brings to light defects which would otherwise be overlooked. The bulk of evidence from many localities points to the fact that a coating of mud and dirt is generally detrimental to a pavement, notwithstanding the fact that a very few authorities look upon this mud as a protection from wear and injury. Macadamised roads should be cleaned frequently, rather than once or twice per year, but they should be scraped only when the dirt is soft and plastic. The liquid mud is best removed by careful sweeping with soft bass brooms. The experience of Manchester, Birmingham, and other English cities shows that with a proper application of water and sweeping machines a saving of nearly one-third of the material required for the repair of macadam roads can be effected.

BUILDING IN LEEDS.

THE annual report of work done in the year ending August 31 has just been presented to the Building Clauses Committee of the Leeds Corporation by Mr. Davidson Hainsworth, inspector of buildings. It shows that 1,380 plans had been submitted. Of these 13 were taken away for alteration and not returned, 1,196 were approved, and 148 were rejected. The plans approved referred to 1,596 houses, 564 cases of alteration, 818 ashpits and other conveniences, and 609 mills, workshops, &c. Among the rejected plans were 217 relating to houses. The house plans approved included 13 villas, 10 semi-detached villas, and 441 through and 1,132 back-to-back houses. Fourteen miscellaneous plans included one cemetery chapel, two additions to churches, five mission-rooms, one Salvation Army

ASCHERBERG PIANOS,

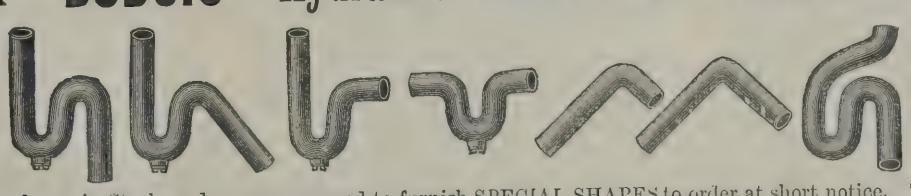
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET, KING'S CROSS, W.C.

Barracks, one school, one Home for Waifs and Strays, and one club. During the year there had been certified for occupation three villas, three semi-detached villas, 378 through houses, and 719 back-to-back houses; while 711 miscellaneous buildings and 771 closets and ashpits, &c., had been completed and certified.

INSTITUTE OF AUCTIONEERS AND SURVEYORS.

ON Wednesday the adjourned meeting in connection with the founding of the new Institute of Auctioneers and Surveyors was held in the Cannon Street Hotel. Mr. J. M. Klenck, who presided, in opening the proceedings stated that an impression had gone abroad that it was the wish of the society to become rivals of the Surveyors' Institute, but on behalf of the committee he desired to state distinctly that that was not the case. They believed that there was a wider field for their society, which would take in a branch of the profession that the Surveyors' Institute did not touch. Since the last meeting they had only had two withdrawals, but they had added to their numbers 81; and now that it was known that the Institute was going to be started many members of the profession who were holding back would come forward and join the society. Everything would be left open to the council as to the rules of the Institute and the election of its members, president, and vice-presidents. The committee had received a large amount of correspondence favourable to the movement. Some hundreds of gentlemen had already joined the society, which the committee believed would be a great success.

The Secretary (Mr. G. J. Ottley), at the request of the chairman, then read the report of the preliminary committee appointed at the meeting of October 6. It stated that the committee met for the first time on the 20th of that month, when the draft rules were laid before them. Since then the committee had assiduously devoted themselves to the task allotted them of revising and perfecting the rules. As they had stated in circulars issued on the 18th and 29th ult. drawing attention to the progress of the movement, copies of the rules could be obtained on application at the offices of the Institute, 57 Moorgate Street. The committee recommended the following gentlemen to serve upon the council, subject to the approval of the members, leaving the remainder of the members—eight for London and thirteen for the provinces—to be filled up by the council as they might think fit:—Messrs. J. M'Clelland, Liverpool; J. L. Yarker, Manchester; W. H. Sheldon, Rotherham; A. Brodie, Consett; J. H. Willoughby, Gravesend; A. H. Wansborough, Weston-super-Mare; J. Earp, Derby; R. Flowers, Newcastle; C. A. Galpin, Oxford; W. F. Perkins, Southampton; B. M. Bradbeer, Lowestoft; and for London, Messrs. J. M. Klenck, H. J. E. Brake, B. Brown, Abram Smith, L. S. Snell, E. Ingham, and G. Stanham. On the motion of Mr. F. Liell, seconded by Mr. F. C. Lee, the report was adopted. The secretary afterwards read a digest of the rules.

A short discussion followed, the principal point being that every care should be taken as regarded the election of members; and a resolution was passed, as a recommendation to the committee, to the effect that the Institute should consist of auctioneers and surveyors only. A resolution was also agreed to electing as the preliminary council the gentlemen mentioned in the report, with the addition of the following:—Messrs. Thomas Capper, Northwich; A. E. Marwin, Cowes; G. F. Brown, Bradford; S. Hearn, Cardiff; and John Hind, Manchester. Votes of thanks to the committee and to the chairman brought the meeting to a close.

THE GERMAN IRON TRADE.

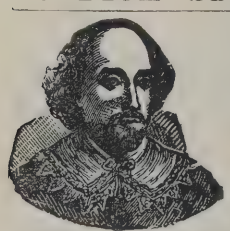
THE last number of the *Diplomatic and Consular Reports* contains one from Mr. T. R. Mulvany on the trade and commerce of the district of Westphalia. In respect of iron and steel he writes:—

The depression of prices not only continued, but increased very considerably during 1885, and still more so up to the present date, so that the present state of things is very disheartening to all those connected directly or indirectly with this so highly-important branch of industry, upon which so many branches of trade depend.

It is difficult to get at the figures, but there can be no doubt stocks have been and are increasing, so that, unless some extraordinary improvement takes place in other manufacturing countries, a still further reduction of prices in the district is apparently inevitable, although there is a fair demand in the home market; and the Rhenish Westphalian producers and manufacturers are going in for export trade, and securing from time to time large orders, more, it is to be presumed, however, for the purpose of keeping the wheels going, and for the purpose (with an eye to the future) of gaining a good footing in foreign markets than for the sake of present profits, which, under

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, { Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,


ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks
No Travellers Employed.
SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

PARKINSON'S
BEST QUALITY
LOWEST PRICES
WET & DRY
COTTAGE LANE
CITY Rd LONDON
GAS METERS

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

Artistic Wall-Papers.
J. & H. LAND.
Architects are invited to inspect our Show-rooms.
(Facing Cannon Street Station.)
93 CANNON STREET, E.C.

R. WAYGOOD & CO.'S Lifts, Cranes, Iron Doors, and Gas Engines.
[See Illustrated Advertisement, page viii last week.]



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

the present state of things, are nil; in fact, I think that with regard to export trade pure and simple, the larger the orders won the greater losses. It may, I think, be safely said that without the home market prices to strike an average with this trade would simply be impossible.

There can be little doubt as to the fact that, right or wrong, in many branches of the trade, especially of the steel trade, the Germans gain orders abroad on the reputation of a superiority of quality due to the advance made in the science of manufacture in this country.

Then apart from protection and moderate land freights, it is out of the question of things that the Germans—for the reasons explained in my last report—can produce, manufacture, or construct as cheaply as the British manufacturers; but the latter are heavily handicapped in the life and death race of competition by free trade and a railway monopoly in the hands of private companies. This appears to be the only way to account for the possibility of an inland Continental district like this—with no better men and no better materials to work with—being able at any time to compete with England, where all the materials are within a ring fence close to the sea.

The Germans, it must be remembered, import foreign ores largely from over the seas, with all the expense of transhipment at Rotterdam, in many cases the same having to be transloaded into railway trucks for carriage from the Rhine to the iron-works, for which in many instances the German railway freights are still too high. There can be no possible reason why the English should not turn out as good if not better steel and iron than the Germans, seeing, as a rule, the former system of management is simpler, better, and more economic than the latter.

It is difficult to get the data for this district alone; but, judging from general statistics, there is very little, if any, increase in quantity produced, while there is a very considerable depression in the value of the products and manufactures, especially in the export trade. In pig iron I should say also, judging from general statistics, there was in 1885 less import and export than in 1884, and a very decided depression in value. Railway rails are less imported, and prices perhaps about the same; whereas export would show a considerable increase in quantity and greatly reduced value, and the same results as regards other manufactures of steel and iron. In engines, locomotives, and machinery, judging from the general state of trade and general statistics for the empire, there was less import and less export in both cases, but especially in the latter, at reduced selling value. Almost without exception, the most marked reduction in value is to be noticed in the selling value of the exports, which goes to show that those manufacturing centres which export to Germany cannot afford to, or do not, make the same sacrifice to maintain an export trade as the Germans (under the aid of protection) do and can afford to do, with the object of establishing an export trade.

Owing to this protection, the home producers and consumers, such as State railways, &c., may have to pay higher prices than under free trade, but they and the nation at large profit by increased reproductive employment, influx of foreign money, interest on capital invested (at least avoidance of loss of capital), a larger revenue from taxes and import dues, by the carriage of German raw materials and unfinished manufactures on German rail and waterways, advantages which far and away outbalance any which might accrue from the purchase at perhaps somewhat lower prices from foreigners. It must be remembered that the money expended in the purchase of home products is kept within the country.

As yet wages have not been reduced to any extent worthy of notice: in a good many cases, however, reductions of the number of hands employed have taken place, but on the whole there is no want of employment worthy of note, nor does there appear to be any discontent among the workmen, nor have they as a rule any grounds for complaint.

The wire trade has undergone a further depression: from Cologne it is reported that a further reduction of demand took place in 1885 of 11 to 12 per cent. Messrs. Felten & Guilleaume export very largely to England and the colonies not only wire and wire ropes, but cables and fencing, &c., of superior quality.

Of late years German manufacturers have established works in Russia, so as to avoid the heavy import duties levied in that country.

A new system of railway sleeper (made of old rails) has lately been patented for Germany, and I believe England, which has, it is stated by the patentee, been practically tested in Germany with very favourable results: the economy which can be effected, he says, according to calculations made, is very great as compared with any other system.

It is assumed that were this system adopted on the principal railways in Germany a saving would be effected in fifteen years of 7,500,000*l.* as compared with wooden sleepers, or an enormous economy would result even in comparison with the present light iron sleepers, seeing that the latter, it is stated,

FIRE BRICKS.
E. BOWEN, Fire Brick Manufacturer, Stourbridge.
Manufacturer of Best Stourbridge Fire Bricks, and Cement Fire Clay, Gas Retorts, Muffles, &c. Fire Bricks and Blocks for the Highest Heats, for Iron Blast Furnaces, Forge, Rolling, Puddling and Steel Furnaces, Pottery, Bottle, and Flint Glass Furnaces, Roasting and Refining Furnaces, Chemical Works, Coke Ovens, &c., Boiler Seating Blocks, Flue Covers, Locomotive Bricks, Tuyères, Steel Runners, Grate Backs.
Special Sizes and Shapes made to Engineers' Drawings.
Prices Quoted to any Port or Railway Station.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

GLAZED BRICKS.
OATES & GREEN, Halifax.
GLAZED BRICKS (White and Coloured), Special Salt Glazed Bricks, Sanitary Tubes, Glazed Earthenware Sinks, Cattle, Sheep, and Pig Troughs, Horse Mangers, Patent Automatic Trough Closet, Patent Flush Tank, Channelling for Stables and Yards, Salt Glazed Bricks for Stables, Sewers, &c. Ventilating Bricks, Patent Ventilating Gullies and Traps, Garden Edging, Patent Chimney Pots and cure for Down Draughts, Patent Drain-Cleaning Rods.
Six Prize Medals. Copies of Testimonials sent if required.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

BLUE BRICKS.
THE KETLEY BRICK COMPANY,
MANUFACTURERS OF STAFFORDSHIRE BLUE BRICKS.
Kingswinford, near Dudley, Staffordshire.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

DRAIN PIPES.
Lime, Cement, Bricks, Slates, Laths, Hair, Sand, Plaster, Stable Paving Bricks, Wall Copings, Channel Bricks, Blue and Red Ridges, Red Plain Tiles and Pan Tiles, Closet Pans and Traps, Drain Pipes, Bends, Junctions, &c., all sizes. Chimney Pots, Red and White, Fire Bricks, Lumps, Tiles, Fire Clay. Prices on Application.
R. CULL & SON'S STORES,
RAILWAY ARCHES,
Corner of LONDON ST., & BRADY ST.,
Near BETHNAL GREEN STATION.
CHIEF OFFICE:—72 PALMERSTON BUILDINGS, OLD BROAD TREET, E.C.

G. BARKER and CO. Established 1863.—The BANK, No. 35 Mark Lane, London.
Current accounts. Special advantages.
Deposits received at the following rates:—
3½ per cent. on demand.
4 per cent. seven days' notice.
4½ per cent. fourteen days' notice.
5 per cent. thirty days' notice.
6 per cent. three months' notice.
Interest payable quarterly Extra bonus for 12 complete months. Pamphlet and further particulars on application.

EDWARD SMITH & CO.
MAKERS OF EVERY DESCRIPTION OF PLAIN AND ORNAMENTAL FLOOR AND WALL TILES : MOSAICS :
E S C
EMBOSSED AND INCISED TILES, ETC., RED & WHITE TERRA-COTTA PRESSED BRICKS, ETC., ETC., ETC.
COALVILLE. LEICESTERSHIRE.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES:
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices: 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered Free.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS.
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

NASH & HULL,
LETTER
MANUFACTURERS
WRITERS AND ENGRAVERS
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.

A. J. SHAW,
Gower Varnish Works, Sheffield,
MANUFACTURER OF
WOOD STAINS & VARNISHES
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.
Samples and Quotations from the Manufacturer

cannot be expected to have a duration of fifteen years, and that each renewal would represent a loss in value of material of 6,240,000*l.*, whereas the life of old rails, as sleepers, is taken at eighty to one hundred years. The deterioration of value of the old rails, as such, would be but comparatively small. Great advantage is claimed from the heavier weight of the rail sleeper securing a greater stability of road.

Two suitable lengths of old steel or iron rails are used in the construction of each sleeper, the only work necessary being the cutting, boring, and fitting of the same.

There is certainly, if good working results can be obtained, a great deal in the idea of the direct application of such old material, which must otherwise be sold at low prices, particularly in countries where iron or steel industry does not exist.

The Iron and Steel Association complains of large orders having been given by the State railways for wooden instead of iron or steel sleepers, notwithstanding the favourable results attained with the latter, and the present depressed state of the iron and steel trade.

MARBLE-WORKING MACHINERY.

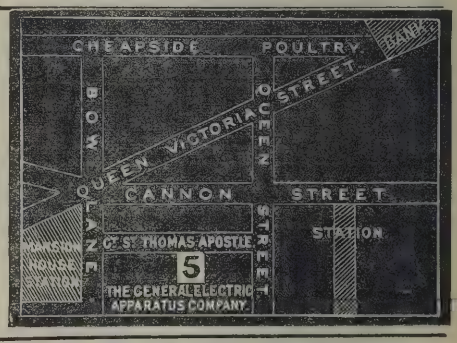
WE lately described the ingenious machinery which is employed by Messrs. Burke & Co. at their Paris works for sawing blocks of marbles into thin sheets. It is a specimen of the skill possessed by Belgian engineers. It appears from a judgment in the Court of Appeal on Saturday that Messrs. Burke had ordered an English machine, but it had to be superseded. The maker of the English machine brought an action to recover the value, and Messrs. Burke objected on the ground that the machinery was unfit for the purpose for which it was made. According to the evidence, Mr. Burke in 1882 ordered of the plaintiff, Mr. Hall, two large saw frames for sawing marble into small pieces for mosaic work. It appeared that Mr. Burke ordered the machines to be on the pendulum principle—that is, that the motion should be communicated from the engine to the saw by means of a pendulum, instead of by means of a crank; and after the contract was entered into, the defendant desired that the working gear should be under the machines, and desired other alterations. The plaintiff raised objections to these, but the defendant desired them as the machines would thereby occupy less room. The contract was arrived at by letters, and what the actual contract arrived at was was a question in dispute between the parties, the principal letter from the plaintiff to the defendant describing the machine as a self-contained saw frame, with radiating water and sand plates, self-raising and self-lowering gear as described, and worked by pendulum. One of the machines was set up in London, and the other in Paris. The Paris machine seemed to have worked for a short time, and then broke down. The plaintiff alleged that the machines were well made, and that they broke down owing to the defendant insisting on having the pendulum and the under-gearing and other alterations, and by reason of the machines being improperly worked by the defendant's workmen. It appeared that sand and water ran down from the sand boxes to the gearing below; and it was alleged that the self-distributing sand boxes ordered by defendant caused an excessive strain on the machines, and that pieces of marble were carelessly allowed to get into the sand boxes, which also contributed to the breakdown. The defendant alleged that the machines, both the London and the Paris one, were unfit for the work for which they were ordered, and that the plaintiff was bound to supply machines that would do the work; that he was entitled to reject and did reject the machines, and counter-claimed for damages. The case was tried before Mr. Justice Grantham without a jury, when it occupied several days. It appeared that the London machine was set up on May 2 and did not break down until June 29, and the question was raised whether the defendant had not kept it too long to be entitled to reject it. In the result the learned judge found that the position occupied by the plaintiff towards the defendant was that of an engineer who was engaged to make a particular machine which the defendant required for carrying out, as he thought it would, certain work which he was anxious to have performed, but that the plaintiff did not warrant that the machines made by him according to the defendant's direction and with his approval would carry out the work as required by the defendant. He also found that the plaintiff's allegations as to the cause of the machines breaking down were true. Judgment was accordingly given for the plaintiff.

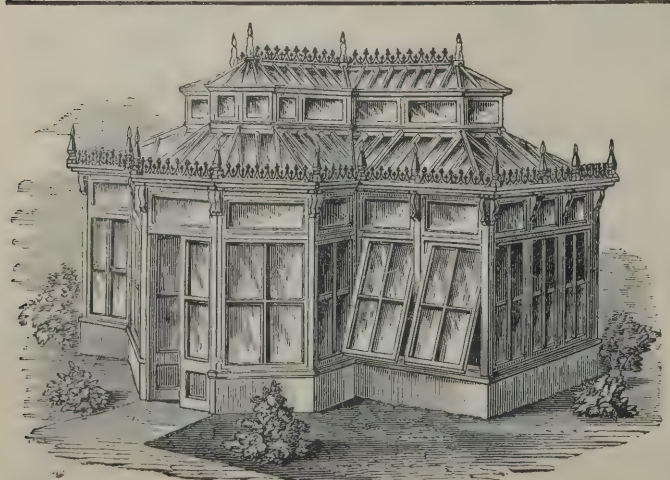
The defendant appealed from this judgment, and argued his case in person; while Mr. Forbes, Q.C., and Mr. Yarborough Anderson argued for the plaintiff. The arguments took place last month, and the Court delivered judgment on Saturday, partly affirming and partly reversing the judgment of Mr. Justice Grantham.

The Master of the Rolls said that the defendant had argued

OAK PANELLINGS.
A SPECIALITY.
MR. J. ICHENHAUSER, of 68 NEW BOND STREET,
Is prepared to give Designs and Estimates for OAK PANELLINGS and CEILINGS, for Sacred and Domestic Buildings. Largest holder in Europe of Queen Anne, Jacobean, Louis XIV., Louis XV., Louis XVI., English, Italian, German, and Flemish Renaissance Styles. Also Antique Carved Oak and Marqueterie Furniture. Architects and intending Builders would do well to send for Mr. Ichenhauser's Illustrated Magazine, *The Collector and Art Furnisher*, Free.

Telegraphic Address: "ELECTRICITY," LONDON. *Telephone No. 1887.*
THE GENERAL ELECTRIC APPARATUS CO.
ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE
Works: BOW and SOUTH HACKNEY. (*Back of the Mansion House Station*), E.C.
ELECTRIC BELLS.
Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.
The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.
Electric Light Instruments, Fittings and Glassware.





R. HOWARD,
Horticultural Works,
DONCASTER.

HORTICULTURAL BUILDINGS erected, with hot-water apparatus complete, in any part of the Kingdom, by experienced workmen. All the newest improvements in machinery for ventilation.

SILVER MEDAL awarded by the Society of Architects at the Architectural and Building Trades Exhibition, Sheffield, February 1886.

Also PRIZE MEDAL and CERTIFICATE, the highest and only award for excellency of Horticultural Buildings and Machinery for Ventilation, at the International Architectural Trades Exhibition, London, April 1886.

the case with unusual and remarkable ability. The dispute was a purely business and mercantile dispute, and there was no imputation on either side. It appeared that there was a contract between a person desiring a machine and a manufacturer of machines. The contract was made in writing, one party asking to have a saw frame made, and the other undertaking to make it for a certain price, the manufacturer knowing that it was for sawing stone or marble. There were two well-known kinds of contract—first, a customer might ask a manufacturer to make a machine according to a given plan or according to a plan supplied by the customer; in that case the manufacturer would only have to make the machine according to the plan and in a workmanlike manner. Secondly, a customer might ask the manufacturer to make a machine for a particular purpose, not supplying any plan, but leaving it to him to make it for that purpose: in that case, unless the contrary was expressly stated in the contract, the manufacturer would have to make a machine fit for that purpose. There might be a third kind of contract, where both parties said that they would jointly endeavour to make a machine that would do its business, when he thought that there would be no warranty that it would affect its purpose. Here there was a contract by the plaintiff to make the machine, not according to a given plan, but for sawing stone or marble. There was, therefore, a guarantee that it would be fit for that purpose, and this notwithstanding that the manufacturer had never made a machine like it before. After the contract was made the defendant ordered certain alterations, and it was argued that those alterations caused the breakdown. But when the manufacturer was to make a machine fit for a particular purpose, and it was left to his skill to make it, even though the customer ordered alterations, the manufacturer had a right to refuse to make those alterations, as he was responsible for the machine under the contract. If the customer were then to insist upon them, the contract would be altered, and the machine would be made according to a given plan. But if, on the alterations being suggested, the manufacturer adopted them, he could not at the same time say that the contract was altered; he had made the suggested alterations his own, and having agreed to make the machine for a fixed price, he could not charge for them, however expensive they were, unless there was an agreement to that effect. The case of a contract to build a house was different, as there the contract nearly always was to build according to a specification, and any tribunal would hold that an alteration of the specification would be an alteration of the contract. But here there was no specification on which the machine was to be built. His lordship then came to the conclusion that the machine was not fit for the purpose for which it was ordered, and that it broke down in consequence, and not in consequence of the defendant's working. The defendant had a right to keep it for a reasonable time in Paris so as to test it, and that was all he did. He did not accept the machine, and could not be made to pay for it, and he must receive back the money paid by him for its conveyance to Paris. Further, the plaintiff was not entitled to any sum for extras incurred by him in trying to make the machine work in Paris, as he was only endeavouring to carry out his guarantee. As to the London machine, the defendant kept it too long, and so must be held to have accepted it, and must pay for it; and as he put his case solely on the ground that he need not pay for it at all, he did not point out any substantial expense to which he had been put in repairing the defects in that machine, and so could not recover anything in his counter-claim in that respect. As to another machine in question, his lordship thought the defendant's complaints about it were not well grounded. The judgment would be that the defendant need not pay for the Paris machine, and would recover on his counter-claim the cost of its conveyance to Paris, but that he must pay for the London and the other machine. The general costs of the trial would be the plaintiff's, the defendant to have the cost of the issues in his defence and counter-claim on which he succeeded. There would be no costs of the appeal.

Lord Justice Lindley, in concurring, said that this contract came within the fourth class laid down in "Jones *v.* Just," "L. R." 3, Q. B. 202, that "where a manufacturer contracts to supply an article which he manufactures or produces, to be applied to a particular purpose, so that the buyer necessarily trusts to the judgment or skill of the manufacturer, there is in that case an implied term or warranty that it shall be reasonably fit for the purpose to which it is to be applied." As to the alterations, he did not think that the defendant insisted upon them, but only suggested the alterations and pressed them. The plaintiff never told the defendant that they would spoil the machine, and the fair inference was that the plaintiff saw the objections to them, but also saw his way to overcome those objections. There was no express decision upon the point; but, upon principle, he thought that the implied warranty extended to the alterations which the manufacturer had agreed to make.

Lord Justice Lopes also concurred.

E. LOFTS, Patentee & Manufacturer,

Hills Road, CAMBRIDGE. London Show-rooms, 165 Queen Victoria St. E.C.,

OPEN FIREPLACES

FOR

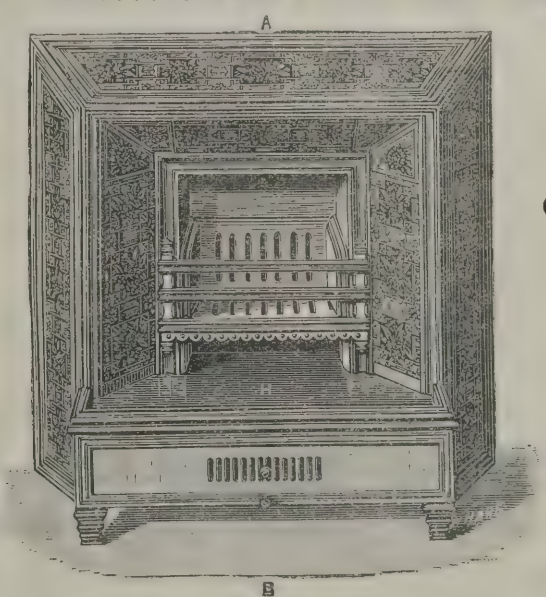
DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES.



HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS,

&c., &c.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Stove.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; **consume their own smoke**; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge.

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

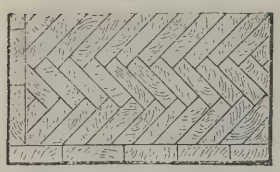
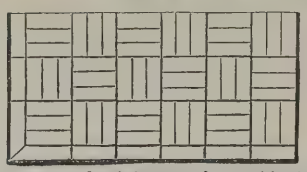
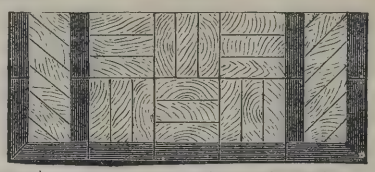
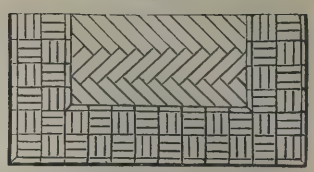
SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

NOW BEING LAID THROUGHOUT THE KINGDOM.

PATTERNS.

No. 1.  No. 2.  No. 3.  No. 4. 

Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

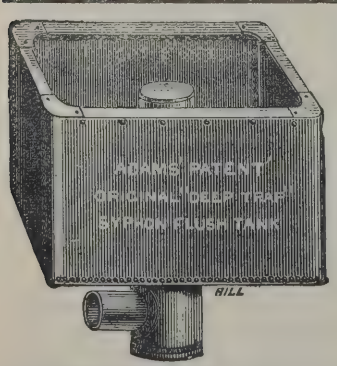
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to :—

BRISTOL ..... **St. Philip's Marsh.**
EXETER ..... **Basin Head.**
SOUTHSEA ..... **Beaufort Road.**
READING ..... **Caversham Road.**
DUBLIN ..... **14 St. Andrew's Street.**
MANCHESTER ... **20 Cross Street.**

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

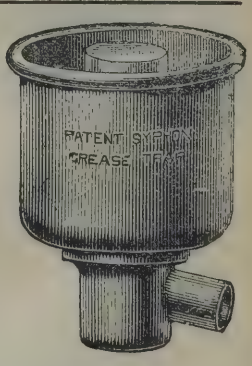


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
" **FLUSH SYPHONS** for Sewer Flushing.
" **FLUSH LATRINES** for Barracks, Schools, &c.
" **FLUSH URINALS** " " "
" **TROUGH CLOSETS** " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, December 10, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, DECEMBER 17, 1886.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

KILBURN.—Jan. 31.—Designs are invited by the Willesden Local Board for the Erection of Public Offices, Dyne Road, Kilburn. Cost, 6,000*l.* Premiums of 50*l.* and 25*l.* Mr. O. Claude Robson, Surveyor, Hampton House, High Road, Kilburn.

LOSSIEMOUTH.—Plans are invited for the Building of a Church in Branderburgh. Mr. George Smith, Lossiemouth.

PEMBROKE.—Jan. 6.—Plans are required for the Erection of about 100 Dwellings for the Working Classes in various Parts of Town. Mr. J. C. Manly, Town Hall, Pembroke.

CONTRACTS OPEN.

ACCRINGTON.—Dec. 22.—For Building Baptist Chapel. Messrs. W. Waddington & Son, Architects, 5 Grimshawe Street, Burnley.

APPERLEY BRIDGE. — Dec. 20. — For Building House, Stable, Warehouse, &c., at Greengates. Mr. Jowett Kendall, Architect, Idle, near Bradford.

ARDROSSAN.—Dec. 20.—For Construction of Wet Dock, Outer Tidal Basin, Entrance Channel, Quay Walls, and other Works at the Harbour. Mr. John Strain, C.E., 154 West George Street, Glasgow.

AYLESBURY.—Dec. 30.—For Building House and Shop. Mr. J. T. Lawrence, Architect, Leighton Buzzard.

BARKING CREEK.—Jan. 7.—For Channels, Pier and Jetty, Engine and Boiler Houses, Workshops, Store-shed, Superintendent's House, and Workmen's Cottages, at Northern Main Drainage Outfall. Mr. J. E. Wakefield, Spring Gardens, S.W.

BIDEFORD.—Dec. 18.—For Building Nine Houses, North Down. Mr. R. T. Hookway, Architect, Bath House, Bideford.

BINGHAM UNION.—Dec. 22.—For 6-feet Kitchen Range. Mr. Arthur Williams, Clerk to the Guardians, Market Street, Bingham.

BISHOPSTOKE.—Dec. 20.—For Additions to the Prize Foods Factory and Steam Bakery. Mr. C. W. Bevis, Architect, Gloucester Chambers, King's Road, Southsea.

BLARNEY.—Dec. 20.—For Alterations and Additions to Business Premises. Messrs. Hussey & Townsend, South Mall, Cork.

BOW.—Dec. 31.—For Enlargement of Sorting Office. The Secretary, H.M. Office of Works, 12 Whitehall Place S.W

BRADFORD.—Dec. 17.—For Erection of Consulting Rooms, Dispensary, &c., and Stable Buildings, Greenbank House. Messrs. Judson & Moore, Architects, 18 Albany Buildings, Market Street, Bradford.

BRADFORD.—Dec. 21.—For Building Spinning Mill and Chimney, with Reservoir. Mr. Samuel Jackson, Architect, 33 Kirkgate, Bradford.

BRADFORD.—Dec. 28.—For Building Weaving Shed at Perseverance Mills, Dudley Hill. Mr. H. Howarth, Architect, Cleckheaton.

BRISTOL.—Dec. 28.—For Building Nine-floor Granary, Prince's Wharf—Brick Walls, Timber Roof Slated, Concrete Floors, Steel and Iron Columns and Girders. Mr. J. W. Girdlestone, C.E., Engineer's Office, Cumberland Basin, Bristol.

BURY.—Dec. 20.—For Iron Castings for Twelve Months. Mr. T. Rigby, Waterworks Manager, Parsons Lane, Bury.

COLLUMPTON. — For Building Two Houses. Messrs. Wilkinson & Warren, Architects, Post Office Chambers, Exeter.

DARLINGTON.—Dec. 21.—For Rebuilding the Theatre Royal. Mr. C. Phipps, F.S.A., Architect, 26 Mecklenburgh Square, W.C.

DOCKING UNION.—Jan. 10.—For Making Efficient the Drainage of the Union House. Mr. J. C. Walker, Vine Cottage, Hunstanton, St. Edmunds.

DODDISCOMBSLEIGH. — Dec. 23. — For Re-seating, &c., Parish Church in Oak. Mr. E. H. Harbottle, Architect, County Chambers, Exeter.

DROGHEDA.—Dec. 18.—For Erection of Bank Buildings for the Belfast Banking Company. Mr. P. J. Dodd, Architect, William Street, Drogheda; Mr. J. M'Dermott Bermingham, Surveyor, Royal Insurance Chambers, Dame Street, Dublin.

ELSTREE.—Dec. 29.—For Construction of the Sewers, Outfall, and Works in Connection. Mr. W. H. Mansbridge, Surveyor, High Street, Barnet.

ELTON.—For Building Nine Dwelling-houses. Mr. T. Nuttall, C.E., Broad Street, Bury.

FLEETWOOD.—Dec. 17.—For Construction of Promenade and Carriage Drive with Retaining Wall or Sea Fence. The Surveyor to the Improvement Commissioners, Town Hall, Fleetwood.

FOLKESTONE.—Dec. 17.—For Glazed Stoneware Pipes. Mr. A. W. Conquest, Borough Engineer, Folkestone.

GREENOCK.—Dec. 18.—For Construction of Customs Watch-house, Two Timber Entrance Gates, &c., at the James Watt Dock. Mr. T. Wilson, General Manager, Greenock.

HEREFORD.—Dec. 17.—For Building Granary, &c., Stables, Cartsheds, &c., at Back of Steam Flour Mill, Bath Street. Mr. Wakeling, 35 Broad Street, Hereford.

HEREFORD.—Jan. 10.—For Providing Additional Water Storage for the General Infirmary, Fire Mains, Valves, Hose Pipe, Delivery Pipes, &c. Mr. J. Parker, City Engineer, Hereford.

ISLE OF MAN.—Jan. 15.—For Making Addition to Principal's House at King William's College. The Secretary, King William's College, Isle of Man.

KINNERTON.—Dec. 18.—For Building Bridge over Sandy Lane Brook. Mr. W. Newton, Surveyor, Pentrobin, Buckley, Chester.

LEEDS.—Dec. 17.—For Building Two Houses and Workshop. Mr. R. A. Bullivant, Architect, 14 Upper Fountaine Street, Leeds.

LONDON.—Dec. 23.—For Additions, &c., and other Works to Board Schools. The Architect's Department, Board Offices Victoria Embankment

LONDON.—Dec. 20.—For Works, General Repairs, and Alterations to Railway Station Buildings, Platforms, and similar Works, on the Railway System for 1887. Mr. J. Wilson, Engineer, Liverpool Street Station.

LONDON.—Dec. 22.—For Construction of Brick and Pipe Sewers, Laying Granite Carriageways and York Stone Footways, &c., Wapping and Limehouse, and Widening Green Street, Bethnal Green. The Engineer, Metropolitan Board of Works, Spring Gardens, S.W.

MANNINGHAM.—For Altering Premises into Cottages. Messrs. Morley & Woodhouse, Architects, 269 Swan Arcade, Bradford.

MONMOUTH.—Dec. 21.—For Refreshment-room at Station. The Engineer, Newport Station.

NEWCASTLE-ON-TYNE.—Dec. 18.—For Building First Section of the Durham College of Science, Lax's Gardens. Mr. R. J. Johnson, Architect, 3 Arcade, Newcastle-on-Tyne.

OTLEY.—Dec. 22.—For Erection of Entrance Lodge and Gates. Messrs. Milnes & France, Architects, Bradford.

PADDINGTON.—Dec. 20.—For Construction of Brick Sewer, &c. The Surveyor, Vestry Hall, Paddington.

PLYMOUTH.—Dec. 22.—For Building Cottage, &c., at Brake's Tenement. Messrs. Andrew & Son, 5 Courtenay Street, Plymouth.

RADFORD.—Dec. 18.—For Pulling Down Buildings at Friesland, in connection with the Radford Boulevard. Mr. Arthur Brown, Borough Engineer, Municipal Offices, Nottingham.

SHEFFIELD.—Dec. 27.—For Construction of Service Reservoir, Meter-house, Laying Cast-iron Water-mains, Pipes, &c., for the Handsworth Local Board. Mr. Charles Gott, C.E., 108 Norfolk Street, Sheffield.

SOUTHAMPTON.—Dec. 20.—For Works at Corn Stores and Corn Exchange, for the Harbour Board. Mr. J. G. Poole, Surveyor, 9 St. Michael's Square, Southampton.

ST. HELENS.—For Making Addition to St. Helens Vicarage. Messrs. Sherlock, Wood & Keef, Architects, 51 South John Street, Liverpool.

STONEHAVEN.—Dec. 24.—For Building Dunnottar Mission Church. Mr. John Young, Architect, Perth.

SUNDERLAND.—Dec. 29.—For Erection of Municipal Buildings, Fawcett Street. Mr. Brightwen Binyon, Architect, Ipswich.

SWINDON.—Dec. 29.—For Construction of Cattle Market, for the Central Market Company. Mr. W. H. Read, Architect, Corn Exchange, Swindon.

WERNETH.—Dec. 21.—For Building Goods Warehouse. The Engineer's Office, Hunt's Bank, Manchester.

WEST BROMWICH.—Dec. 20.—For Supplying and Laying Blue-brick Paving. Mr. J. T. Eayrs, Borough Surveyor, Town Hall, West Bromwich.

WHITEHAVEN.—Dec. 21.—For Alterations to 69 King Street. Mr. J. S. Moffat, Architect, 10 Scotch Street, Whitehaven.

WHITEHAVEN.—Dec. 21.—For Building Pair of Semi-detached Villas at Summerfield. Mr. J. S. Moffat, Architect, 10 Scotch Street, Whitehaven.

TENDERS.

ABERCARN.

For Building Public Hall and Committee-rooms, Abercarn. Mr. G. ROSSER, Architect, Arcade Chambers, Newport, Mon.

T. WILLIAMS & SON, Newbridge (*accepted*)	£1,215 0 0

ACTON.

For Alterations at St. Mary's Boys' and All Saints' Board Schools, Acton. Mr. EDWARD MONSON, jun., A.R.I.B.A., Architect, Acton.

Partitions at All Saints' Schools.

T. BROWN, Acton (*accepted*)	£43 10 0

Partitions at St. Mary's Schools.

G. HOOPER, Acton (*accepted*)	37 0 0

Alterations at St. Mary's Schools.

F. BRAY, Acton (*accepted*)	36 4 0

BARHAM.

For Erection of Gallery at Barham.

D. Thomas, Tredegar	£195 10 0
D. Davies, Cathays, Cardiff	182 0 0
S. Davies, Ebbw Vale	167 0 0
T. EDWARDS, Tredegar (*accepted*)	135 0 0

BARROW-IN-FURNESS.

For Ironwork in connection with Railing Enclosure to New Town Hall, Barrow-in-Furness.

A. WEBB, Belfast (*accepted*)	£521 7 6

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

BRIGHTON.

For Sanitary Improvements, Alterations, and Additions to No. 33 Sussex Square, Brighton, for Mr. E. Frend. Mr. CHAS. E. GRITTON, A.M.Inst.C.E., Surveyor, of Brighton, London, and Sidcup.

GEORGE ROSE, Brighton (*accepted*).

CHELSEA.

For Supply of Austrian Bentwood Chairs for Chelsea Town Hall.

Atkinson & Co.	£146 19 8
Austrian Bentwood Company	146 6 9
Oetzman & Co.	144 17 10
J. Claude & Co.	133 14 8
Vaughan & Co.	130 14 10
Bowman & Co.	118 19 8
Glaser & Son	116 19 10
C. E. R. LIGHT (*accepted*)	107 8 6

CORSHAM.

For Extension of Churchyard, Corsham.

C. F. OSBORNE (*accepted*).

CROYDON.

For Wrought-iron Railing on Yard Walls at the Workhouse, Queen's Road, Croydon. Mr. F. WEST, Surveyor, Coombe Road, Croydon.

Barltrop, Sutton	£104 9 0
Smith & Sons, Norwood	92 0 0
Municipal Appliances Co., Baniber, near Preston	85 0 0
Egleton, Croydon	73 10 0
Davies, Croydon	70 0 0
Goldsmith, Croydon	69 17 6
East Surrey Ironworks Co., Croydon	65 0 0
Chadwick, Croydon	58 0 0
Wenham & Waters, Croydon	54 16 0
Russell, Croydon	53 0 0
Wood Bros., Brockley	46 19 0
Keay, Birmingham	45 0 0
FAULKNER & SON, Horsham (*accepted*)	39 0 0

DUNFERMLINE.

For Building Drill Hall, Dunfermline.

Messrs. Stewart & Hutchison, mason.
A. Mitchell, Maygate, joiner.
R. M'Gregor, Reform Street, plasterer.
W. Lambert, slater.
Messrs. M'Arthur & Chisholm, plumber.

DARENTH.

For Painting, Distempering, and other Works at the Asylum for Imbeciles, Darenth, near Dartford, Kent, for the Managers of the Metropolitan Asylums District, under the Superintendence of Messrs. A. & C. HARSTON, Architects, 15 Leadenhall Street, E.C. Quantities not supplied.

W. Wythe, Dalston	£1,771 5 0
W. Andrews, East Margate	1,322 3 3
H. Fullager, Kingsland	1,168 8 0
G. F. Wenborn, Blackheath	1,097 13 9
F. Wilder, Gravesend	999 0 0
C. Willmott, Hackney	980 0 0
Robson, Snaresbrook	897 0 0
Proctor, Woolwich	790 0 0
Church & Co., Coleman Street, E.C.	780 0 0
A. Whelch, Dover	780 0 0
A. Gee, Stafford	775 0 0
Lilley, Pall Mall	767 0 0
Dudley, New Southgate	661 15 0
Vigor & Co., Poplar	660 0 0
T. A. Bone, Regent's Park	613 0 0
W. F. HADLOW, Dover (*accepted*)	609 0 0

DAWLISH.

For Construction of Sea Wall, &c., Lea Mount, Dawlish. Mr. J. S. DELBRIDGE, Surveyor to the Local Board.

H. R. Trehearne & Co., London	£3,100 0 0
Messrs. Friend, Dawlish	3,100 0 0
W. Hill & Co., London	2,830 0 0
J. R. Sharp, Falmouth	2,714 12 8
J. Pickthall & Sons, Merthyr Tydvil	2,607 15 0
J. W. C. Hawking, Dawlish	2,282 0 0
J. W. Pickthall, Yeovil	2,252 0 0
R. D. Earley, Dawlish	2,154 9 8
W. H. R. HILL & CO., Plymouth (*accepted*)	2,094 0 0

GREENOCK.

For Building proposed Christian Institute in West Stewart St., Greenock. Mr. JOHN BOSTON, Architect, 11 William St.

Accepted Tenders.

J. & R. Kirk, mason	£740 17 3
C. F. Stewart, wright	488 0 0
J. McCue, plasterer	98 5 6
Crawford & Kerr, plumber	69 0 4
A. Leisk, jun., slater	35 10 3
J. McJannet, gasfitting	17 10 11

MAHOGANY & HARD WOODS.

ROBERT GARRARD & CO., 206 BETHNAL GREEN ROAD, LONDON, E.

Contractors to Railway and Rolling Stock Companies.

Large Stocks of thoroughly-seasoned Mahogany Teak, Wainscot Oak, and Walnut for Counter Tops, Handrails, Stair Treads, &c. Mahogany, Cedar, and Teak Panel Dry Pine, Whitewood, Ash, Birch, &c., in all thicknesses and widths. Prepared Flooring and Matching in Pitch Pine, Teak, Oak, &c.

LOGS, Mahogany, Teak, Walnut, Sawn and Hewn Pitch Pine, and other Log Timber, supplied in large or small quantities from Stocks kept at the Docks.

Telegraphic Address—"ACAJOU, LONDON."

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

IMPORTANT.—To Specialists, Manufacturers, and Others.

Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.

THE ARCHITECT AND CONTRACTOR'S COMPENDIUM

And Specialist's Directory for 1887.

EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.

An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, **the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory.** Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this **at a cost less than half that of sending out one circular.**

The minimum **guaranteed circulation** of the **Compendium** is 3,000 copies, but the actual circulation will probably reach a much higher figure.

Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent **Ink-Photo** process, specimens of which are to be seen weekly in *The Architect*. The **Compendium** will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, **without block,** from **any** drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.

An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.

Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager, 16 New Bridge Street, London, E.C.

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

HASTINGS.

For Alterations and Additions to Board Schools, Silverhill, London Road, Mount Pleasant, and Waterloo Place, Hastings. Messrs. ELWORTHY & SON, Architects, St. Leonards.

Cosens, St. Leonards	£155	0	0
Eldridge & Cruttenden, St. Leonards	149	10	0
W. E. Brown, Hastings	135	0	0
Wellsted, St. Leonards	128	0	0
Bovis, Hastings	115	0	0
Salter, St. Leonards	99	0	0
S. P. MILLER & SON, St. Leonards (*accepted*)	94	10	0

ILKESTON.

For One Pair of Villas, for Mr. Charles Wolliscroft. Mr. GEORGE HASLAM, Architect, Euclid House, Ilkeston.

W. Haynes, Ilkeston	£1,436	17	0
J. H. Nicklin, Ilkeston	1,416	0	0
F. Shaw, Ilkeston	1,325	0	0
R. F. BROWN, Stanley Common (*accepted*)	1,320	0	0

KIDDERMINSTER.

For Building Weaving-shed, Kidderminster, for Messrs. Tomkinson & Adam. Mr. J. T. MEREDITH, Architect.

J. & W. Beauland, Bradford	£1,941	0	0
Borrers & Co., Hereford	1,870	0	0
Jones, Kidderminster	1,650	0	0
Everall, Malvern	1,578	0	0
Bate, Bridgenorth	1,550	0	0
Nelson & Son, Dudley	1,549	0	0
Howard & Sons, Kidderminster	1,499	0	0
Bradney & Co., Wolverhampton	1,480	0	0
Mallin, West Bromwich	1,470	0	0
Robinson, Birmingham	1,449	0	0
Tildesley, Willenhall	1,449	0	0
Bate, Kidderminster	1,442	0	0
Binnian & Son, Kidderminster	1,435	0	0
Thompson, Kidderminster	1,399	0	0
Guest, Brettle Lane	1,350	0	0
Bridgeway, Kidderminster	1,345	0	0
Smith, Kidderminster	1,324	0	0
Gittens, Kidderminster	1,298	0	0
Vale, Kidderminster	1,246	0	0

LONDON.

For Erection of the Yorkshire Grey Hotel, corner of Beer Lane and Lower Thames Street. Mr. SECKHAM WITHERINGTON F.R.I.B.A., Architect, 79 Mark Lane.

Kellaway	£6,300	0	0
J. Martin, Eastbourne	6,225	0	0
W. Oldrey & Co.	5,597	0	0
F. R. Turtle	5,505	0	0
W. Goodman	5,490	0	0
J. Grover & Son	5,488	0	0
Staines & Son	5,480	0	0
G. Parker	5,450	0	0
H. Pickersgill	5,447	0	0
W. Downs	5,426	0	0
F. Higgs	5,400	0	0
J. Allen & Son	5,330	0	0
H. Harbrow & Co.	5,310	17	0
Prestige & Co.	5,276	0	0
W. H. Lascelles & Co.	5,234	0	0
G. & J. Green	5,195	0	0
C. F. Kearley	5,177	0	0
E. C. Howell & Son	5,100	0	0
G. Roberts	5,050	0	0
J. M. Goodwin	4,850	0	0
Church & Co.	4,875	0	0
E. A. Roome	4,680	0	0
G. Stephenson	4,669	0	0
T. Elkington	4,650	0	0
J. O. Richardson	4,629	0	0
W. Shepherd	4,600	0	0
Spencer & Co.	4,575	0	0
W. Buckeridge	4,567	0	0
T. Knight	4,560	0	0
S. Sabey & Son, Sidcup	4,500	0	0
R. Priestley	4,270	0	0
PATMAN & FOTHERINGHAM (*accepted*)	4,253	0	0

For Construction of Areas and Ventilation of Basement at the Infirmary, for the Guardians of St. Leonard's, Shoreditch. Mr. F. J. SMITH, Architect, 7 Queen Victoria Street, E.C.

Palmer & Co., Old Gravel Lane	£145	0	0
Lecks & Hooker, Blackfriars Road	135	0	0
W. Whicher, Morning Lane, Hackney	126	0	0
Williams, New North Road	114	0	0
Webb, Stratford	87	10	0
IVORY, Great Cambridge Street (*accepted*)	87	10	0

PHOTOGRAPHS OF **ARCHITECTURE**

In all parts of the world,

INCLUDING a NEW SERIES of DETAILS

From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.

Our magnificent Collection is always on view at our London Galleries,

24 OLD BOND STREET, W.,

Or Selections and Lists can be had by post from

WINCH BROTHERS, Colchester.

List Free.

PAWSON & BRAILSFORD,

DRAWING-OFFICE STATIONERY MANUFACTURERS,

Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.

General Stationery Stores & Milner's Safe Depot,

1 HIGH ST., SHEFFIELD.

SPECIALITIES IN

TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.

Legal and Commercial Stationery.

W. F. STANLEY,

Mathematical Instrument Manufacturer

To H.M.'s Government, Council of India, Science and Art Department, Admiralty, &c.

Mathematical, Drawing, and Surveying Instruments of every description, of the highest quality and finish, at the most moderate prices. Price List post free. Engine Divider to the Trade. Address, 4 and 5 Great Turnstile, Holborn, London, W.C. Also New Store, at 5A Victoria Street, Westminster.

GOLD MEDAL, Inventions Exhibition, 1885.

ACCIDENT ASSURANCE TRANSACTED BY THE ATLAS FIRE AND LIFE OFFICE. Established 1808. West End Office, 32 COCKSPUR STREET.

Head Office, 92 CHEAPSIDE. Secretary, SAML. J. PIPKIN.

QUESTION. WHOSE VENTILATORS are the best for **Churches, Chapels, Schools, Billiard Rooms,** Staircases, Kitchens, Stables, Factories, Hospitals, &c.?

ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, **HALIFAX.** Proved by the most extensive and varied application.

Established 1852.

WRIGHT & CO.'S PATENT FIREPROOF FIXING BLOCKS FOR WALLS AND FLOORS.

Awards 1885. { "Certificate of Merit" from the Sanitary Institute of Great Britain at York. "Highly Commended" at the Firemen's Exhibition, Westminster Aquarium.

Improved fixing, sounder work, no extra cost. Extensively used for High Class Works by leading Architects, Engineers, Contractors, H.M. War Department, &c. Our new illustrated pamphlet, post free, containing full particulars, with numerous recent references, including opinions from Arthur W. Blomfield, Esq., M.A., F.R.I.B.A., J. Douglass Matthews, Esq., F.R.I.B.A., Colonel W. J. Stuart, Commanding R.E. Department, Chatham; Basil Champneys, Esq., B.A., R. J. Withers, Esq., and many other leading architects; also recommendations from practical clerks of works, well-known contractors, &c., who have always used our patent fixings with the greatest success.

WRIGHT & CO. { 3 Westminster Chambers, Victoria Street, London, S.W.

Telegraphic Address: Fixing, London.
Works:—Gosport, Hants, and at Carnforth, Lancs.

BEST BLUE PENNANT STONE,

For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.

Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.

Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.

Wycombe Stone for Building, Pitching, Kerbing, &c.

We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.

Samples of either Stone and full particulars on application.

THOMAS FREE & SONS,

Naphill, High Wycombe.

THE NEW CHANDELIER.

PATENT SECRET BALANCE.

See "The Architect" of October 22, 1886, page 9. Particulars free on application.

H. T. TALLACK, { 28 Hatton Garden, London, E.C.

GRUNDY'S PATENT WARM-AIR VENTILATING FIRE GRATE.

The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.

TESTIMONIALS.

"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.

"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,

"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."

"6 John Street, Bedford Row, W.C.:
"December 16, 1885.

"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,

"R. S. LANDER, F.R.I.B.A.

"To Mr. John Grundy."

From James Garry, Esq., Architect, West Hartlepool, July 1884.

"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."

From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.

"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."

Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."

Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road London.—Works: TYLDESLEY, near Manchester.

Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmore Place, Edinburgh.

LONDON—*continued.*

For Works at Catford Bridge, S.E., for the Governors of the Charities of St. Dunstan's-in-the-East. Mr. E. N. CLIFTON, Architect. Messrs. Williams & Gritten, Surveyors.

Conder	£38,684 0 0
Hall, Beddall & Co.	38,583 0 0
Cubitt	38,493 0 0
Perry	37,817 0 0
Nightingale	37,813 0 0
Ashby Bros.	37,330 0 0
Patman & Fotheringham	36,863 0 0
Clarke & Bracey	36,520 0 0
Ashby & Horner	36,450 0 0
Morter	36,443 0 0
Mowlem	36,320 0 0
Colls	36,300 0 0
Greenwood	36,210 0 0
Dove Bros.	36,104 0 0
Lawrance	34,874 0 0
Brass	34,737 0 0

For Construction of Brick and Pipe Sewers, Laying Granite Carriageways and York Stone Footways, &c., High Street, Hampstead.

G. Elkington	£10,300 0 0
Hindle, Moorish & Co.	9,800 0 0
Church & Co.	8,480 0 0
C. Killingback	7,893 0 0
G. G. Rutty	7,880 0 0
Trehearne & Co.	7,550 0 0
J. Mowlem & Co.	6,980 0 0
Howell & Robson	6,773 0 0
S. & E. Bentley	6,740 0 0
G. FELTON (*accepted*)	5,675 0 0

For Alterations and Additions to Premises, No. 57 Carey Street, Lincoln's Inn, W.C., for Mr. John Clayton, of Humshaugh-on-Tyne, Northumberland. Mr. R. OWEN ALLSOP, Architect, 37 Norfolk Street, Strand, W.C.

F. Love	£445 0 0
Sykes & Son	426 0 0
W. Laughton	420 0 0
Higgs & Hill	388 0 0
W. & F. CROAKER*	384 0 0

*Accepted subject to alterations.

LONDON—*continued.*

For Building Board School, Old Woolwich Road. Mr. T. J. BAILEY, Architect.

Balaam Bros.	£10,820 0 0
J. M. Goodwin & Co.	10,599 15 3
W. Downs	10,453 0 0
C. Wall	10,150 0 0
Wall Bros.	9,900 0 0
Stimpson & Co.	9,877 0 0
Atherton & Latta	9,872 0 0
Kirk & Randall	9,843 0 0
H. L. Holloway	9,777 0 0
W. Johnson	9,750 0 0
S. J. Jerrard	9,743 0 0

For Building Board School, Blackstock Road. Mr. T. J. BAILEY, Architect.

F. R. Tozer	£14,834 10 0
G. H. Dawes	13,296 0 0
J. Godfrey & Son	12,240 0 0
T. L. Green	12,068 0 0
G. W. Stephenson	11,680 0 0
C. Wall	11,625 0 0
W. Johnson	11,496 0 0
Atherton & Latta	11,395 0 0
Stimpson & Co.	11,374 0 0
W. Downs	11,352 0 0
Wall Bros.	11,255 0 0
C. Cox	11,254 0 0
J. M. Goodwin & Co.	11,155 13 9

For Building Board School, Marsh Lane. Mr. T. J. BAILEY, Architect.

Balaam Bros.	£11,152 0 0
T. L. Green	10,617 0 0
W. Downs	10,581 0 0
C. Wall	10,266 0 0
Stimpson & Co.	10,126 0 0
Wall Bros.	10,075 0 0
H. L. Holloway	9,973 0 0
J. M. Goodwin & Co.	9,905 7 3
W. Johnson	9,900 0 0
S. J. Jerrard	9,749 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced ...es.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED ... YEARS.

BEST BATH STONE.
CORSHAM DOWN, FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT.
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

SIMPLEX LEAD GLAZING
For ROOFS, ... SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

PERMANENT EXHIBITION OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Application for Space can now be made to the Manager,
S. S. PHILLIPS.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
☞ MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

LONDON—*continued.*

For Repairs, &c., to Board School, Horseferry Road.

S. S. Pritchard	£617 5 0
W. Furniss	586 0 0
W. Johnson	508 0 0
H. L. Holloway	493 0 0
S. R. Earsdon	470 0 0
J. A. Rhodes	460 10 0
Cowley & Drake	422 0 0
T. Bendon	323 0 0

For Cleaning, &c., at Board Schools.

Thomas Street.

C. V. Howard	£118 10 0
G. Limm	117 0 0
B. E. Reed	113 0 0
J. B. Driscoll	89 0 0
Atherton & Latta	88 0 0
R. Toole	80 0 0
J. T. Robey	70 0 0

Belleville Road.

Richens & Mount	84 10 0
J. Holloway	65 0 0
C. Horton	55 0 0
W. Johnson	54 10 0
Newton & Idle	46 10 0

Buckingham Terrace.

J. H. Petchey	£83 0 0
W. Oldrey & Co.	79 0 0
Pardoe & Son	75 0 0
Stimpson & Co.	63 0 0
W. Hornett	59 0 0
Cowley & Drake	56 10 0

Winstanley Road.

Lathey Bros.	76 12 0
J. Holloway	67 0 0
C. Horton	59 0 0
Newton & Idle	47 15 0
S. W. Stephenson	44 0 0

Scrutton Street.

Knight & Walden	33 10 0
S. Flaxman	30 0 0
Pritchard & Son	28 9 0
J. F. Sargeant	25 10 0
T. McCormick	24 0 0

Jessop Road.

S. J. Jerrard	£118 10 0
H. Mallett	98 0 0
G. Bash	96 0 0
W. Pearce	92 15 0
J. W. Roy	69 0 0
S. Groom	65 0 0

Church Street.

Richens & Mount	92 0 0
B. E. Nightingale	82 0 0
H. Mallett	61 0 0
Newton & Idle	55 10 0
J. W. Roy	53 10 0
W. Hornett	44 0 0

Mantua Street.

Holloway Bros.	60 0 0
J. D. Hobson	55 10 0
H. Mallett	50 0 0
C. Horton	50 0 0
H. Walkley	48 0 0

Wolverley Street.

J. F. Sargeant	38 5 0
C. V. Howard	36 10 0
Vigor & Co.	34 0 0
W. G. Lilley	32 0 0
Norris & Luke	30 0 0
E. Tait & Co.	29 0 0

Sumnerford Street.

G. Flaxman	36 0 0
W. G. Lilley	32 0 0
G. S. Pritchard	28 0 0
C. V. Howard	21 18 0
J. F. Sargeant	15 10 0

LONDON—*continued.*

For other Works at Board Schools.

Langford Road.

Holloway Bros.	£87 0 0
W. Johnson	70 0 0
H. Walkley	68 0 0
Lathey Bros.	68 0 0
C. Horton	60 0 0

Credon Road.

J. W. Roy	34 10 0
H. L. Holloway	26 0 0
S. J. Jerrard	25 0 0

Magdalen Street.

J. W. Roy	27 10 0
W. H. Castle	27 0 0
Davis Bros.	18 10 0

Laxon Street.

Davis Bros.	29 10 0
Ewart & Son	27 18 0
Riley Bros.	22 10 0
Holden & Co.	19 18 0

Bath Street.

E. H. Sargeant	19 10 0
J. Grover & Son	16 0 0
G. S. Pritchard	10 5 0
T. McCormick	9 17 0

Bellendon Road.

J. W. Roy	8 15 0
S. J. Jerrard	8 8 0
H. Mallett	7 0 0
G. Bash	6 14 0

Battersea Park.

Holloway Bros.	£65 0 0
W. Hammond	39 10 0
B. E. Nightingale	37 0 0
H. Walkley	36 0 0
Lathey Bros.	35 0 0

Aldenham Street.

William & Son	57 0 0
J. H. Petchy	50 19 0
Dearing & Son	50 0 0
F. N. Chapman	48 14 9
W. Hornett	43 0 0

Bowling Green Lane.

E. H. Sargeant	63 0 0
J. Grover & Son	58 0 0
T. W. Smith & Son	48 18 0
G. S. Pritchard & Son	46 10 0
T. McCormick	43 0 0

Glengall Road.

R. Toole	59 0 0
G. Limm	25 0 0
Atherton & Latta	23 0 0
J. T. Robey	19 4 0

Montem Street.

Unsigned Tender	86 10 0
Davis Bros.	78 0 0
Troughton & Co.	46 10 0
E. H. Sargeant	43 10 0
T. Cruwys	37 0 0

For Additional Playground to Board School, Portman Place.

Pritchard & Son	£580 0 0
Cowley & Drake	555 0 0
F. & F. J. Wood	543 0 0
J. Webb	540 0 0
J. R. Earsdon	492 0 0
W. Johnson	488 0 0
T. Bendon	375 0 0

MILNROW (LANCS.).

For Building Police Station at Milnrow.

T. BARRY & SON, Rochdale (*accepted*).

Equitable

One Premium returned every Fifth Year to those who have made no Claim.

FIRE INCOME (all Home Business) **£66,778**
FUNDS **£98,969**

ACCIDENT CO.
INCOME ... **£21,264** | **FUNDS** ... **£36,528**

Fire & Accident Offices

ACCIDENT POLICIES, Free from vexatious conditions, and INSURING CAPITAL SUMS in the event of PERMANENT DISABLEMENT, as well as DEATH by Accident and Allowances during TEMPORARY DISABLEMENT, are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE GUARANTEE AND ACCIDENT COMPANY LIMITED.

FIRE POLICIES, COVERING DWELLING-HOUSES and HOUSEHOLD FURNITURE; FARM BUILDINGS and FARMING STOCK; SHOPS and STOCKS-IN-TRADE, CHURCHES, CHAPELS, and SCHOOLS, and all other risks of ordinary Hazard are issued at moderate rates, with BONUS RETURN EVERY FIFTH YEAR, by the EQUITABLE FIRE INSURANCE COMPANY LIMITED.

For information as to Agencies, apply to the

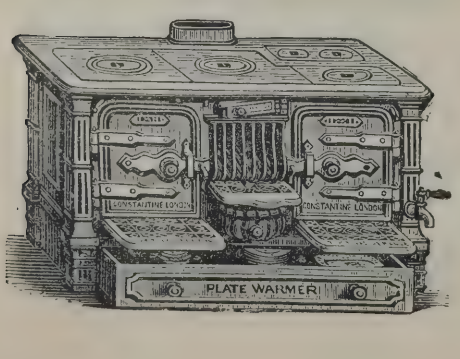
SECRETARY, EQUITABLE OFFICES, 11 & 13 ST. ANN STREET, MANCHESTER,

Or to the RESIDENT SECRETARY at the various Branches:—

London	69 Lombard Street, E.C.	**Liverpool**	11 Tithebarn Street.
Glasgow	101 St. Vincent Street.	**Newcastle**	1 St. Nicholas Buildings.
Birmingham	Midland Buildings, 2 New Street.	**Belfast**	6 Royal Avenue.
	Dublin	18 Dame Street.	

A HOUSEHOLD TREASURE.

75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S



PATENT "TREASURE"

COOKING RANGE,

With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.

DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*

Illustrated Price Books, with Testimonials, Post Free.

A. R. CONSTANTINE, 61 FLEET STREET, E.C.

N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

MARGATE.

For Certain Alterations at Trinity Church, Margate.

Paramor & Son	£243 0 0
Bushell & Son	210 0 0
E. W. Edwards	205 0 0
F. Doughty	150 0 0
JOHN ROLFE (*accepted*)	135 0 0

NEWARK.

For Enlargement of Kitchen at Newark Infirmary.

C. Baines	£20 0 0
T. Cosham	18 10 0
W. H. Duke	18 5 0
F. Duke	18 0 0
THRALE BROS. (*accepted*)	17 9 0
W. Coombes	16 10 0
T. Camamile	15 10 0

NEWHAVEN.

For Carrying Out Drainage System, Newhaven. Mr. W. H. RADFORD, C.E., Engineer, Angel Row, Nottingham.

Small & Sons, Birmingham	£8,631 0 0
J. W. Neave, Leytonstone	8,285 0 0
R. Cowdery, Newent	8,239 13 9
J. Longley, Crawley	7,960 0 0
J. Dickson, St. Albans	7,791 3 4
Capper & Co., St. Albans	7,250 0 0
J. T. Whettam, Weymouth	7,160 0 0
Meat Bros., Nottingham	6,690 0 0
J. Harrison, Brighton	6,500 0 0
W. Cunliffe, Dorking	6,117 0 0
J. M. Goodwin, Kilburn	5,985 0 0
J. Edmondson, Edmonton	5,848 0 0
J. Hayward, Eastbourne	5,497 0 0

POOLE.

For Swimming and other Baths at Seldown, Poole. Mr. J. ELFORD, Architect, King Street, Poole.

E. J. Tilsea, Poole	£3,815 10 6
J. Eaton, Poole	3,687 10 0
J. Dunford, Poole	3,140 0 0
Jenkins & Sons, Bournemouth	3,100 0 0
W. H. Gray, Poole	2,950 0 0
D. Hitching, Poole	2,833 15 0
Rigler & Crane, Poole	2,588 0 0
W. H. C. CURTIS, Poole (*accepted*)	2,269 0 0

ROTHERHAM.

For Building Infirmary at the Workhouse, Rotherham. Mr. H. L. TACON, Architect, Rotherham. Quantities by the Architect.

F. Ashforth, Sheffield	£7,300 0 0
J. Greenwood, Attercliffe	7,172 0 0
Wm. Bissett & Sons, Sheffield	7,000 0 0
G. Longden & Son, Sheffield	6,600 0 0
O. Fox, Rotherham	6,499 0 0
Thornton & Son, Masbrough	6,349 0 0
Scott Bros., Masbrough	6,300 0 0
Wm. Seile, Rotherham	6,237 0 0
Richard Snell, Rotherham	6,200 0 0
Robert Snell, Rotherham	6,140 0 0
C. T. Dobb, Rotherham	5,962 0 0
A. T. Ripley, Rotherham	5,870 0 0
G. Smith, Greasbro	5,760 0 0
J. Wade, Wath	5,675 0 0
G. H. Smith, Mexbro	5,645 0 0
C. Green, Rotherham	5,636 0 0
G. B. Adams, Tusmore Street, Rotherham	5,384 0 0
A. Whitaker, Mexbro	5,284 0 0
Architect's estimate	5,850 0 0

STOCKPORT.

For Taking Down Old Buildings at Brinksway, and Erecting Retaining Wall to Road. Mr. A. M. FOWLER, Borough Surveyor, Central Buildings, Stockport.

T. Rome, Manchester	£275 0 0
J. Broadhurst, Shaw Heath	198 0 9
N. Mountain, Pendleton	174 18 10
J. Sykes, Stockport	170 0 0
D. Eadie, Heaton Norris	168 0 0
F. & W. Meadows, Heaton Norris	163 0 0
R. Bateson, Oakwood *	140 0 0
Surveyor's estimate	140 0 0

* Recommended for acceptance.

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.

DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.

SEE HOBBS & Co's
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON

SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.

SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST
BENTLEY PRIORY, ROYAL, LANGHAM,
GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S,
BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

SOUTHAMPTON.

For Enlargement of Scholing Girls' School, for the St. Mary Extra School Board, Southampton. Mr. W. H. MITCHELL, Architect, Southampton.

Honeychurch & Mitchelmore, Southampton	£586	0	0
Kimber & Cotton, Southampton	580	0	0
Stevens & Sons, Southampton	580	0	0
Franklin, Southampton	570	0	0
R. Martin, Southampton	551	0	0
R. J. Crook, Southampton	549	10	0
J. W. Rowland, Sonthampton	530	0	0
T. J. Jukes, Southampton	525	0	0
Dyer & Sons, Southampton	525	0	0
J. Watts, Bitterne	523	5	0
W. Harvey, Southampton	510	0	0
Hinton, Woolston	487	0	0
H. CARDEN, Southampton (*accepted*)	462	10	0

STRETFORD.

For Building Offices at Old Trafford for the Stretford Local Board.

J. Macfarlane	£3,250	0	0
Hampson & Co., Manchester	3,241	0	0
W. Holt, Cheatham	3,237	0	0
R. Ramsbottom, Pendleton	3,234	0	0
J. Wilson, Hulme	3,227	0	0
W. BROWN, Salford (*accepted*)	3,190	0	0

YORK.

For Formation of Paths, &c., Heslington District, York.

PARKER & SHARPE (*accepted*)	£1,231	5	2

TRADE NOTES.

THE General Gas Heating and Lighting Apparatus Company, Limited, have brought out a large series of new designs in stoves, which not only have the advantage of the application of Mr. Leoni's patent principle for incandescent perfect radiant gas fires, but are decorated with beautifully-designed Lambeth art china. They are suitable for rooms in the highest class of houses.

OBJECTIONS are often raised against the garish and hard appearance of the gold grounds which are used in paper-hangings, and which counterbalances the effect which gold imparts. Messrs. William Cooke & Co., of Leeds, in their "golden lustre silk" papers, have got over the difficulty. The gold grounds have a softness that is suggestive of a delicate textile fabric. Whether seen by daylight or under strong gas-light, the gold ground never becomes obtrusive, while it imparts an exquisite sheen to the material. This mode of treatment is the most important of recent improvements in wall papers, but Messrs. Cooke & Co. do not depend on it alone for success. The patterns printed on the ground are all admirably designed.

THE revival of polychrome decoration has made coloured marbles a necessity both for outdoor and indoor work. The facilities of communication have allowed modern architects to have as wide a range of choice as their Greek and Roman predecessors. It is well known that Rome was indebted for much of its magnificence to the beauty of the African marbles. After being closed for centuries several of the quarries were lately rediscovered by Signor Del Monte, and the English authorities in Northern Africa have borne testimony to the extreme beauty of the marble. Mr. Ruskin was enchanted with one of the slabs. Apparently there is an almost inexhaustible supply. A company has been organised to work the quarries, and among the directors is Mr. C. J. Phipps, F.S.A. There could hardly be a more opportune time for starting a company to work a decorative material of so much value, and from the cheapness of production and transit the sales ought to be exceedingly remunerative.

THE special Christmas number of *Bric-à-Brac*, issued by Mr. J. W. Palmer, contains amongst other matters some hints to collectors concerning rare stamps, in which is found much information that will be useful to collectors. The "History of Postage Stamps" gives further useful and interesting details. Collectors have always to be on their guard, but, notwithstanding, it is no uncommon thing for spurious articles to be passed off as genuine, and anything that can assist the collector in avoiding this danger is welcome.

A MEETING of the Birmingham Philosophical Society was held on Thursday last week. Mr. Thomas Turner read a paper on "The Hardness of Metals," and showed a new apparatus for determining the relative hardness of metals, more particularly those used for chemical purposes. The method of determination by that instrument, he explained, was by scratching with a weighted diamond, the harder the metal the heavier being the weight. In steel rails, he remarked, the true hard-

ASCHERBERG PIANOS,

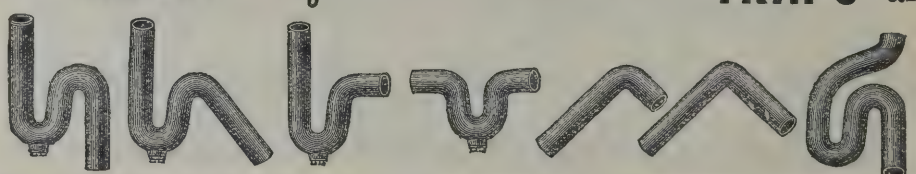
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, **211** Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET, KING'S CROSS, W.C.

ness did not vary, as was commonly supposed, according to the tenacity, and that accounted for the difference which was often seen in the wear of railway rails. He also pointed out that in cast iron the softest metal was really the strongest, contrary to the common belief.

MR. JOHN CLUTTON, of London, the umpire appointed by the Board of Trade, has recently made his awards in the cases of Mr. John Gillbanks, of Wythburn, and Mrs. Hall, of St. John's Vale, Keswick, the owners of land and stints adjoining Lake Thirlmere, which are required by the Manchester Corporation for their Thirlmere Water Scheme. In the case of Mr. Gillbanks, where the claim made amounted to 25,000*l.*, the award is 13,000*l.*; and, in the case of Mrs. Hall, where the claim made was 2,500*l.*, the award is 1,360*l.* The cases, which were heard at the Surveyors' Institution. London, were conducted by Mr. Pember, Q.C., on behalf of the Corporation, and by Mr. M'Intyre, Q.C., on behalf of the claimants.

GERMAN AND BRITISH TRADE IN BRAZIL.

THE following information on the subject of the causes of increase of German trade in Brazil at the expense of British trade is extracted from a report dated October 25 last by Mr. W. H. D. Haggard, Her Majesty's Secretary of Legation at Rio de Janeiro :—

I see no reason to alter the opinion I have on various occasions expressed as to the growth of German at the expense of English trade in this country. I do not mean to say that British trade is declining. It is not, it is rather increasing in bulk, but, particularly in the southern provinces, German competition has so decreased the price of English goods that they hardly pay the merchant and the manufacturer for the greater cost of production in England as compared with Germany.

This, as far as Brazil is concerned, constitutes the so-called depression of British trade. Of trade there is plenty, but it does not pay. Not so with German goods. They are produced at far less cost than British manufactures ; they are not as good or as durable, but they are more showy and catch the Brazilian eye. Add to this that the German trader is now more energetic and pushing, more industrious, more economical in his personal habits and in his mode of conducting business, and, moreover, content with smaller profits, and it will be seen why he makes what is to him a fortune, while the British merchant who goes on his old "humdrum" way changing nothing, save the price of his goods, or even not changing that, fails or goes away altogether, or makes a bare livelihood where he used to make a fortune.

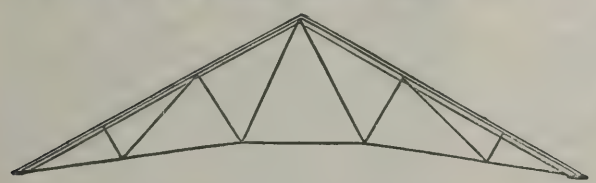
The Englishman has a further difficulty to contend against in the falsification of English trade-marks, which affects him very severely in this country. This is, however, a mere item, and the fact is, I think, indisputable, that the main causes of British depression in trade are those which I have enumerated.

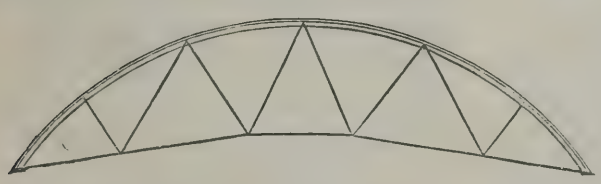
A very striking instance of the failure of British trade to supply the want of this country is to be found in the fact that Antwerp is now almost, if not quite as much the headquarters of the royal mail steamers, which trade with this country and the Plate, as is Southampton. They there tap the German and Belgian trade, and the manufactures of these countries form a very considerable, if not a chief part of their cargoes outward bound.

The captain of one of the steamers belonging to Messrs. Lamport & Holt, which have been for the last seven years running between Rio Janeiro and Porto Alegre, one of the most rising commercial ports in this country, told me that the foreign trade there is practically in German hands, and that during his experience the amount of German goods carried by his ship has increased from an average on each voyage south of 20 tons at first to 250 tons at present, or in the ratio of 1,250 per cent.; while that of English goods has only increased from 40 to 150 tons, or in the ratio of little more than 250 per cent. These figures speak for themselves, and bear out the remarks I have ventured to make, that while English trade is increasing in bulk, German trade is doing so much faster.

A circumstance has come to my knowledge which is perhaps more alarming, as affecting the future interests of English trade here, than anything of which I have previously heard. Hitherto the German has only contended with us in articles of clothing, stuffs, &c. ; now he threatens, he has begun, to invade us, not unsuccessfully, on ground where we, too confident, thought ourselves unassailable. The agent of a German company contracted for the supply of Bessemer steel rails to the "Itapemirim railroad." The same firm wished to tender for the locomotives required. The railroad company wished to have Baldwin's (American) engines. These locomotives cost about 1,800*l.* each. The German agent offered to supply as good a locomotive for 1,150*l.* each, but the railway company would have nothing but Baldwin's engines. The German agent then offered to let his

WALTER JONES, MAGNET WHARF, BOW BRIDGE, E.,
MANUFACTURER OF
WROUGHT-IRON ROOFS,
PLAIN OR ORNAMENTAL,
ADAPTED FOR
GALVANIZED IRON,
SLATES, TILES, or GLASS.





COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

engine run for twelve months without payment, and agreed to take it back if it did not prove satisfactory.

It is a most significant fact that during this contest there is no mention of any English firm making any tender, and whilst this instance proves the energy of the German agents, and how hard they are working to get a footing for their machinery in Brazil, it also proves the want of energy of the British contractor and manufacturer.

As is well known, there exists a European syndicate of iron-founders, who have agreed not to deal below a certain fixed figure. Each firm belonging to that syndicate engages, while pushing his own business to the best of his ability, not to interfere in any transaction which is being negotiated by any other member of the syndicate.

It follows *cæteris paribus* that those firms which have the best agents do the most work. The German firm in question was, I am informed, a member of this syndicate, to which the leading English firms also belong; they had therefore an equal chance with the German company of obtaining the contract; as they did not do so, it would appear that the German company was the better served by its agents. Perhaps, however, the most striking instance of loss to an English firm, through want of energy or failure to recognise the signs of the times has lately occurred in this city. An English company has for years had the monopoly of the gas supply. Their contract coming to an end, the Brazilian authorities offered to renew it to them on more favourable terms (to the town). The English company demurred for some time, when suddenly the question was decided for them by the contract being given to a Belgian company; and I heard the other day, on what I cannot but consider as very good authority, that this company had cleared 10,000*l.* profit in the first month.

These changes, then, are not due, I believe, to any special protection on the part of German or Belgian officials, or to any want of such protection on the part of British diplomatic or consular agents; they are simply a natural effect of a natural cause, which can only be removed or alleviated in a natural manner. Let the British ironmaster or other trader, now that he has not, as he formerly had, the command of the market, show the same energy as his German or other foreign rival. Let him be content with smaller profits; let him manage his house and stores here, and as far as possible his manufactories at home on strictly economical principles, and he will do far more himself towards holding his own than can be done for him by diplomatic or consular fostering or protection.

BRIDGE AT TROLLHATTAN.

THE Consul at Stockholm has forwarded to the Secretary of State for Foreign Affairs the following translation of an advertisement in the *Göteborgs Handels och Sjöfarts Tidning* of December 6, 1886:—"It having been decided to build a bridge across the river Gotha at Trollhättan, for which the Government have granted an allowance, the committee of management hereby request intending competitors to send in offers before the expiration of the month of December, separately for the bridge and separately for the foundation, according to drawings and specifications. Solvent guarantee or other approved security must be given for the completion of the work. Offers are received by and necessary information given upon application to the chairman of the committee of management, Ernst Stridsberg, civil engineer, Trollhättan."

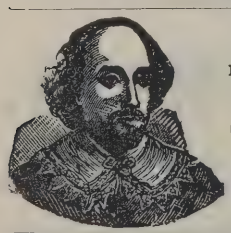
THE MANCHESTER SHIP CANAL.

AN influential meeting, convened by the Mayor, and including many of the leading citizens, was held on the 9th inst., in the Manchester Town Hall, to receive the report of the Independent Consultative committee appointed to investigate the Manchester Ship Canal scheme at the time the Company failed to obtain the capital they asked for through Messrs. Rothschild. The Mayor (Mr. Alderman Curtis) presided.

The ex-Mayor (Mr. Alderman Goldschmidt), in presenting the report, said the committee were entirely outside the Ship Canal Company. An exhaustive inquiry had been made, and the committee were unanimously of opinion that the undertaking was a sound one. The committee in their report stated that they had undertaken the inquiry under a strong sense of public duty, and with the sole desire and aim of arriving at a correct judgment upon the merits of a scheme the failure of which, supposing it to be commercially sound, would be a public calamity. The men composing the committee pretended to no authority beyond such as they might derive from their personal knowledge of the trade and commerce of the district. Not one of them entered upon the inquiry with his mind made up, and many of them did so with opinions adverse rather than favourable to the scheme. If in the result they had been led with

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, { Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.



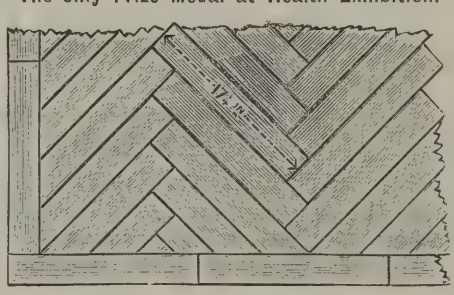
QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

WM. WOOLLAMS & CO.,
ORIGINAL MAKERS OF
ARTISTIC WALL PAPERS.
FREE FROM ARSENIC.
PATENT EMBOSSED FLOCKS.
Dado Decorations, Embossed Leathers, Raised Flocks.
No Travellers Employed.
☞ SOLE ADDRESS—110 HIGH STREET, near MANCHESTER SQUARE, LONDON, W.
SIXTEEN GOLD, SILVER, AND BRONZE MEDALS.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.



Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11*s.* 6*d.* per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month. Sample of 10 blocks sent on receipt of 1*s.* 7*d.* in stamps.



Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices:—1½×4½ Dry Wainscot Oak, 54*s.* 9*d.* per square; 1×4½ ditto, 45*s.*; 1½×4 Pitch Pine, 26*s.* 6*d.*; 1×4 ditto, 22*s.* 9*d.* IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office:—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills:—537 King's Road, Chelsea, S.W.
Branch Yard:—65 Poland Street, Oxford Street, W.
Telephone 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely Bound in Cloth, Gilt Lettered. Price 12*s.* 6*d.*
Office: 175 Strand, London, S.W.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W
Designs and estimates on application.

unanimity to the conclusion far more favourable to the project than they could have anticipated, it was, they believed, only because a similarly exhaustive inquiry would produce the same effect upon the minds of others who might undertake it. Their conclusions were as follows :—

1. That the ship canal and works are practicable from an engineering point of view, and would permit vessels of the largest class to be safely navigated to and from Manchester. 2. That the canal and works can be completed ready for traffic at a cost within the estimate of £5,750,000, and that the sum of £802,936 set down for the purchase of the land is a sale estimate. 3. That the canal and works should be constructed under a contract, fixing a maximum sum in order to prevent any possibility of the estimates being exceeded. 4. That graving dock accommodation should be provided, and be ready for use on the opening of the canal. 5. That the estimate of £105,300 per annum of the expenses of the working and maintenance is ample. There would probably be a material saving on this item during the first few years after completion. 6. That the acquisition of the Bridgewater undertaking at the sum of £1,710,000, fixed by the Act of Parliament, would be an advantageous purchase for the Ship Canal Company, and that the present average net income of £60,000 would, after the completion of the works, continue to be derived from the Bridgewater Canal and those other portions of the Bridgewater properties not required for the construction of the ship canal. 7. That the capital powers of the Company under their Acts of Parliament, amounting to £9,812,000, are sufficient for all the purposes contemplated by their Acts. 8. That the project is a thoroughly sound commercial undertaking, and would speedily become remunerative on the completion of the works, and that a large amount of traffic would at once be secured, and that thereafter the increase in traffic and revenue must be steady and continuous. Having regard to the responsible character of this report, we feel it our duty to state that in our judgment it is necessary, before the issue of any further prospectus, to reconstitute and greatly strengthen the board of directors.

The report was signed by Alderman Goldschmidt (chairman), Mr. C. Moseley (deputy chairman), Lord Egerton of Tatton, and twenty other gentlemen who formed the committee. The report also contained the grounds upon which the committee based their conclusions. They attached great importance to the fact that the canal, throughout the whole length of thirty-five miles, could be made available for the purpose of a dock for vessels of all sizes, and that industries, tempted by the certainty of cheap access to the sea, must spring up on its banks and yield a good revenue in tolls to the canal. They estimate that during the second year after the canal and docks are open, there is a reasonable prospect of securing a traffic which would produce a net income of £479,430, and would be sufficient to pay a 5 per cent. dividend upon the whole share capital of the Company (£8,000,000), leaving a surplus of £79,430. Their estimate of traffic for subsequent years was much larger, and pointed to the undertaking becoming increasingly remunerative under capable administration.

Mr. Daniel Adamson, chairman of the Ship Canal Company, thanked the committee for their services, and said that he was convinced they only wanted to make the subject thoroughly understood, for this scheme had behind it a paying power that the great porter brewing firm in Dublin never would possess, and, unfortunately, when the shares were put into the market, sufficient time was not allowed for them to be taken up.

Mr. Jacob Bright, M.P., said that if, after that meeting, there was no great result, one might say that the enterprise of Manchester was coming to an end. The meeting then terminated.

THE LATE MR. ROBERT ROBSON, BUILDER.

IT is with the deepest regret, says the *Durham Advertiser*, that we announce the decease of Mr. Robert Robson, at the ripe old age of eighty-two years. The deceased gentleman was a native of Lumley, but after receiving his education came to Durham, and was apprenticed to Mr. Matthew Wardle, joiner and builder. Mr. Robson, however, was not slow to take advantage of the large business aptitude with which he was endued. He thus commenced business on his own account as a joiner and builder, and soon formed extensive connections in this particular line, in fact it may be said that deceased, together with his son, the late Councillor Henry Robson, who was in partnership with him for many years, were entrusted with most of the principal contracts in this part of the county. But perhaps Mr. Robson's public career is best known to the older citizens of Durham, for he was connected with the corporation during the period of the town's greatest progress, and was instrumental in devising many of the reforms and improvements which have had such a beneficial effect in late years. Deceased was first elected a member of the

FIRE BRICKS.
E. BOWEN, Fire Brick Manufacturer, Stourbridge.
Manufacturer of Best Stourbridge Fire Bricks, and Cement Fire Clay, Gas Retorts, Muffles, &c. Fire Bricks and Blocks for the Highest Heats, for Iron Blast Furnaces, Forge, Rolling, Puddling and Steel Furnaces, Pottery, Bottle, and Flint Glass Furnaces, Roasting and Refining Furnaces, Chemical Works, Coke Ovens, &c., Boiler Seating Blocks, Flue Covers, Locomotive Bricks, Tuyères, Steel Runners, Grate Backs.
Special Sizes and Shapes made to Engineers' Drawings.
Prices Quoted to any Port or Railway Station.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

GLAZED BRICKS.
OATES & GREEN, Halifax.
GLAZED BRICKS (White and Coloured), Special Salt Glazed Bricks, Sanitary Tubes, Glazed Earthenware Sinks, Cattle, Sheep, and Pig Troughs, Horse Mangers, Patent Automatic Trough Closet, Patent Flush Tank, Channelling for Stables and Yards, Salt Glazed Bricks for Stables, Sewers, &c. Ventilating Bricks, Patent Ventilating Gullies and Traps, Garden Edging, Patent Chimney Pots and cure for Down Draughts, Patent Drain-Cleaning Rods.
Six Prize Medals. Copies of Testimonials sent if required.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

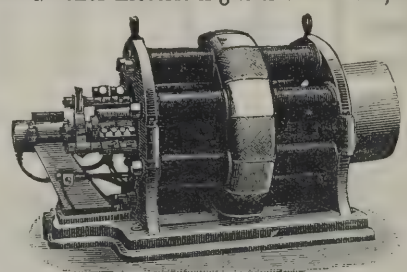
BLUE BRICKS.
THE KETLEY BRICK COMPANY,
MANUFACTURERS OF STAFFORDSHIRE BLUE BRICKS,
Kingswinford, near Dudley, Staffordshire.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

DRAIN PIPES.
Lime, Cement, Bricks, Slates, Laths, Hair, Sand, Plaster, Stable Paving Bricks, Wall Copings, Channel Bricks, Blue and Red Ridges, Red Plain Tiles and Fan Tiles, Closet Pans and Traps, Drain Pipes, Bends, Junctions, &c., all sizes. Chimney Pots, Red and White, Fire Bricks, Lumps, Tiles, Fire Clay. Prices on Application.
R. CULL & SON'S STORES,
RAILWAY ARCHES,
Corner of LONDON ST., & BRADY ST.,
Near BETHNAL GREEN STATION.
CHIEF OFFICE :—72 PALMERSTON BUILDINGS, OLD BROAD STREET, E.C.

G. BARKER and CO. Established 1863.—The BANK, No. 35 Mark Lane, London.
Current accounts. Special advantages.
Deposits received at the following rates :—
3½ per cent. on demand.
4 per cent. seven days' notice.
4½ per cent. fourteen days' notice.
5 per cent. thirty days' notice.
6 per cent. three months' notice.
Interest payable quarterly Extra bonus for 12 complete months. Pamphlet and further particulars on application.

EDWARD SMITH & CO
MAKERS OF EVERY DESCRIPTION OF PLAIN AND ORNAMENTAL FLOOR AND WALL TILES : MOSAICS :
E S C
EMBOSSED AND INCISED TILES, ETC., RED & WHITE TERRA-COTTA PRESSED BRICKS, ETC., ETC., ETC.
COALVILLE. LEICESTERSHIRE.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES :
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices : 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.

The Gulcher Electric Light & Power Co., Ld.

GULCHER DYNAMO.
Electric Lighting by either Arc or Incandescent Lamps to Public Buildings, Factories, &c.
BATTERSEA FOUNDRY, LONDON, S.W.

STAINED GLASS WINDOWS,
LEAD GLAZING, &c.
W. JAMES & CO.,
Willes Road & Prince of Wales Road, Kentish Town, N.W.
WHITE RELIEVO ETCHINGS ON PLATE GLASS,
IN THE CONTINENTAL STYLE.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

corporation as a councillor for St. Nicholas' Ward in the place of Mr. Robert Tiplady. He was also re-elected for the same ward on November 1, 1853, 1856, and 1859, and on November 9 of the latter year he was elected to the aldermanic dignity, in the vacancy, we believe, caused by the promotion of Mr. John Bramwell to the Recordership. Mr. Robson was re-elected an alderman in 1865, 1871, and 1877. In the meantime, however, the zeal and activity which he had displayed in the conduct of municipal affairs recommended him for the distinguished position of Mayor of Durham, and on November 9, 1858, he was elected to the civic chair, a position which he also twice afterwards occupied, namely, in 1866 and 1867. On November 9, 1883, Mr. Robson, through ill-health, was compelled to sever his connection with the Corporation; but this was not allowed to take place without his fellow-citizens showing their high appreciation of his public career, for in February, 1884, he was presented by the Council with an illuminated address. Mr. Robson was also a trustee of Smith's Charity, and a Justice of the Peace for this city, having been added to the Commission in May 1860. Deceased was a prominent member of the Wesleyan body in this city, having filled during his lifetime almost every lay position connected with that body. Mr. Robson leaves one son (Mr. E. R. Robson, architect) and three daughters.

THE PLUMBERS' COMPANY.

THE registration of plumbers proceeds apace. Again we publish a long list of names and addresses of master-plumbers and journeymen who have qualified themselves for registration, either by supplying satisfactory evidence of their experience or by passing a practical examination. The architects have been well represented in their support of the movement to improve plumbers' work from its very outset. Mr. E. I'Anson recently stated the architect's interest in the subject very practically when he said:—"Of course architects are only designers. They endeavour to design the most perfect buildings they can for all classes, but they are dependent upon the artificers to carry out the work, and without good workmanship the efforts of the architectural profession cannot be successful." This statement of the case may be considered almost too trite for notice. But, nevertheless, its importance is not to be exaggerated. The public will always hold architects more or less directly responsible for the complete efficiency of their buildings; therefore, on the lowest grounds, it is obviously the interest of the profession to take every opportunity which presents itself for promoting the technical training of craftsmen, and particularly the better education and registration of plumbers, whose shortcomings and scamped work are undoubtedly the most prolific of all the causes of trouble and dissatisfaction which arise between the owners of property, the general public, and architects; and therefore all have an inducement to encourage the efforts of the Plumbers' Company, and give the preference to registered over unregistered men.

THE RISKS OF COVED CEILINGS.

THE adjourned inquiry into the circumstances attending the death of a workman who died from injuries received by the fall of a portion of the new bathing establishment, was held last week in the Guildhall of Bath.

The following report of the proceedings is taken from the *Bath Herald*:—

Major C. E. Davis, F.S.A., the City Architect, first read the following statement of his evidence:—The coved ceiling, forming a roof of the Aix Douche, is coved in order that condensed vapour from the douche shall not drop, but follow the slope of the curve. The ceiling was constructed in this way for the purpose above stated, and not as an arch for the purpose of strength. The arch, as it was constructed, would, when thoroughly solidified, be self-sustaining, that is to say, abutments would be quite unnecessary. The theory of arch building assumes that the voussoirs, or wedge stones of the arch, are held together by gravitation, without the assistance of any adhesive matter, such as mortar or cement. The arch or ceiling that has fallen was constructed of concrete and cement brickwork, and is one solid mass, and would have sustained itself and any ordinary weight likely to be placed on a roof. I was on that portion of the scaffolding between November 4 and November 12, when I made some alteration in the curve of the centering. Although (with two exceptions) I was on the building every working day between November 12 and November 25, I did not go to the north-east part of the scaffolding until Thursday, the 25th, the day before the arch fell, when I walked on the top of it. On November 17 I measured the dressing-rooms adjoining the douche, in order to get an estimate for the

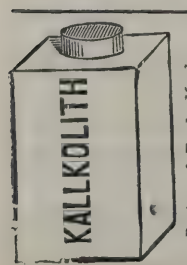
ELECTRIC LIGHTING!

The Thomson-Houston System of Arc Lighting,
The Edison-Swan System of Incandescent Lighting,
GOLD MEDAL Awarded—
International Inventions Exhibition, 1885.
Edinburgh Exhibition, 1886.

ESTIMATES FREE ON APPLICATION TO
LAING, WHARTON & DOWN,
8 & 9 HOLBORN VIADUCT, and 110 & 111 SAFFRON HILL, LONDON, ENGLAND.

TURKEY, PERSIAN & INDIAN CARPETS,
IMPORTED by THOMAS BONTOR & CO., late
WATSON, BONTOR & CO.,
35 & 36 OLD BOND STREET, W.
EXHIBITION MEDALS, 1851, 1862, and Dublin, 1865. Hors Concours, Paris, 1878.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.
OFFICE: 175 STRAND, LONDON, W.C.



Registered Trade Mark.

TO ARCHITECTS, CONTRACTORS, AND BUILDERS.
SAVE ONE-THIRD of COST and TIME in your PRIMINGS by using
KALLKOLITH.
IT produces an exquisite smoothness, and amalgamates thoroughly with WOOD, STONE, IRON, CEMENT, PLASTERING, &c. IT is less than HALF the WEIGHT, and IT goes further than three times the same quantity of ordinary priming. IT has to be thinned with two parts of water for use on Stone, Cement, and Plastering, and with seven parts of water for Smoky Ceilings and for preparing Walls for Colouring and Paper Hanging. IT dries in from ONE to TWO hours, effecting a great SAVING in TIME. IT lasts longer and better than any other priming known, and prevents Blistering.
Price per Case of Eight Tins of 14 lbs. each, 40s, packing included. Sample Tins, 6s. each.
H. RANSOM & CO., 11 Queen Victoria Street, LONDON, E.C.
Agents wanted in every Town in the United Kingdom and Colonies.



Registered Trade Mark.

floor, and the ceiling of the Aix Douche was then in position. I fix this date by a variety of circumstances. I have read the evidence given by Mr. Wilcox. I am willing to accept his figures, but I do not admit his conclusions. Let the weight of the arch, therefore, be taken at 7 tons, and the weight of the east wall at 3 tons 9 cwt., or 1 cwt. less than half the arch; but as a perpendicular weight on the wall equal to two-thirds that of the half arch (namely, 2 tons 6 cwt. 75 lbs.) would maintain it in equilibrium, there remains something more than a ton (namely, 1 ton 3 cwt. 37 lbs.) to make the arch doubly secure, so that there was an immense margin of support to secure the stability of the fabric. I do not, however, rest all my strength on this calculation, because I assume that this roof, when ultimately consolidated, would have no outward thrust to resist, and would therefore need no extra support from side walls or tie rods. The unusual height of the arch arises from the exceptional condition to be contended with, a sufficient space being required to allow free circulation for the vapours from the hot waters, so as to mitigate their disagreable effect. With reference to Mr. Wilcox's suggestion that the fact of my residence being near the scene of my labours imposes on me the responsibility of examining the arches before the centerings are struck, I wish to say that an architect's duties in this respect are clearly defined and well understood, and are quite irrespective of the distance of his house from the work which he has designed; and the question of the juryman, "Whether it was the architect's duty to examine the walls before the centering was struck," can only admit of a plain answer, "Yes" or "No"—it cannot admit of an answer which faces both ways. On looking over a number of specifications by the leading architects, I have not met with a single instance of any such condition imposed on the architect; but even if such condition be general and usual, it certainly does not exist in my specification.

The Coroner: You say abutments would be unnecessary; was that supposing the arch was resting flat at each end?—The thing itself would be like an umbrella, it would be self-sustaining.

And abutments as a means of counter support would be unnecessary?—Quite so, that is if it were solidified.

Would that be so when the arch was resting on a skewback?—That does not apply.

I can understand its giving a downward pressure directly, if there were no slanting skewback. Supposing the centres were removed when the binding between the skewback and the arch itself was not solidified, would there not be of necessity an outward pressure?—I cannot give you an opinion. I am only explaining my construction, which I take to be solidified.

Would there be an outward pressure?—That would be counteracted by the weight of the wall exceeding the weight of the arch.

The superior weight in this case would have more than counteracted any thrust?—Quite so.

Did you, in your designs, calculate for one ring of bricks?—I had in my specifications two courses of lock bricks.

The clerk of the works stated one ring of bricks?—Two. I have got the specifications here.

What do you mean by lock bricks?—They are hollow bricks, and would be rather lighter.

And would the quantity of cement required for binding these together be less?—Rather more.

Would that lightness then be counteracted?—Well, in a degree. I thought it was better work using these bricks, or I should not have consented to the alteration. At any rate, it was more expensive.

It was brought to your notice and adopted by you?—It was suggested to me that the contractor was quite willing to put vitrified bricks, and I approved of it.

The calculations you have now made are made upon the present state of things?—Yes.

A juryman (Mr. Ruddock) said he thought they ought to have the specifications before them, but he supposed as Major Davis was there it would answer the purpose.

Major Davis: I have the specifications here.

Mr. Ruddock: I should like to ask Major Davis if he considers the wall was built in accordance with specifications?—Witness: Yes.

Mr. Rud dock asked whether the wall was properly bonded? There was a casing of bricks, then about three parts rubble, with no bonding from the ashlar. To be thoroughly bonded it should be bonded right through the ashlar, rubble, and bricking.—Witness: It would then be partly a brick wall, if the bricks were to go right through.

Mr. Ruddock said some of the jury went on the building yesterday, and they thought if there was any blame anywhere they should put it on the right shoulders.

The Coroner: You are quite right.

Major Davis: It is impossible to bind a brick wall casing into a stone wall. The brick would go through the face of the stone wall.

OAK PANELLINGS.

A SPECIALITY.

MR. J. ICHENHAUSER, of 68 NEW BOND STREET,

Is prepared to give Designs and Estimates for OAK PANELLINGS and CEILINGS, for Sacred and Domestic Buildings. Largest holder in Europe of Queen Anne, Jacobean, Louis XIV., Louis XV., Louis XVI., English, Italian, German, and Flemish Renaissance Styles. Also Antique Carved Oak and Marqueterie Furniture. Architects and intending Builders would do well to send for Mr. Ichenhauser's Illustrated Magazine, *The Collector and Art Furnisher*, Free.

Telegraphic Address: "ELECTRICITY," *LONDON.* *Telephone No. 1887.*

THE GENERAL ELECTRIC APPARATUS CO.

ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE

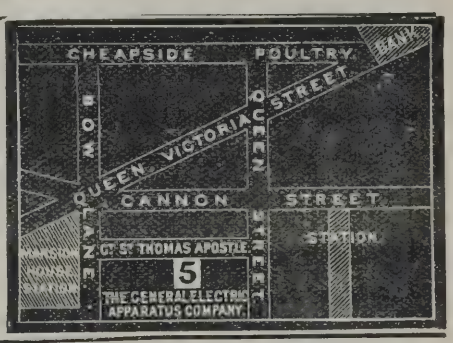
Works: BOW and SOUTH HACKNEY. *(Back of the Mansion House Station),* E.C.

ELECTRIC BELLS.

Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.

The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.

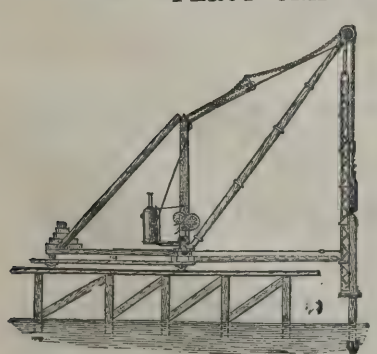
Electric Light Instruments, Fittings and Glassware.



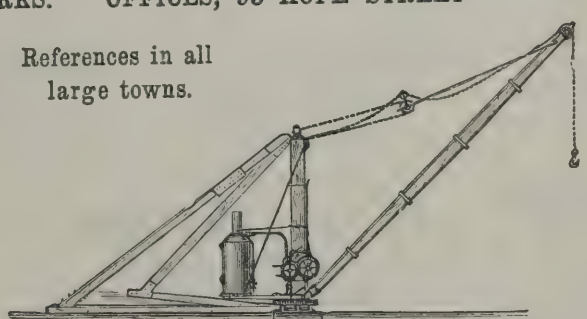
BUTTERS BROTHERS, ENGINEERS, GLASGOW.

PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

References in all large towns.



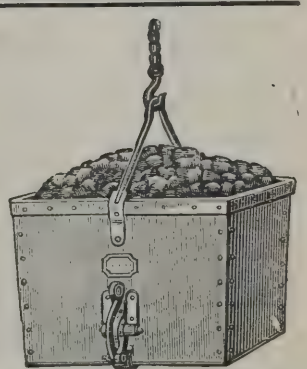
Crane used for Piling.



SCOTCH BUILDERS' CRANES.

Large Stocks. Send for List.

FOR SALE, HIRE, OR HIRE-PURCHASE.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8 10	0
" ¾ "	.	9 10	0
" 1 "	.	10	0

Mr. Ruddock: It struck me that it was only semi-bonded.

Major Davis: You will find the stone in one place bonded into the brick wall.

Mr. Ruddock: I saw that by the window.

Major Davis: I have no fault to find with the work in any way.

The Foreman: You think it has been carried out according to the specifications?—Witness: It is a splendid bit of work.

The Foreman: But, as my friend Ruddock asks, where are the bonders? Witness replied that there was a difficulty about it, having a brick casing to the wall, which was essential in this case. To be properly bonded a wall should be of brick and stone, or stone alone.

The Foreman asked whether in this case there ought not to have been a bond right through?—Witness: No, certainly not.

The Foreman: In all the building I have done I have put in the bonders.

Supt. Berry: If you don't behave I shall have to clear the court.

The Foreman: In all the building I have ever done I have put in the bonders from the face to the inside.—Witness: Yes, but the stone would under those circumstances come through the brick wall?

The Foreman: Yes, sir.—Witness: But that is not my intention in this case.

The Foreman: Will you give us your idea of why this wall fell down?—Witness: There are so many reasons, you know. There are so many different theories. I would not put forward one view more than another as to how it fell. There are a great many ways in which the wall might have fallen.

The Coroner: I think the Foreman asks your opinion. Perhaps you will give your opinion?—My opinion is, as far as I can judge, that there was not sufficient care exercised in taking down the centres.

The Foreman: Referring to this wall again. In my examination, with my brother jurymen, it appeared to me like three walls. First there was a casing of 5-inch or 6-inch ashlar; then you have the inside 4½-inch brickwork, filled up with rubble. Of course that is properly done, so far as I am able to judge of it, yet there are three distinct walls, ashlar, rubble, and brickwork, with no other bond except that the stones in the windows are tied together.—Witness: I told you that I did not go much on that particular portion of the building. There is the clerk of the works; it is left to him because I have a great deal of other work on the other part of the building. Therefore I could not see to that part much. From the 12th to the 25th I was only once there.

The Foreman: Give us your opinion why the wall fell down. If it was not from the thrust, nor from the weakness of the wall, give us your superior opinion as to why it fell, if you please?—Well I can only give you one reason. There may be other reasons, you know.

The Coroner: The fact is it fell?—It is quite clear that it did fall.

The Coroner: You are as likely as anyone to be able to give us a true reason.—Witness: It would not have fallen from the way in which the building was constructed. My impression is that it fell in consequence of the work not being solidified. I believe that was the reason.

The Foreman: You really cannot give us any reason beyond that of the wall not being properly solidified?—The fact is—there is no doubt about it—the wall had not properly hardened.

Replying to a remark by the Coroner, the Foreman said the wall was like placing three boards together. They would have no power, but if they were all nailed well together they would be much stronger and able to resist pressure.

Major Davis said it was very difficult to define what was properly bonded and what was sufficiently bonded. He considered this was sufficiently bonded. He knew it was thoroughly good work, and he was satisfied that no work in Bath had ever been executed better.

The Foreman asked if Major Davis said the arch was self-sustaining, how did he account for the wall falling beyond the taking away of the centering?

Major Davis: I am only answerable for the arch being self-sustaining, or constructively correct when solidified. I have nothing whatever to do with it in progress of building. Of course it has fallen, there is no doubt of that.

A juryman asked if Major Davis thought that a wall carried up in the same way would be able to carry an arch without tie rods.

Major Davis: Yes. I should not use tie rods. I have an objection to them. I shall do it in the same way again.

A juryman said the clerk of the works stated that the cement would set in twenty-four to forty-eight hours.

Major Davis: He is quite correct.

The juryman: Then how do you reconcile that with the statement that the arch was not set or firm?

Major Davis said the brickwork did not constitute the whole

Harness' Electropathic Belt.

TESTIMONIAL.

From Rev. JOSEPH LANE, of Lamport, Northamptonshire:—

"I have derived great benefit from HARNESS' ELECTROPATHIC BELT; the PAIN HAS ENTIRELY LEFT ME, enabling me to do my work without any inconvenience. You may make what use you please of this letter, and, as a Methodist Preacher, it is my duty to recommend your appliances to alleviate suffering."

KIDNEY DISORDERS.

Every man and woman suffering from any disorder of the Nerves, Stomach, Liver, or Kidneys, should at once stop physicking, and send a P.O.O. or cheque for 21*s.*, for HARNESS' ELECTROPATHIC BELT (post free) and obtain immediate relief. Pamphlet and Book of Testimonials post free. THE MEDICAL BATTERY CO. (LIMITED),

52 Oxford Street, London, W.

(Corner of Rathbone Place).

BOOKS.

Now ready.

Limp covers, 1*s.* 3*d.*; post free, 1*s.* 5*d.*

Les Artistes Célèbres.

"JEAN LAMOUR,"

Locksmith to the King Stanislas at Nancy.

By CHARLES COURNAULT.

Excellent work for Art Metal Workers and Electric Lamp and Bracket Designers.
Beautifully illustrated with Twenty-six Designs.

London: GILBERT WOOD & Co., 175 Strand, W.C.

Bound in Cloth, lettered, 21*s.*

"HISTOIRE ARTISTIQUE DU METAL."

By René Ménard.

A Grand Volume. Full of Illustrations.
Well worthy of the attention of connoisseurs in this handicraft.

London: GILBERT WOOD & Co., 175 Strand, W.C.

ART PLATES FROM "THE ARCHITECT."

Proof Impressions of the following Illustration which has appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing:—



THE MARTYRDOM OF ST. STEPHEN

By E. J. POYNTER, R.A.



Awarded the GOLD MEDAL at the INTERNATIONAL HEALTH EXHIBITION.

Size, Forty Inches by Fifteen Inches. Price One Shilling; by post, carefully packed inside patent roller, One Shilling and Threepence.

May be obtained from all Newsagents or Booksellers, or from the Publishers,

GILBERT WOOD & CO.,

175 STRAND, LONDON, W.C.

VOLUME XXXV. OF

THE ARCHITECT,

Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.

Office: 175 Strand, London, W.C.

BOOKS.

Just published.

Bound in Cloth, with Introduction, price 16*s.*

Les Bronzes de la Renaissance.

"LES PLAQUETTES."

Preceded by an Introduction by
EMILE MOLINIER,
Member of the Louvre Museum.
Eighty-two Engravings of Medallions, &c.

London: GILBERT WOOD & Co., 175 Strand, W.C.

INTERNATIONAL SERIES OF THE LIBRARY OF ART.

New Volume, price 8*s.* 6*d.*, post free.

"LA TAPISSERIE."

Containing the Interior Decoration of the Parthénon.
By LOUIS DE RONCHAUD.
Invaluable for Decorators desiring something new to work on in this particular line.

London: GILBERT WOOD & Co., 175 Strand, W.C.

of the arch. The work was two feet thick at the haunches, and it was clear that part was not consolidated perfectly, because it came down and was carted away.

A juryman asked how long Major Davis thought it would take for the wall to get solid?

Major Davis said in dry weather it would consolidate in a week or ten days, but in such weather as they had had, and in such a position, he should not like to say, and with the experience of the wall falling. Of course he should work with experience now. The wall was built in a continuous steam; the air was fully charged with moisture in that particular place.

Mr. Redford, the clerk of the works, was called, as the coroner wished to ask him one or two questions, but he was not in court.

The Coroner then proceeded to sum up, and, after an exhaustive review of the evidence, said that they had the fact that the arch was placed near the top of the wall, that it was constructed in the usual way over what was known as centering. It was said it was intended that the arch, when the centering was removed, should act in great measure as a beam; but it was obviously impossible that it could wholly act as such because it was not designed to rest quite flat upon its ends; it was to rest on the wall. So soon as the centering was removed there was of necessity an outward thrust, with the result that part of the east wall gave way. There was no collapse on the west side, because the resistance there was good and sound, as there were reversed arches there. Why did the east wall give out? Was it because it was not sufficiently set and so not acquired its proper strength, or was it because it was not of sufficient substance to resist the pressure upon it? Upon this point they had heard Mr. Davis's evidence, and in looking for an answer to this question, they also had the evidence of Mr. Willcox, who told them that the wall was just strong enough to resist the thrust if set, and that the cause of the fall was that it was green. That was his reason why it collapsed, coupled with the fact that the arch itself was green. With regard to the removal of the centering it appeared from evidence that Mr. Long and the clerk of the works jointly, and either explicitly or tacitly, consented to and directed this removal. The workmen who actually did the work had every right to consider themselves perfectly safe in doing so. There was no contributory negligence on their part; nor was that a matter which they had to consider. What they had to consider was, who took upon themselves the responsibility of the removal of these centres, and were they fairly and reasonably justified in doing so, taking into consideration all the circumstances and surroundings of the case—the length of time the wall had been up, and also the circumstances which had been mentioned, the vapour from the baths, and the wet weather. If they considered that such precautions were not used as might and ought to have been used—precautions that would be warranted by experience—then he asked the jury to consider whether such want of prudence on their part amounted to gross and culpable neglect of duty, not forgetting that a thing might be in itself highly reprehensible, and yet at the same time not amount to such culpable gross neglect. To assist them to come to a proper conclusion it might be well to look at the matter from the reverse side of the case, namely, what might be considered an accident, and what did not amount to such culpable gross neglect as he had pointed out. What was accidental? A result was accidental when the act by which it was caused was not done with the intention of causing it; when its occurrence as a consequence was not so probable that a person of ordinary prudence ought under the circumstances in which it was done to have taken reasonable precautions against it. Of course it was necessary in considering whether the matter was or was not accidental to judge of each particular case according to its own merits entirely. He then asked the jury to consider their verdict.

The jury retired, and after an absence of thirty-five minutes returned into court, when the Foreman read their verdict as follows:—"We find that the deceased William Mortimer met his death accidentally through the falling of the arch at the New Baths, owing to the east wall of the building not being of sufficient strength or thickness to resist the thrust, and the jury are further of opinion that it would be unsafe to construct another arch on the same wall. We agree to exonerate the contractors from all blame."

The Coroner: I am afraid I cannot record that rider as a part of your verdict; it is simply a matter of opinion.

The Foreman said he had no doubt it would appear in the papers that they had expressed their opinion very strongly on that point.

After a pause, a juror (Mr. Ruddock) said the jury would like to know on what grounds the rider was left out.

The Coroner said it was a matter that related to something in the future and not to that man's death. It was a mere expression of opinion as to a future event, and did not relate to the case into which they had to inquire. It would no doubt be taken notice of in the papers, but he could not attach it to the record of their verdict.

E. LOFTS,

PATENTEE AND MANUFACTURER,

Hills Road, CAMBRIDGE.

London Show-rooms:
165 Queen Victoria St., E.C.

OPEN FIREPLACES

FOR

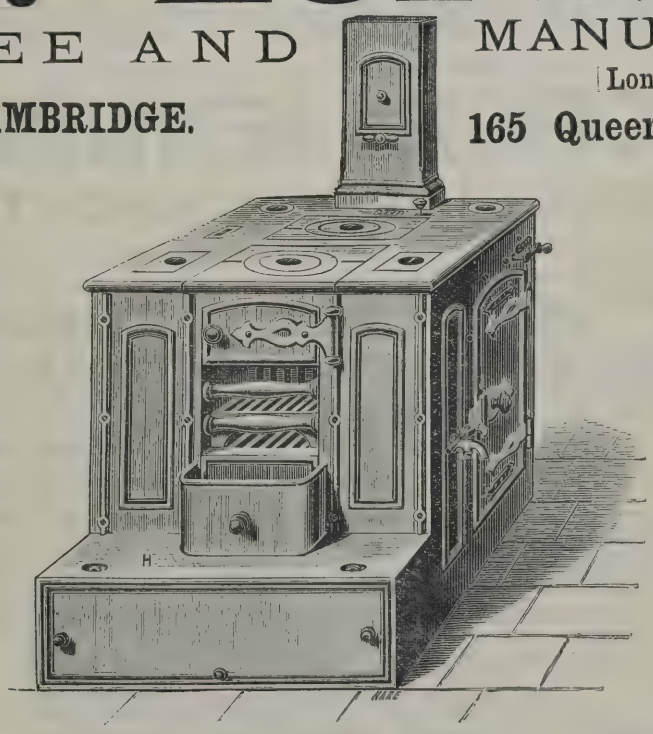
DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES.



HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS, &c., &c.

LOFTS' PATENT STOVES

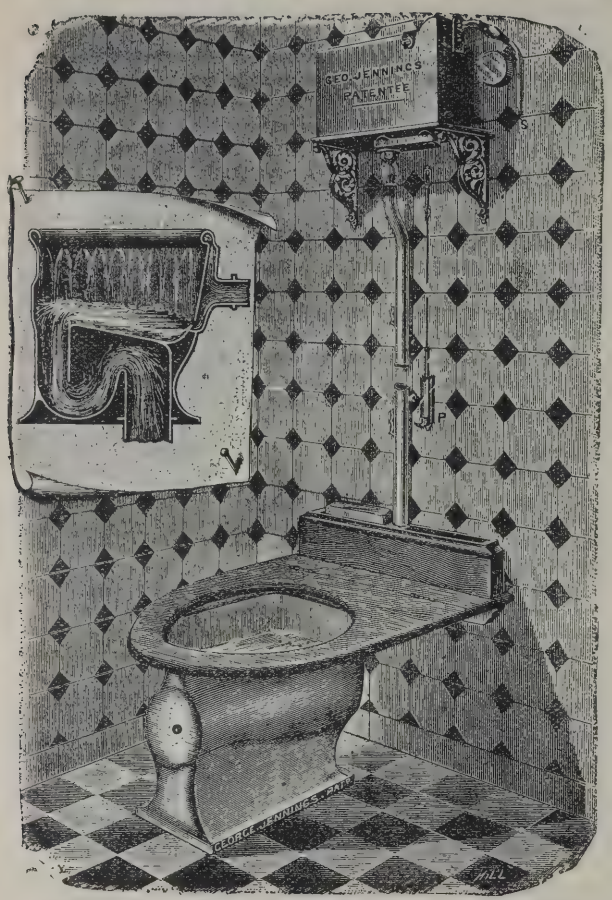
Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Stove.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort, they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; **consume their own smoke**; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge.

"THE PEDESTAL VASE,"
JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884), amongst a series of official tests, under the supervision of Baldwin Latham Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

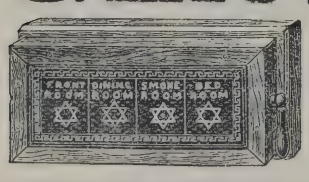
GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,
SANITARY ENGINEER, STANGATE, LONDON.

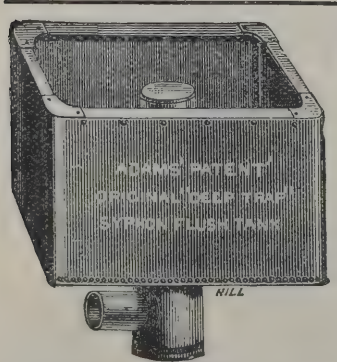
A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.



ELECTRIC & PNEUMATIC BELLS.
NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.
MECHANICAL TELEPHONES. Everything for a line complete for £3.
PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

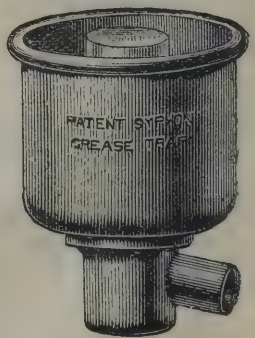


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
" **FLUSH SYPHONS** for Sewer Flushing.
" **FLUSH LATRINES** for Barracks, Schools, &c.
" **FLUSH URINALS** " " "
" **TROUGH CLOSETS** " " "

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

---

inted by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London
Friday, December 17, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, DECEMBER 24, 1886.

TENDERS, ETC.

*** *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the office, 175 Strand, London, W.C., not later than 5 p.m. on Thursdays.*

Correspondents, when writing to notify an extension of time, or an alteration of the date of sending in Competitions or Contracts, are requested in their letter of advice to write at the head of the required change—"Contract Reporter to THE ARCHITECT."

EDITORIAL NOTICES.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested as much as possible to make their communications brief. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

THE ARCHITECT
AND
CONTRACT REPORTER.

ADVERTISEMENT SCALE.

	£	s	d
For Two Lines and under (eight words to the line)	0	2	6
For every Additional Line	0	0	6
For Quarter Page	2	10	0
For Half Page	4	10	0
For a Page	8	8	0
For 1 inch deep by 2½ wide	0	7	6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & CO., 175 *Strand, London, W.C.*

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

KILBURN.—Jan. 31.—Designs are invited by the Willesden Local Board for the Erection of Public Offices, Dyne Road, Kilburn. Cost, 6,000*l.* Premiums of 50*l.* and 25*l.* Mr. O. Claude Robson, Surveyor, Hampton House, High Road, Kilburn.

LOSSIEMOUTH.—Plans are invited for the Building of a Church in Branderburgh. Mr. George Smith, Lossiemouth.

PEMBROKE.—Jan. 6.—Plans are required for the Erection of about 100 Dwellings for the Working Classes in various Parts of Town. Mr. J. C. Manly, Town Hall, Pembroke.

CONTRACTS OPEN.

ABERTILLERY.—Jan. 8.—For Building Board School to accommodate 248 Boys. Mr. W. D. Blessley, Architect, Guildhall Chambers, Cardiff.

ANSTRUTHER-EASTER.—Jan.—For Execution of Water and Drainage Works (Intercepting Drain, Service, Reservoir, Filter Beds, Water House, Laying Main and other Pipes, &c.). Mr. John Buchanan, C.E., 24 George Street, Edinburgh.

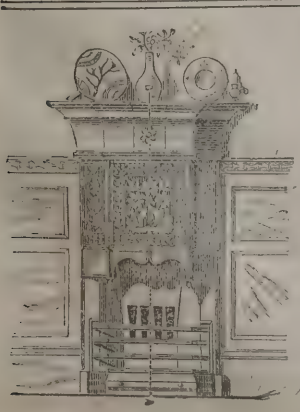
ATTERCLIFFE.—Dec. 31.—For Supplying and Erecting Cast and Wrought Iron for Lattice Girder Bridge across the River Don, and Excavating, Concrete, and Mason Work. Mr. R. Davidson, C.E., Borough Surveyor, Bower Spring, Sheffield.

BARKING CREEK.—Jan. 7.—For Channels, Pier and Jetty, Engine and Boiler Houses, Workshops, Store-shed, Superintendent's House, and Workmen's Cottages, at Northern Main Drainage Outfall. Mr. J. E. Wakefield, Spring Gardens, S.W.

BOW.—Dec. 31.—For Enlargement of Sorting Office. The Secretary, H.M. Office of Works, 12 Whitehall Place S.W

BRADFORD.—Dec. 28.—For Building Weaving Shed at Perseverance Mills, Dudley Hill. Mr. H. Howarth, Architect, Cleckheaton.

BRADFORD, MANCHESTER.—Dec. 29.—For Building Mortuary, Bath Room, Coal Shed, &c., at Police Station. The City Surveyor, Town Hall, Manchester.



THE "ECLAT" AND THE RUMFORD-TEALE FIRE-GRATE.

"As little ironwork as possible."—Vide *"Economy of Fuel," by T. Pridgen Teale.*

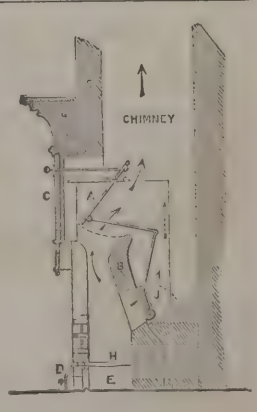
These fireplaces are wholly constructed of Fire-clay and Glazed Terra-cotta or Faïence Ware on principles introduced by the celebrated Count Rumford, and recently revived by Dr. T. Pridgen Teale, with the addition, in the form of the "Eclat," of a Front and Range projecting in advance of the Chimney-Breast, as recommended by Sir Wm. Armstrong.

A Pint only of Residuum in the form of Fine Ash obtained from the combustion of 22 lbs. of Coal.

WILL BURN ANTHRACITE OR COKE.

Illustrated Circulars from the Makers, together with Catalogues descriptive of their—

Patent Chain Fan and Hopper Light Opener.
" Perfect Fanlight Regulator.
" Chain Skylight Lifters and Iron Skylights.
" Reversible Pivoted Windows for Cleaning from the inside.
" Epicycloidal Action for Opening one or a number of Lights simultaneously.



E. & J. M. VERITY,

98 HIGH HOLBORN, W.C., and at CALL LANE, LEEDS.

BRISTOL.—Dec. 28.—For Building Nine-floor Granary, Prince's Wharf—Brick Walls, Timber Roof Slated, Concrete Floors, Steel and Iron Columns and Girders. Mr. J. W. Girdlestone, C.E., Engineer's Office, Cumberland Basin, Bristol.

BRISTOL.—Jan. 11.—For Opening Out No. 1 Tunnel and Constructing Depôt for Marshalling Trains. The Engineer, Paddington Station.

CARDIFF.—Dec. 29.—For Building Chapel and Wood Fittings for same. Mr. Tom Roberts, Llangarthen Villa, 8 Llandough Street, Cardiff.

CLAYTON, BRADFORD.—Dec. 30.—For Building Residence. Messrs. Milnes & France, Architects, 99 Swan Arcade, Bradford.

COLCHESTER.—Dec. 24.—For Building Pair of Semi-detached Villas. Mr. C. E. Butcher, 2 Victoria Chambers, West Stockwell Street, Colchester.

DOCKING UNION.—Jan. 10.—For Making Efficient the Drainage of the Union House. Mr. J. C. Walker, Vine Cottage, Hunstanton, St. Edmunds.

EASTBOURNE.—Jan. 5.—For Building Provision Market and Arcade. Mr. George Fuller, Architect, 15 Cornfield Road, Eastbourne.

ELGIN.—Dec. 28.—For Building Gate Lodge, Gray's Hospital. Messrs. A. & W. Reid, Architects, Elgin.

ELGIN.—Dec. 27.—For Alterations to School-house, St. Andrew's, Llanbryd. Messrs. A. & W. Reid, Architects, Elgin.

ELSTREE.—Dec. 29.—For Construction of the Sewers, Outfall, and Works in Connection. Mr. W. H. Mansbridge, Surveyor, High Street, Barnet.

FOREST GATE.—For Completion of Ten Houses. Mr. J. F. Wesley, Architect, 277 Romford Road, Forest Gate.

GLASGOW.—Dec. 25.—For Forming Additional Aqueduct from Loch Katrine. Mr. Gale, Engineer, Waterworks Offices, 25 Miller Street, Glasgow.

HALIFAX.—Jan. 7.—For Building Cocoa House. Messrs. Horsfall & Williams, Architects, Post Office Buildings, Halifax.

HASTINGS.—Jan. 3.—For Building Boundary Wall, with Iron Fence, Gates, &c., at Cricket and Recreation Ground. The Borough Surveyor, Town Hall, Hastings.

HEREFORD.—For Erection of Premises, Elgin Street. Mr. W. W. Robinson, Architect, King Street, Hereford.

HEREFORD.—Jan. 10.—For Providing Additional Water Storage for the General Infirmary, Fire Mains, Valves, Hose Pipe, Delivery Pipes, &c. Mr. J. Parker, City Engineer, Hereford.

HUDDERSFIELD.—Dec. 24.—For Alterations and Additions to Waterloo Mills. Messrs. J. Kirk & Sons, Architects, Huddersfield.

ISLE OF MAN.—Jan. 15.—For Making Addition to Principal's House at King William's College. The Secretary, King William's College, Isle of Man.

KENSINGTON.—Jan. 6.—For Additions and Alterations to Laundry at Workhouse, Marloes Road. Mr. H. H. Bridgman, Architect, 42 Poultry, E.C.

KIRKHEATON.—For Erection of Extensive Iron Works. Messrs. Calvert & Wright, Architects, Low Pavement, Nottingham.

LAMBETH.—Jan. 12.—For Reconstruction of Prince's Road Workhouse. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

LLANYBYTHER.—Dec. 29.—For Restoration of Bridge over the Teify. Mr. T. George, Pendine, St. Clears, County Surveyor for Carmarthenshire.

MARYPORT.—Dec. 30.—For Alterations and Additions to Girls' National School. Messrs. C. Eaglesfield & Son, Architects, Maryport.

MORLEY.—Dec. 30.—For Building Long Chimney of Brick, Springfield Mills. Messrs. Kirk & Sons, Architects, Dewsbury.

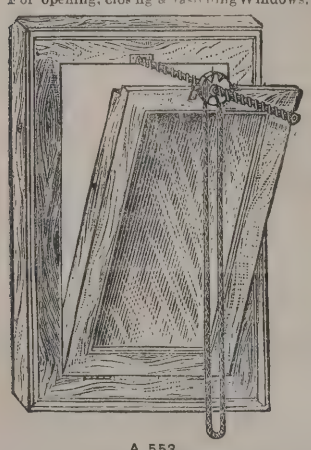
NEWHAVEN.—Jan. 17.—For Building and Maintaining Engine Shed (with Corrugated Iron Roof). Mr. F. T. Banister, Chief Engineer, London Bridge Terminus, S.E.

NORTHWICH.—Dec. 28.—For Supplying and Fixing (tenders and designs) Water-wheel at Wade Brook Waterworks. Mr. W. R. Stow, Surveyor, Local Board Offices, Northwich.

PENARTH.—Jan. 3.—For Building Baptist Schoolroom and Offices. Mr. J. P. Jones, Architect, 27 Park Street, Cardiff.

PONTYCYMMER.—Jan. 4.—For Building Board School. Messrs. Seddon & Carter, Architects, 74 St. Mary Street, Cardiff.

Preston's Patent Screw Adjustment,
For opening, closing & fastening Windows.



A 553.

JAMES CARTLAND & SON,

Cabinet, Builders' & Furnishing Brassfounders,

BIRMINGHAM.

TRADE MARK

The Extent, Variety, and Finish of Articles Manufactured at this Establishment cannot be excelled.

THE REGISTERED DESIGNS AND PATENTED ARTICLES ARE NUMEROUS AND VALUABLE.

All Goods for Export are CAREFULLY PACKED IN CARTOON BOXES, and distinctly labelled with Orange-coloured Labels, bearing the Trade Mark as at side.

TRADE MARK

The attention of Architects and Builders is specially drawn to the merits of PRESTON'S PATENT SCREW ADJUSTMENT for opening, closing, and fastening windows of Churches, Board Schools, Warehouses, and Manufactories, as its extreme simplicity cannot fail to commend it.

An endless Cord passing over a grooved Pulley, and worked by hand, causes the Box to travel on Screw, carrying the Sash with it to the required distance, and remaining securely locked at any angle. The action is perfectly easy and a child can adjust it.

DRAWINGS MAY BE HAD ON APPLICATION.

LONDON SHOW-ROOMS:—40 HOLBORN VIADUCT.

COLES, STEWART & CO.,

STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

PORTSMOUTH.—Jan. 4.—For Pulling Down and Rebuilding The Fighting Cocks. Mr. A. H. Bone, Architect, 66 Hanover Street, Portsea.

PUDSEY.—Dec. 24.—For Heating Apparatus for Unitarian Church. Rev. H. B. Smith, Church Lane, Pudsey.

QUEENSBURY.—Jan. 8.—For Forming Playgrounds and for Alteration to School, Ambler Thorn. Mr. Herbert Hodgson, Architect, Queensbury.

RAVENSTHORPE.—Dec. 24.—For Building Dye House, Netherfield Mills. Mr. R. Castle, Architect, Westgate, Cleckheaton.

SHEFFIELD.—Dec. 27.—For Construction of Service Reservoir, Meter-house, Laying Cast-iron Water-mains, Pipes, &c., for the Handsworth Local Board. Mr. Charles Gott, C.E., 108 Norfolk Street, Sheffield.

STEVENAGE.—Dec. 30.—For Gas Engine, Gas Generator and Pumps. Mr. A. T. Lacy, C.E., Palace Chambers, S.W.

ST. HELENS.—Jan. 11.—For Laying Pipes with Valves, Hydrants, &c. Mr. D. M. F. Gaskin, C.E., Town Hall, St. Helens.

ST. LEONARDS-ON-SEA.—Jan. 3.—For Constructing Sea-wall (814 feet long), with Return Wall and Slipway, at the West Marina. The Borough Surveyor, Town Hall, Hastings.

STOCKPORT.—Dec. 29.—For Telescope Gasholder. Mr. James Jacques, Engineer, Millgate Works, Stockport.

STONEHAVEN.—Dec. 24.—For Building Dunnottar Mission Church. Mr. John Young, Architect, Perth.

SOUTHSEA.—Jan. 10.—For Rebuilding No. 5 Russell Street. Mr. A. H. Bone, Architect, 66 Hanover Street, Portsea.

SUNDERLAND.—Dec. 29.—For Erection of Municipal Buildings, Fawcett Street. Mr. Brightwen Binyon, Architect, Ipswich.

SWANSEA.—Jan. 11.—For Steel Superstructure for Central Span, Landore Viaduct. The Engineer, Paddington Station.

SWINDON.—Dec. 29.—For Construction of Cattle Market, for the Central Market Company. Mr. W. H. Read, Architect, Corn Exchange, Swindon.

ULVERSTON.—Dec. 30.—For Building Business Premises, New Market Street. Mr. J. W. Grundy, Architect, Central Buildings, Brogden Street, Ulverston.

UPPER CWMBRAN.—For Construction of Reservoir. Mr. J. Blenkarn, Waterworks Engineer, Pontnewydd, near Newport, Mon.

WARWICK.—Jan. 3.—For Construction of Engine and Boiler House, &c., at the Waterworks, Haseley. Mr. E. Pritchard, C.E., 57 Waterloo Street, Birmingham.

TENDERS.

ABERDEEN.

For Constructing Reservoir in Granite or Concrete at Mannsfield, Aberdeen.

Granite.

E. GAULD, Aberdeen (*accepted*) . . . £11,111 12 0

Concrete.

J. & W. Grainger 8,833 8 0

APPERLEY BRIDGE.

For Building House, Stable, and Warehouse, &c., at Greengates, Apperley Bridge. Mr. JOWETT KENDALL, Architect, Idle, near Bradford. Quantities by the Architect.

E. Whiffield, mason, Idle, near Bradford.
J. & E. Barker, joiner, Calverley, near Leeds.
Edward Pearson, plumber, Faisley.
Andrew Taylor, plasterer, Eccleshill, near Bradford.
Joseph Richardson, slater, Eccleshill, near Bradford.

For Building Wesleyan Chapel, Woodhouse Grove, Apperley Bridge. Mr. H. ISITT, Architect, Queen Anne Chambers, Bradford.

W. IVES & Co., Shipley, near Leeds (*accepted*) £2,200 0 0

BIDEFORD.

For Building Nine Houses, North Down, Bideford. Mr. R. T. HOOKWAY, Architect, Bath House, Bideford. Quantities not supplied.

Glover & Hoare, Abbotsham	£3,422 0 0
Martin, Bideford	3,378 0 0
Cock & Lamerson, Bideford	3,114 0 0
Gent & Son, Bideford	2,540 0 0

INTERNATIONAL HEALTH EXHIBITION.—MEDAL Awarded for

LEGGOTT'S PATENT ADJUSTMENT,

FOR FANLIGHTS, SKYLIGHTS, &c.,

Is admitted to be the best ever put before the Public.

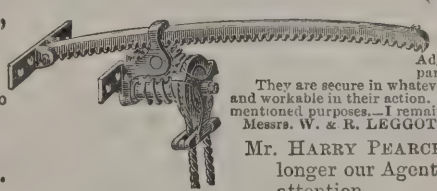
From 5s. each.

Write for REDUCED PRICE LIST and Testimonials to

W. & R. LEGGOTT,

70 Park Road, Bradford, Yorkshire.

N.B.—Size and height of window no object.



TESTIMONIAL.

BANGOR, N. Wales: September 14, 1885.

Sirs,—I have pleasure in testifying that I have used Leggott's Silent Adjustments for various buildings to high skylights, fanlights, and top parts of windows, and in every case they gave satisfaction. They are secure in whatever position, whether the window is open or closed, and are quite simple and workable in their action. I prefer them to any other that I have seen or used for the above-mentioned purposes.—I remain, yours obediently, R. DAVIES, Architect.

Messrs. W. & R. LEGGOTT, Bradford.

Mr. HARRY PEARCE, 125 Great Portland Street, London, W., is no longer our Agent. All direct communications shall have our prompt attention. W. & R. L.

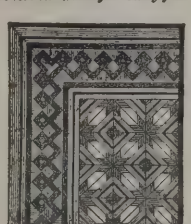
TURPIN'S PARQUET FLOOR, JOINERY & WOOD CARVING CO., LD., 22 QUEEN'S ROAD, BAYSWATER, LONDON, W.

PARQUET FLOORINGS.

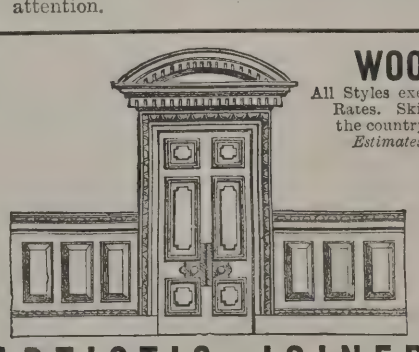
150,000 ft. super. in Stock, ready for Laying.

RIGA INCH OAK FLOOR BOARDS, Tongued and Grooved, VERY CHEAP.

Immense Stock always ready for Laying.



THIN PARQUET (Turpin's Patent). 5-16 inch thick, prepared on deal back laminations, equal in wear to inch Solid Parquet. Used for Veneering old existing deal floor, and is susceptible of removal at pleasure. See Construction.



WOOD CARVINGS.

All Styles executed for the Trade at Special Rates. Skilled Artisans sent to all parts of the country.

Estimates and Designs on Application.



ARTISTIC JOINERY.



ORNAMENTAL PARQUET.

DEAL BACKING.

KALLKOLITH PRIMING.

SAVE ONE-THIRD OF COST AND TIME BY USING KALLKOLITH.

It fills the Pores, stops all suction, dries quickly, produces an exquisite smoothness, and is more durable than Oil Priming.

KALLKOLITH STAIN.

Wood twice coated with KALLKOLITH produces a fine Oak Tint, and can be

VARNISHED WITHOUT SIZE BEING USED.

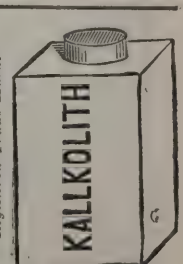
Price per Case of Eight Tins of 14 lbs. each, 40s., packing included. Sample Tins, 6s. each.

H. RANSOM & CO., 11 Queen Victoria Street, LONDON, E.C.

AGENTS WANTED.



Registered Trade Mark.



Registered Trade Mark.

BARNES.

For Additions to Westfield Schools, for the Barnes (Surrey) School Board. Mr. H. JACQUES, Architect.

W. Hallett	£980 0 0
Geo. Barnes	970 0 0
Wall	932 0 0
F. R. Tozer	919 0 0
W. J. Beale	895 0 0
R. L. Wood	885 0 0
G. Stephenson	871 0 0
G. Lyford	860 0 0
P. H. Dawes	853 0 0
Webb & Rosser	812 0 0
Jas. Tozer	797 0 0
J. Hill	784 4 0
H. Haynes	775 0 0
A. Sale	769 0 0
Newton & Idle	768 0 0
J. Channon	750 0 0
J. M. Goodwin	738 13 6
A. Hunt	720 0 0
H. Pickersgill	705 0 0
A. & E. Braid	699 0 0

BEXLEY.

For Decorative Repairs to Sutton House, Parkhurst Road, Bexley, for Mr. J. Carter. Mr. R. PETERS, Architect, 72 Wool Exchange, E.C.

GREEN (*accepted*).

BOURNEMOUTH.

For Roads and Fencing, Rosebery Park Estate, East Boscombe, for the South Coast Freehold Land Society. Mr. W. HOARE, Surveyor, Victoria Works, Bournemouth.

Fencing.

Lock & Davis	£248 0 0
C. Stickland	243 8 5
Wellman	240 17 6
JAMES & TAYLOR (*accepted*)	226 0 0

Roads.

W. H. Saunders	370 5 6
G. Troke	345 0 0
Lock & Davis	338 0 0
C. STICKLAND (*accepted*)	301 4 9

BIRSTALL.

For Construction of Storm Overflow on land at Smithies, for the Birstall Local Board.

J. Slinger, Cleckheaton	£64 0 0
Parker & Sharpe, Batley	40 8 0
J. & B. FARRER, Birstall (*accepted*)	34 0 0

BROCKLEY.

For Additions to a Residence, for Captain Harvey, Brockley. Mr. R. PETERS, Architect, 72 Wool Exchange, E.C.

KEMP (*accepted*).

For Completion of a Residence, for Captain Harvey, Brockley. Mr. R. PETERS, Architect, 72 Wool Exchange, E.C.

WASSON (*accepted*).

CARDIFF.

For the Construction of Urinals, Cardiff.

	Tudor Street.	Picton Place.
Turner & Sons, Cardiff	£148 0 0	(both)
J. Allan, Cardiff	106 16 8	70 5 10
Ellis & Davies, Cardiff	86 0 0	50 2 0

CROYDON.

For Asphalting Playgrounds, Princes Road, Oval Road, and Brighton Road Schools, for the Croydon School Board. Mr. RIDGE, Surveyor to the Board.

H. LAKE, Croydon (*accepted*) £582 3 4

For Alterations to Residence, Sydenham Road, Croydon. Mr. R. PETERS, Architect, 72 Wool Exchange, Coleman Street, E.C.

KEMP (*accepted*).

EALING.

For Building Wing to the Public Baths, Ealing. Mr. CHARLES JONES, C.E., Surveyor.

Jones Bros.	£1,726 0 0
W. A. Read	1,680 0 0
Oldrey & Co.	1,655 0 0
Beale	1,648 0 0
Priestley & Gurney	1,645 0 0
Wardrop	1,644 0 0
W. H. Waters	1,573 0 0
H. Haynes	1,550 0 0
Pickersgill	1,530 0 0
ADAMSON & SONS (*accepted*)	1,495 0 0

HOLDEN & CO.'S PATENT ZINC ROOFING

WITH THEIR

PATENT STOP-END FLANGE & HOLDING-DOWN CLIP,

Whereby the use of Solder and all Outside Fastenings are entirely dispensed with. Models, Drawings, and List of Works executed forwarded upon application.

Zinc, Copper, and Galvanised Iron Roofing. Stamped Ornamental Zinc and Copper Work of every description.

ZINC AND IRON WORKERS AND COPPERSMITHS.

Reference to Works executed in all parts of the United Kingdom during last twenty-five years their best recommendation.

HOLDEN & CO., 5 WOOD STREET, WESTMINSTER, LONDON, S.W.

H. W. COOPER & COMPANY, LIMITED,

HEALTH EXHIBITION,



MEDAL AWARDED, 1881.

OPEN.



Manufacturers of Cooper's Glass, Revolving, Circular, and Sliding Ventilators (H. W. Cooper, Sole Inventor).

Improved Glass Louvre and Venetian Ventilators, for Private and Public Buildings, Churches Halls, and lights of every description. Improved Iron, Copper, Brass, and Gun-Metal Casements. New Hopper Ventilators for Skylights, &c. Medal awarded to H. W. Cooper from Glass Sellers' Company Exhibition, London, 1876. Diploma of Merit, Sanitary Institute of Great Britain Exhibition, Glasgow, 1883. Diploma of Merit, National Health Society Exhibition, London, 1883.

H. W. COOPER, Sole Inventor of the Circular and Sliding Ventilators; also of the Metal Casements and Hopper Ventilators.

SHUT.



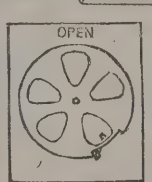
GLASS SELLERS' COMPANY EXHIBITION,



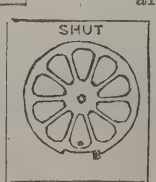
MEDAL AWARDED, 1876.

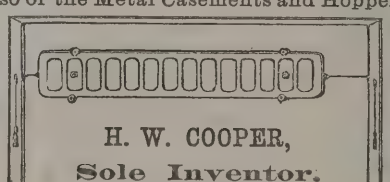


Improved Casement.

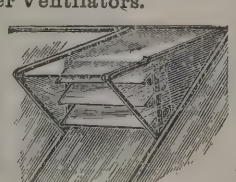


Circular Glass Revolving Ventilator.

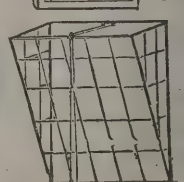




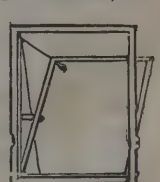
Glass Sliding Ventilator.



Improved Hopper for Skylights.



Hopper Ventilator.



Casement.

Steam Works: Little Queen St., Upper George Street, Edgware Road, W.

Office: 28a UPPER GEORGE STREET, EDGWARE ROAD, W.

SPECIALITE MEDIEVAL ECCLESIASTICAL TILES.

CARTER, JOHNSON & CO., Encaustic Tile Manufactory, St. George's Works, WORCESTER.

LONDON DEPÔT:
Kinson Wharf,
34a Albert Embankment,
LAMBETH, S.E.

20 Victoria Buildings,
Victoria Street,
MANCHESTER.

AGENTS:—
T. J. STURGEON & CO., Cross Lane, Eastcheap, E.C

DUMBARTON.

For Building Bridge at Balloch in place of present Suspension Bridge.

HANNA, DONALD & WILSON (*accepted*)	£4,996 11 2

FOLESHILL.

For Extension to Factory at Foleshill. Mr. A. RANDLE, Architect.

W. Bacon, Foleshill	£207 15 0
A. Randle, Foleshill	198 0 0
T. Wright, Foleshill	189 7 6
Kelly & Son, Foleshill	177 0 0
D. CLARKE, Foleshill (*accepted*)	175 0 0

FRODSHAM.

For Farm Buildings at Netherton, Frodsham, for Mr. E. A. Wright, J.P. Messrs. C. E. LINAKER & S. DAVIES, Architects, Frodsham.

T. DAVIES, Frodsham (*accepted*)	£660 0 0

For Sewer in Ship Street, Frodsham, for the Runcorn Union Rural Sanitary Authority. Messrs. C. E. LINAKER & S. DAVIES, Architects, Frodsham.

J. LITTLER, Newton-by-Frodsham (*accepted*)	£49 18 0

For Covering Frodsham Water Wells, Newton, Runcorn. Messrs. C. E. LINAKER & S. DAVIES, Architects, Frodsham.

J. LITTLER, Newton-by-Frodsham (*accepted*)	£20 15 0

GOOLE.

For Enlarging Alexandra Street Schools, Goole, for the School Board of Goole. Mr. WILLIAM WATSON, Architect, Wakefield.

Accepted Tenders.

Newboult & Garner, Goole, excavating, brick, stone, plastering, and carpenter	£1,368 13 8
Webster, Jackson & Co., Goole, plumbing, glazing, iron, and gas	276 0 0
George Stewart, Goole, slating	139 0 0
M. Baron, Goole, painting and staining	45 0 0

78 Tenders received.

KINNERTON.

For Farm Buildings at Kinnerton, Flintshire, for Mr. J. Collinge. Messrs. C. E. LINAKER & S. DAVIES, Architects, Frodsham.

E. O. PROBERT, Hope (*accepted*)	£1,468 16 0

KINNERTON—*continued.*

For Farmhouse at Kinnerton, Flintshire, for Mr. J. Collinge. Messrs. LINAKER & DAVIES, Architects, Frodsham.

E. O. PROBERT, Hope (*accepted*)	£959 0 0

GUILDFORD.

For Covering in small Low Service Reservoir at Waterworks, Guildford.

G. Garnett, Guildford	£168 0 0
H. Knight, Northfleet	167 10 0
W. Cunliffe, Dorking	165 0 0
W. G. Mason, Guildford	161 0 0
J. Wheeler, Guildford	127 10 0
F. Noble, Guildford	110 0 0
B. PETERS, Horsham (*accepted*)	93 0 0

LONDON.

For Additional Stabling, &c., adjoining the Windsor Castle Yard, Hammersmith, for the London General Omnibus Co.

Schedule A.

Farzan, Kensington	£2,350 0 0
Hack, Poplar	2,284 0 0
Roberts, South Norwood	2,160 0 0
Knight, Fulham	2,160 0 0
Webb & Rosser, Hammersmith	2,074 0 0
Higgs, Loughborough Junction	2,060 0 0
Manley, 7 St. George's Road, N.W.	2,043 0 0
Garrud, John Street, Hackney Road	1,983 0 0
Richens & Mount, Battersea	1,982 0 0
Evans, Hornsey Rise	1,960 9 0
Haynes, Harrow	1,920 0 0
PARKER, Peckham (*accepted*)	1,920 0 0

Schedule B.

Farzan, Kensington	£1,086 0 0
Hack, Poplar	1,049 0 0
Roberts, South Norwood	997 0 0
Higgs, Loughborough Junction	990 0 0
Manley, 7 St. George's Road, N.W.	969 0 0
Webb & Rosser, Hammersmith	967 0 0
Garrud, John Street, Hackney Road	957 0 0
Knight, Fulham	900 0 0
Richens & Mount, Battersea	912 0 0
Evans, Hornsey Rise	875 0 0
Haynes, Harrow	875 0 0
PARKER, Peckham (*accepted*)	859 0 0

E. LOFTS, Patentee & Manufacturer,

Hills Road, CAMBRIDGE. London Show-rooms, 165 Queen Victoria St. E.C.,

OPEN FIREPLACES

FOR

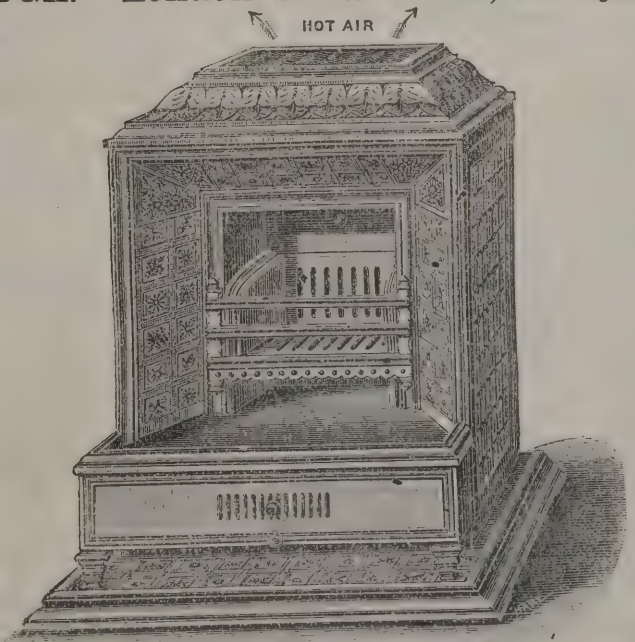
DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES.



HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS, &c., &c.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Store.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort, they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; consume their own smoke; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge.

LONDON—*continued.*

For Alterations to Old Workhouse, Wandsworth. Mr. ALDWINCKLE, Architect.

William Hammond	£15,350 0 0
Parsons	15,195 0 0
Walkley	14,426 0 0
Charles Wall	14,417 0 0
Gregory	13,790 0 0
Nightingale	13,750 0 0
Lathey	13,700 0 0
Mowlem & Co.	13,660 0 0
Stevens & Bastow	13,475 0 0
Howell & Sons	13,187 0 0
James Holloway	12,985 0 0
Kirk & Randall	12,950 0 0
Turtle & Appleton	12,945 0 0
Charles Cox	12,640 0 0
Holliday & Greenwood	12,444 0 0
WILLIAM JOHNSON (*accepted*)	12,100 0 0
Architect's estimate	12,300 0 0

For Altering and Adapting Premises in Bell Lane, Spitalfields, for Messrs. J. & F. Newman. Mr. D. C. NICHOLS, Architect.

Taylor	£2,020 0 0
Shenton	1,990 0 0
Gentry	1,986 0 0
Grover	1,924 0 0
Conder	1,896 0 0
Lawrance	1,495 0 0

For Studio, Engine House, and Alterations and Additions, 9 Barnsbury Park, for Messrs. Barnard & Coombs. Mr. C. FITZROY DOLL, Architect.

Williams & Son	£1,646 0 0
Conder	1,590 0 0
Grover	1,544 0 0
Croaker	1,534 0 0
Lawrance	1,475 0 0

For Rebuilding Stabling, No. 3 Portland Mews, Poland Street, for Mrs. Land. Messrs. BURDEN & MILNES, Architects.

Macey & Sons	£610 0 0
Mitchell	595 0 0
Scrivener	557 0 0
HAYNES (*accepted*)	525 0 0

LONDON—*continued.*

For New Casual Wards, Wandsworth. Mr. ALDWINCKLE, Architect.

Walkley	£5,720 0 0
Holloway & Greenwood	5,377 0 0
Parker	5,400 0 0
Parsons	5,350 0 0
Lathey Bros.	5,300 0 0
Lyford	5,144 0 0
Mowlem	5,092 0 0
Charles Wall	5,049 0 0
Nightingale	5,020 0 0
Stevens & Bastow	4,999 0 0
Beal	4,941 0 0
Howell & Sons	4,831 0 0
William Hammond	4,798 0 0
Charles Cox	4,758 0 0
Holloway Bros.	4,743 0 0
Kirk & Randall	4,738 0 0
Wyatt	4,697 0 0
WILLIAM JOHNSON (*accepted*)	4,200 0 0
Architect's estimate	5,000 0 0

For Granite Paving at the New Workhouse of the Wandsworth and Clapham Union. Mr. T. W. ALDWINCKLE, Architect.

	New.	Second-hand.
Hindle & Morrish	£279 0 0	£229 0 0
Griffiths	277 0 0	234 0 0
Wheeler	245 0 0	225 0 0
B. Cooke & Co.	240 0 0	230 0 0
MOWLEM & CO. (*accepted*)	232 0 0	200 0 0
Woodham & Fry	225 0 0	205 0 0

For Decorative Repairs and Alterations to Offices, 71 Eastcheap, for Messrs. Lough Bros. Mr. R. PETERS, Architect, 72 Wool Exchange, E.C.

Richardson	£84 0 0
Kemp	76 0 0
Smith	64 0 0
HEWITT (*accepted*)	60 0 0

For Rebuilding Two Shops at Rathbone Street, Canning Town.

T. Baxter	£698 0 0
W. Parsons	645 0 0
Allerton & Fox	555 0 0
J. W. WYLES (*accepted*)	548 10 0

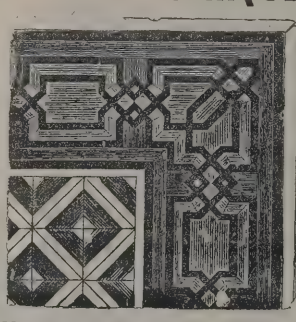
PRIZE MEDAL, BUILDING TRADES EXHIBITION, PLYMOUTH.
GIBBARD'S Reliable Wood Block Flooring,
FOR CHURCHES, SCHOOLS, ETC.
ALL WORK GUARANTEED.
Works—TIVERTON ROAD, EXETER.

PHOTOGRAPHS
OF
ARCHITECTURE
In all parts of the world,
INCLUDING a NEW SERIES of DETAILS
From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.
Our magnificent Collection is always on view at our London Galleries,
24 OLD BOND STREET, W.,
Or Selections and Lists can be had by post from
WINCH BROTHERS, Colchester.
List Free.

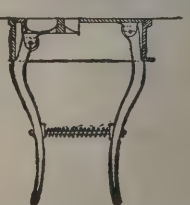
PAWSON & BRAILSFORD,
DRAWING-OFFICE STATIONERY MANUFACTURERS,
Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.
General Stationery Stores & Milner's Safe Depot,
1 HIGH ST., SHEFFIELD.
SPECIALITIES IN
TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.
Legal and Commercial Stationery.

THE NEW CHANDELIER.
PATENT SECRET BALANCE.
See "The Architect" of October 22, 1886, page 9.
Particulars free on application.
H. T. TALLACK, 128 Hatton Garden, London, E.C.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c.?
ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.
Established 1852.

ARROWSMITH'S
"SOLID" PARQUET FLOORS

SOLID INCH THICK. BOTH SIDES ALIKE.
Not Veneered.
PATENTED.
Also Quarter-inch THICK, for Surrounds of Carpets.
References to Works executed since 1851, in all parts of the World.
CARVED WOOD CHIMNEY-PIECES.
Contracts for all kinds of Joinery, Painting, Decorating, &c.
No. 80 NEW BOND STREET, London, W.

EMPLOYERS' LIABILITY. ACCIDENTS. ALL ACCIDENTS DURING EMPLOYMENT. | GENERAL ACCIDENTS. RAILWAY AND MARINE ACCIDENTS. FIDELITY GUARANTEES.
THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION (Limited).
Nos. 84 and 85 King William Street, London, E.C.
Capital, £1,000,000.
Fully Subscribed, £500,000. Paid up, £100,000.
Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
Protection granted during issue of Policy.
Reduced Rates for GENERAL ACCIDENTS with bonus on all renewals.
Collective Fidelity Guarantee Policies for any number of persons.
Applications for Agencies invited.
S. STANLEY BROWN, Genera Manager.

WILLIAM HALFORD
(*The Patent Self-Fastening Coal Plate Co.*),
MANUFACTURER OF
"SEMI-PRISM" LENS
And other Pavement Lights,
Illuminated Stall Boards, Cellar Flaps, Steps and Risers, Ornamental Tiled Pavement Lights.
Patent Self-Fastening Coal Plates,
M. & T.'S PATENT.  NO. 4,125.
International Inventions Exhibition, London, 1885,
HIGHEST AWARD, BRONZE MEDAL.




Price Lists and Special Quotations on application to
2 WYNYATT ST., LONDON, E.C.
And at WARRINGTON.

LONDON—*continued.*

For Building Studio, and Alterations and Additions, No. 13 Portland Place, W., for Mr. W. Q. Orchardson, R.A. Mr. C. F. MOXON, Architect. Quantities by Mr. H. Bushell, Finsbury Pavement.

Church & Co., London	£1,538 0 0
T. H. Kingerlee, Oxford	1,493 0 0
J. K. Tibbetts, Buckingham	1,370 0 0
S. C. Parmenter, Braintree	1,330 0 0
Clarke & Bracey, London	1,293 0 0
G. H. & A. Bywaters, London	1,263 0 0
Lawrance & Sons, London	1,170 0 0
L. C. ROPER, New Cross (*accepted*)	1,163 0 0

For Rebuilding No. 18 Cowcross Street, E.C., for Mr. H. Wilson.

S. Goodall	£917 0 0
John Garrud	831 0 0
George Moore	803 15 6
E. Battershill	761 12 0
J. W. Wyles	635 19 0
J. STUDDS & SON (*accepted*)	536 1 0

MARSH.

For Building Shed at Stanley Mills, Marsh, Huddersfield. Messrs. JOHN KIRK & SONS, Architects, Huddersfield.

J. Radcliffe & Sons, Huddersfield, mason.
J. W. Sykes, Huddersfield, joiner.
E. Morton & Son, Huddersfield, plasterer.
T. Armitage, Huddersfield, plumber.
J. Lunn, Huddersfield, painter.
W. E. Jowett, Huddersfield, slater.
G. W. Tomlinson, Huddersfield, ironfounder.
Mellows & Darby, Sheffield, glazier.
J. Bedford & Co., Halifax, ventilators.

NEWCASTLE-ON-TYNE.

For Erecting at the Jubilee Exhibition Grounds a fac-simile of Old Tyne Bridge. Mr. P. J. MESSENT, Engineer to the Tyne Improvement Commissioners.

Accepted Tenders.

Walter Scott & Co., Newcastle, structural work.
Gullachen, Newcastle, decorator.
Willesden Paper Co., aggregate roofing.
Amount of accepted tenders, 3,250*l.*

MELKSHAM.

For Club Room at Melksham, for Mr. H. A. Wadworth. Mr. J. S. RANDELL, Architect, Devizes.

W. Smith, Trowbridge	£410 0 0
Light & Smith, Chippenham	310 0 0
Blake & Davis, Melksham	292 18 0
G. Moore, Trowbridge	248 0 0
G. BROWN, Devizes (*accepted*)	229 0 0

OLDBURY.

For Constructing Sewer, Langley Green. Mr. J. STANFIELD BRUN, Engineer.

J. Jevons, Dudley	£98 14 6
Jones & Fitzmaurice, Birmingham	68 0 0
Underhill, Oldbury	66 7 4
W. Bennett, Bilston	55 14 0
J. ROWLEY, Oldbury (*accepted*)	54 0 0

For Constructing Roadway and Footpaths, Underhill Street, Langley. Mr. J. STANFIELD BRUN, Engineer.

J. Jevons, Dudley	£77 1 6
Underhill, Oldbury	75 10 0
Jones & Fitzmaurice, Birmingham	55 0 0
J. Griffiths, Langley	53 10 0
J. Hadley, Rowley Regis	50 0 0
W. Bennett, Bilston	41 10 0
T. SHIPTON & J. CASHMORE, Oldbury (*accepted*)	36 0 0

RIPLEY.

For Addition to Premises, Ripley, Surrey, for Mr. Lucas. Mr. RICHARD PETERS, Architect, Wool Exchange, E.C.

Lee	£410 0 0
Christmas	290 0 0
WHITBURN (*accepted*)	250 0 0

SOUTHSEA.

For Rebuilding the Clarence Arms, to be called the Clarence Hotel, Southsea, for Messrs. G. Peters & Co. Mr. J. W. WALMISLEY, Architect, 7 King's Terrace, Southsea. Quantities by the Architect.

J. H. Corke, Southsea	£2,580 0 0
W. Ward, Southsea	2,480 0 0
T. P. Hall, Southsea	2,468 0 0
G. Burbridge, Southsea	2,425 0 0
Evans Bros., Southsea	2,400 0 0
LIGHT BROS., Landport (*accepted*)	2,349 0 0
Architect's estimate	2,500 0 0

SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.

BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.

SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.

PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.

PHOTO-LITHOGRAPHY.

CERTIFICATE BOOKS for Instalments, 3*s.*, or with receipt, 5*s.* Bill Paper, 17*s.* 6*d.* & 25*s.* per ream. SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper, Drawing Paper, Sectional Paper Mounted Papers, Continuous Papers, Pencils, Pens, &c. &c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced Prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
CORSHAM DOWN / FARLEIGH DOWN } SUMMER DRIED.
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN, BOX GROUND, COMBE DOWN, STOKE GROUND, AND CORNGRIT
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

SIMPLEX LEAD GLAZING

For ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR ILLUSTRATIONS, TESTIMONIALS & FULL PARTICULARS (SENT POST FREE).

PERMANENT EXHIBITION OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.

BATH STONE.
BOX GROUND
IS BEST FOR EXTERNAL USE.
CORSHAM DOWN
IS WELL ADAPTED FOR INTERIOR WORK
PICTOR & SONS, Box, Wilts.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of **Bath Stone,** and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS,
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
☞ **MICA,** Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

SHERBORNE.

For Stonework for Sanatorium, for the Governors of Sherborne School.

Ham & Son	£485 0 0
S. & J. Staple	465 0 0
JOHN TRASK & CO. (*accepted*)	420 0 0

SOUTHAMPTON.

For Building Seven Cottages at Otterbourne Waterworks for the Southampton Corporation. Mr. WM. MATTHEWS, C.E., F.G.S., Engineer, Southampton. Quantities by Mr. E. C. Poole.

W. Franklin, Portswood	£2,377 0 0
J. Reynolds, Brighton	2,298 0 0
S. Stevens & Sons, Southampton	2,154 0 0
H. J. Sanders, Southampton	2,130 0 0
W. H. Simonds, Reading	2,121 0 0
J. Bull, Sons & Co., Southampton	2,037 0 0
John Crook & Son, Southampton	1,937 0 0
HONEYCHURCH & MICHELMORE, Southampton (*accepted*)	1,850 0 0
Engineer's protecting tender	1,920 0 0

For Works at Corn Stores and Corn Exchange, Southampton, for the Harbour Board. Mr. J. G. POOLE, Surveyor, 9 St. Michael's Square, Southampton. Quantities by the Surveyor.

Stevens & Sons, Southampton	£660 0 0
John Holt, Southampton	655 0 0
Crook & Sons, Southampton	569 0 0
BULL & SONS (*accepted*)	537 0 0
Surveyor's estimate	658 0 0

SOWERBY.

For Works at Farmhouse at Lower Hathershelf, Sowerby, near Halifax, Taking Down back portion, Building New Dairy, Kitchen, Bedrooms, and Staircase, Stripping, Straightening, and Reslating, Roofing, and Draining of Premises. Mr. T. L. PATCHETT, Architect, Halifax.

Moses Wilkinson, Mytholmroyd, excavator, mason, and bricklayer.
John Kershaw, Mytholmroyd, carpenter and joiner.
Levi Crabtree, Luddenden, plumber and glazier.
J. & T. Alderson, Luddenden, plasterer and slater.

WAKEFIELD.

For Alterations, Westgate Schools, Wakefield, for the Wakefield School Board. Mr. WILLIAM WATSON, Architect, Wakefield.

Accepted Tenders.

George Fawcett, Wakefield, excavating, brick and stonework	£182 9 8
Samuel Atkinson, Wakefield, plumbing, glazing, gas ironwork	42 10 0
Edwin L. Craven, Wakefield, carpenter and joiner	25 7 6
C. F. Rycroft, Wakefield, slating	8 0 0
C. Turner & Sons, Wakefield, painting	3 15 0
Charles Abson, Wakefield, plastering	2 4 6

Thirty-four Tenders received.

For Converting Premises into Shops, Kirkgate, Wakefield. Mr. WILLIAM WATSON, Architect, Wakefield.

Accepted Tenders.

Charles Squires, Wakefield, carpenter and joiner	£156 10 0
George Fawcett, Wakefield, excavating, brick and stonework	146 19 0
Samuel Atkinson, Wakefield, plumbing, glazing, gas ironwork	96 10 0
Pickles Bros., Leeds, slating	35 16 0
C. Turner & Sons, Wakefield, painting	16 10 0
Charles Driver, Wakefield, plastering	8 14 0

Thirty-five Tenders received.

WINDSOR.

For Building Two Semi-detached Villas, New Road. Mr. T. V. H DAVISON, C.E., Architect, Frances Road, Windsor.

W. Jones, Gloucester	£1,800 0 0
Snell & Son, Maidenhead	1,586 0 0
Woolgar & Son, Brighton	1,565 0 0
W. P. Reavell, Windsor	1,557 0 0
H. C. Belch, Hammersmith	1,511 17 6
F. Akery, Windsor	1,489 0 0
Green Bros., Colnbrook	1,470 0 0
R. Bishop, Windsor	1,369 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.
BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application
LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

MAHOGANY & HARD WOODS.
ROBERT GARRARD & CO., 206 BETHNAL GREEN ROAD, LONDON, E.
Contractors to Railway and Rolling Stock Companies.
Large Stocks of thoroughly-seasoned Mahogany Teak, Wainscot Oak, and Walnut for Counter Tops, Handrails, Stair Treads, &c. Mahogany, Cedar, and Teak Panel Dry Pine, Whitewood, Ash, Birch, &c., in all thicknesses and widths. Prepared Flooring and Matching in Pitch Pine, Teak, Oak, &c.
LOGS, Mahogany, Teak, Walnut, Sawn and Hewn Pitch Pine, and other Log Timber, supplied in large or small quantities from Stocks kept at the Docks.
Telegraphic Address—"ACAJOU, LONDON."

ART PLATES FROM "THE ARCHITECT."
Proof Impressions of the following Illustration which has appeared in "THE ARCHITECT" can now be obtained in a separate form suitable for Framing:—
The Bard.
FACSIMILE OF CARTOON BY PROFESSOR MAILLART.
Size, Thirty-six Inches by Twenty-two Inches.
Price One Shilling; free by post, carefully packed inside patent roller, One Shilling and Threepence.
May be obtained from all Newsagents or Booksellers, or from the
Publishers, GILBERT WOOD & CO., 175 Strand, London, W.C.

IMPORTANT.—To Specialists, Manufacturers, and Others.
Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.
THE ARCHITECT AND CONTRACTOR'S COMPENDIUM
And Specialist's Directory for 1887.
EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.
An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with an Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory. Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this at a cost less than half that of sending out one circular.
The minimum guaranteed circulation of the Compendium is 3,000 copies, but the actual circulation will probably reach a much higher figure.
Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by the magnificent Ink-Photo process, specimens of which are to be seen weekly in *The Architect*. The Compendium will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium. The Ink-Photos can be produced, without block, from any drawing or photograph, and printed in any tint. The charges are very moderate, and will be quoted on application.
An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.
Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the Advertisement Manager 16 New Bridge Street, London, E.C.

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

WALMER.

For Building Church at Walmer.
S. C. PARMENTER, Braintree (*accepted*).

WESTON POINT.

For Sewer at Weston Point, Cheshire, for the Bridgewater Navigation Company, and others. Messrs. C. E. LINAKER & S. DAVIES, Architects, Frodsham
KIRKHAM & Co., Runcorn (*accepted*). . . £108 8 6

TRADE NOTES.

THE Secretary of State for Foreign Affairs has received a despatch from Her Majesty's Minister at Lisbon stating that on the 22nd inst. public tenders will be invited for the construction of the works necessary for improving the port of Lisbon, recently approved by the Committee of Public Works.

MR. EDGAR GAULD, of Aberdeen, has obtained the contract for the new reservoirs at Mannsfield and Slopefield, which will cost over 11,000*l.*

THE Municipal Council of Paris has granted to the Committee of the Jubilee of Railways the free use of 900 acres of the most attractive portion of the Bois de Vincennes, including the lakes, and the works will be commenced immediately.

MESSRS. STREET & Co., of Cornhill, state, in reply to numerous inquiries, that the new edition of their "Indian and Colonial Directory" will be issued early next month.

MESSRS. GIBBS, BRIGHT & Co, of Melbourne, have obtained a contract for 50,450 tons of steel rails and fish-plates, required for Australian railways; but this country will not gain anything by the work, as it is to be carried out in the Krupp factory at Essen.

THE St. Pancras Ironwork Company fitted up the extensive stabling that is required for the French Circus known as "Olympia," which is about to be opened at the new Agricultural Hall, Kensington. The stables have many points of interest, and are worth the attention of all who can obtain orders to visit them.

THE Builders' Benevolent Institution announce their thirty-ninth annual ball on Thursday, January 20, 1887, at Willis's Rooms, King Street, St. James's. Tickets can be obtained from members of the committee or the stewards up to Monday, January 17—double, 21*s.*; lady's, 8*s.*; gentleman's, 14*s.*, including refreshment and supper. We trust that this deserving charity will realise a substantial sum as profit on the ball.

NOTES ON NOVELTIES.

Leggott's Patent Gum Damper.—Messrs. W. & R. Leggott, of 70 Park Road, Bradford, have just patented a very valuable invention for closing envelopes and affixing stamps and gummed labels. We have had it tried by our clerks, and have come to the conclusion that no office should be without one. A great saving in time is accomplished, and the offensive act of moistening the stamp or envelope with the tongue is avoided. As will be seen from our illustration, the damper

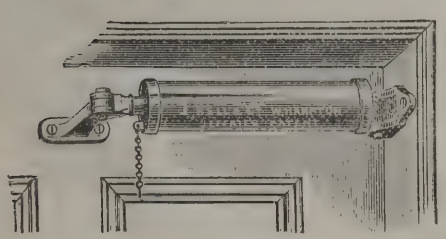


consists of a small brass case with a push at the end attached to a spring acting on an indiarubber disc. The tube is filled with water, and the pressure of the thumb and finger forces through a sufficient amount of moisture to damp the porous cloth. A thousand envelopes may be closed before the tube requires refilling. The damper is sold at a price which brings it within the reach of all.

THE BEXHILL-ON-SEA SEWERAGE WORKS.

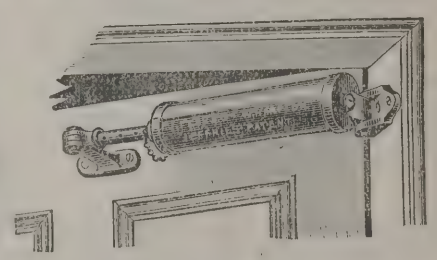
THE sewerage works for Bexhill-on-Sea have been completed at a cost of 5,581*l.* They were commenced in the early part of March last, the tender of Mr. James Hayward, of Eastbourne, being accepted at 5,477*l.*, the additional outlay being expended on extra work to the contract. The whole of the work has been completed in a satisfactory manner, and has been carried out from the designs and under the superintendence of Mr. H. Bertram Nichols, Assoc.M.Inst.C.E., of Grosvenor Chambers, Birmingham, the engineer to the Board. Mr. Nichols's scheme was selected out of several candidates for the appointment last year. The contract work has not exceeded the engineer's estimate, and has been completed within the specified time.

JEFFERIES' PATENT
AUTOMATIC DOOR-CHECK AND SPRING,
For Public Buildings, Hospitals, Banks, Schools, Hotels, Offices, Warehouses, Private Houses, &c.
No. 2529.



Engraving showing Door closed.

The advantages of Jefferies' Patent Door-Check and Spring are:—
It is AUTOMATIC and CERTAIN in its action.
SLAMMING of doors is ENTIRELY PREVENTED, whilst PERFECT CLOSING is insured.
Doors can be made to close QUICKLY or SLOWLY as required.
Doors can be KEPT OPEN, if required, AT ANY ANGLE.
It works parallel with the door, and takes up VERY LITTLE SPACE.
Having NO COMPLICATED LEVERS, it can be fixed in a few minutes by an UNSKILLED WORKMAN.
It is DIRECT ACTING, so that friction is reduced to a MINIMUM.
The SAME CHECK can be used for EITHER RIGHT or LEFT HAND doors.
Being fixed OUTSIDE the room, it is not an eye-sore.
After being fixed it requires NO ATTENTION except OCCASIONALLY OILING at the joints.
Each Check is sent out COMPLETE with oil and screws, and PACKED IN A CARDBOARD BOX, with instructions for fixing.
In ordering, please give full particulars of size of door.
SOLE MANUFACTURERS:—



Engraving showing Door partly open.

JOHN FELL & CO., Wolverhampton; 9 Fenchurch St., London; and 163 Westgate Road, Newcastle-on-Tyne.
Also Manufacturers of Bath and Lavatory Fittings, and all kinds of Sanitary Brass Work, Pumps, Steam Fittings, &c., &c.

NOW ON SALE. THE LAST FEW PORTFOLIOS.

Price Eight Guineas on Japanese Paper, and Ten Guineas on Parchment.

EIGHT ORIGINAL ETCHINGS
From Water-Colour Drawings,
By THE BARONESS NATHANIEL DE ROTHSCHILD.
ETCHED by MM. T. CHAUVEL (GOLD MEDALLIST AT THE SALON), LEON GAUCHEREL, & DANIEL MORDANT.

"A magnificent set of two Picturesque Views in Holland, two Neapolitan, one Sicilian, one Venetian, and two French Views, which appear in the finest style, and display the exquisite touch of a born artist."

GILBERT WOOD & CO., 175 STRAND, LONDON, W.C.

The scheme embraces Bexhill and the village of Sidley, the total length of sewers constructed in the present contract being nearly six miles, and has been carried out under the separate system, the bulk of the rainfall being allowed to pass away through the existing channels. The stoneware pipe sewers are of Doulton's London manufacture, with the exception of about three miles of 9 inches and 12 inches diameter, which are of Hassall's patent, this joint being adopted on the steep gradients, and where it was necessary to insure a safe and watertight joint. The largest pipe sewer is 18 inches in diameter, laid along the Sidley Valley, which junctions on to the 2 feet 6 inches by 1 foot 8 inches egg-shaped main outfall sewer, having an outlet into the main sewer, constructed by Lord De la Ware for the Bexhill Estate, passing along the Esplanade to outfall tanks, and from thence out to sea in cast-iron pipes.

The ventilation is effected by numerous openings in the roadway in connection with the manholes and ventilators, of which there are about 115, on the sewerage system. Manholes are constructed at every change of direction, and ventilators and lampholes are inserted at every change of vertical deviation. By this means the sewers are under perfect control, and can be inspected at any time without difficulty; and, being broken up into short lengths by this system, each section of the sewers ventilates itself. There is a slight drop allowed at the manholes, and flap-valves are inserted to prevent sewer gas from rising into the high portions of the district. Sliding disc flushing valves are also inserted, for damming back the sewage to allow an accumulative discharge through the sewers for the purpose of flushing. The whole of the sewerage system is laid out in straight lines from point to point, with even gradients, having junctions for house drainage where considered necessary. The high portions of the district are ventilated by cast-iron shafts, 6 inches in diameter, carried up above the houses, surmounted with Gibbs's weather-proof extractors. Automatic flushing tanks are placed at the dead ends of the sewers, fitted with Doulton's annular syphons, which are capable of discharging about 600 gallons at each flush.

An interesting feature in the scheme is the construction of a large flushing tank on the 18-inch main outfall sewer in connection with a small stream, having a capacity of 1,570 gallons, which can be discharged three times consecutively, a weir being constructed across the stream. The tank is fitted with sluice-valve, penstock, overflow, &c., and has a 9-inch outlet. This tank is capable of discharging its contents in the short space of a minute and a half.

The clerk of the works engaged by the Local Board has been Mr. Julian Downsborough, of Bexhill.

AN IRISH BUILDING CASE.

ON Saturday a decision was given in the Irish Exchequer Division in respect of one of the stages in the action between Alderman George Moyers, LL.D., late Lord Mayor of Dublin, and the Commissioners of Public Works. The defendants applied to set aside a writ issued by the plaintiff, on the ground that the matters in respect of which the action was brought—to recover 5,400*l.* for extra work, materials supplied, goods sold, &c.—formed the subject of a submission to arbitration. The plaintiff was the contractor for the new buildings belonging to the Royal University, Earlsfort Terrace. Under a deed of August 21, 1884, it was provided that all the works, with the exception of the campanile, should be finished by September 1, 1885, and the campanile itself by September 1, 1886. The contract deed contained a clause providing that in the event of the Commissioners requiring any deviation from or alteration in the original plans, or any substitution of other works, materials, &c., in lieu of those already agreed for, such alteration or deviation should be conducted as affecting only the specific object in view, and not as affecting in any way the contract made, except so far as it might increase or decrease the quality of the work. There was also an arbitration clause, and in case of any difficulty or difference arising between the plaintiff and the Commissioners the matter should be referred to such arbitrator as the Commissioners might approve, and his decision should be final and binding on the parties. According to the affidavit of Mr. Owen, architect to the Commissioners, certain deviations and alterations were made in the plans, and others substituted, but it was not true that the works were interrupted by the Commissioners. For sufficient reasons it was necessary to suspend the work in the great hall, and he alleged that the claim made by the plaintiff on account of this interruption, amounting to 1,112*l.*, was in excess of the value of the work postponed, and up to the present the contract works were not completed. The Commissioners selected the names of several arbitrators, and submitted them to the plaintiff, and on October 23 he agreed through his then solicitors, Messrs. D. & T. Fitzgerald, to the appointment of Mr. James Kempster, of Ballinasloe, who was

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, {Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.

MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.

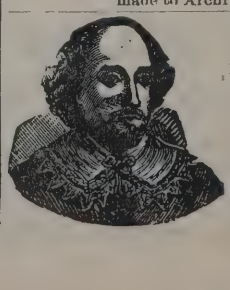
A. J. SHAW,
Gower Varnish Works, Sheffield,
MANUFACTURER OF
WOOD STAINS & VARNISHES
For imitating Ebony, Mahogany, Walnut, Satinwood, Oak, &c., on every description of Wood. Also in Green, Red, Blue, &c., for Fancy Purposes.
LIQUID WOOD STAINS,
Same as shown at the Sheffield Exhibition.
Highest Award Prize Medal for WOOD STAINS.
Samples and Quotations from the Manufacturer.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88-92 PENTONVILLE ROAD, N.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

PARKINSON'S
BEST QUALITY LOWEST PRICES
WET & DRY
COTTAGE LANE CITY Rd LONDON
GAS METERS

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.



QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
☞ Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.



JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

to make his award before December 31, and the matters referred to in the action were the same as those agreed upon to be referred to the arbitrator. It was not true that the testimony tendered on behalf of the plaintiff before the arbitrator was rejected. The Commissioners had in no way impeded the arbitrator, and five meetings had been held at which the plaintiff attended. He repudiated the arbitrator appointed, and in his affidavit he alleged that the extra work done did not fall within the meaning of the contract of 1884, and that Mr. Kempster, the arbitrator, had acted unfairly towards him, and had refused to hear several of his witnesses, and he had ascertained that Mr. Kempster was actually in the employment of the Board of Works as District Inspector of Ballinasloe Lunatic Asylum.

During the hearing of the statements, Baron Dowse said he did not see how he could interfere to dismiss the writ unless it was made perfectly clear that the matters in dispute were within the terms of the original contract: and on Saturday, after the arguments had concluded, the Court refused the motion, and with costs against the defendants.

MR. HERKOMER, A.R.A., ON APPRENTICESHIP.

PRIOR to delivering the prizes to the students of the science and art classes at Folkestone, Sir E. W. Watkin, M.P., read the following letter from Professor Herkomer:—

My father, of course, is a splendid sample of the past age that honoured apprenticeship. Let your hearers know what the dignity of apprenticeship means. My father was apprenticed at fourteen years of age—had to do all the hard work of boys of that time, clean his master's boots, &c.; and though he sat with the master's family (as all the other workmen did) at table, he never had quite enough to eat. He had to learn his trade as well as he could by watching and without real tuition. On Sundays the apprentices of all the trades were marshalled in procession, accompanied by gendarmes, to the three schools —Sunday-school, day-school, and drawing-school. During that time my father already showed great ability as a draughtsman. His master, Hampfstaenge (the father of the present well-known photographer in Munich) saw his talent, and wanted him to compete for the one silver medal given that year to the apprentices for drawing in Munich, but he was too poor to buy the material. So the master gave him the paper, Indian ink, and materials, and his drawings gained the silver medal. I have those drawings now. They are masterly in their beautiful precision and delicacy of touch. Prizes were awarded by the mayor of the town in the fine old town hall of Munich; there was a great crowd of people to see the apprentices get their prizes, and when my father received his medal from the hands of the mayor a blast of trumpets sounded to mark the event. It was the only time in his life, said my father, "that he did not feel his legs when he walked out." Those are great triumphs. He then worked his way up to be journeyman workman, and then travelled on foot with a knapsack on his back, to Amsterdam, Brussels, and Paris, learning all the different methods of work in each city and country, when he made his masterpiece, and was pronounced an extra good master of his craft. He then made another tour on foot, and when he returned went in for a thorough course of perspective and geometry, and also studied the Gothic style from its foundation. He then settled in his native place, starting with a commission to make a new altar for the church. But his mind was "ahead" of the times. He had his romantic notions, and wished to build his own house. He pulled down the house left to him by his father, which was in a bad state, and built a charming house, which still stands, and in which I was born. But though it was simple it was dignified. However, 1848 spoilt Germany. He felt it was too "tight," and in 1851 we three—my father and mother and I (two years old)—emigrated to America. There the climate after six years affected the health of my mother and myself, and we came to England. Now in England at that time there was no taste for workmanship. We struggled with poverty until I could earn some money. But here mark the difference. The noble man who had gone through the severe training never allowed poverty to take one dignified thought from him, or to make him feel that life had only misery for him. He gave up smoking and drinking alcoholic liquors, and even eating meat, so as to reduce expenses. My dear mother gave music lessons for middle-class people. We had to live on thirty shillings a week. With this the "master workman," my father, had few chances of showing his skill; but he did buy a little wood from time to time, and did beautiful carved work, without, however, being able to sell it. Still he was a master, and lived a dignified life that could only come to a man when trained as he was trained. He never would have had the self-control without that training. He was my one companion as a boy. I worked with him. He knew how to guide my enthusiasm, and with scarcely any means at hand I learned a craft; I learned to use my

FIRE BRICKS.
E. BOWEN, Fire Brick Manufacturer, Stourbridge.
Manufacturer of Best Stourbridge Fire Bricks, and Cement Fire Clay, Gas Retorts, Muffles, &c. Fire Bricks and Blocks for the Highest Heats, for Iron Blast Furnaces, Forge, Rolling, Puddling and Steel Furnaces, Pottery, Bottle, and Flint Glass Furnaces, Roasting and Refining Furnaces, Chemical Works, Coke Ovens, &c., Boiler Seating Blocks, Flue Covers, Locomotive Bricks, Tuyères, Steel Runners, Grate Backs.
Special Sizes and Shapes made to Engineers' Drawings.
Prices Quoted to any Port or Railway Station.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

GLAZED BRICKS.
OATES & GREEN, Halifax.
GLAZED BRICKS (White and Coloured), Special Salt Glazed Bricks, Sanitary Tubes, Glazed Earthenware Sinks, Cattle, Sheep, and Pig Troughs. Horse Mangers, Patent Automatic Trough Closet, Patent Flush Tank Channelling for Stables and Yards, Salt Glazed Bricks for Stables, Sewers, &c. Ventilating Bricks, Patent Ventilating Gullies and Traps, Garden Edging, Patent Chimney Pots and cure for Down Draughts, Patent Drain-Cleaning Rods.
Six Prize Medals. Copies of Testimonials sent if required.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

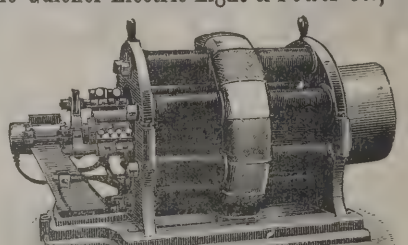
BLUE BRICKS.
THE KETLEY BRICK COMPANY,
MANUFACTURERS OF STAFFORDSHIRE BLUE BRICKS,
Kingswinford, near Dudley, Staffordshire.
LONDON AGENTS:—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores:—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

DRAIN PIPES.
Lime, Cement, Bricks, Slates, Laths, Hair, Sand, Plaster, Stable Paving Bricks, Wall Copings, Channel Bricks, Blue and Red Ridges, Red Plain Tiles and Pan Tiles, Closet Pans and Traps, Drain Pipes, Bends, Junctions, &c., all sizes. Chimney Pots, Red and White, Fire Bricks, Lumps, Tiles, Fire Clay. Prices on Application.
R. CULL & SON'S STORES,
RAILWAY ARCHES,
Corner of LONDON ST., & BRADY ST.,
Near BETHNAL GREEN STATION
CHIEF OFFICE:—72 PALMERSTON BUILDING OLD BROAD STREET E.C

G. BARKER and CO. Established 1863.—The BANK, No. 35 Mark Lane, London.
Current accounts. Special advantages.
Deposits received at the following rates:—
3½ per cent. on demand.
4 per cent. seven days' notice.
4½ per cent. fourteen days' notice.
5 per cent. thirty days' notice.
6 per cent. three months' notice.
Interest payable quarterly. Extra bonus for 12 complete months. Pamphlet and further particulars on application.

EDWARD SMITH & CO.
MAKERS OF EVERY DESCRIPTION OF PLAIN AND ORNAMENTAL FLOOR AND WALL TILES : MOSAICS :
E S C
EMBOSSED AND INCISED TILES, ETC., RED & WHITE TERRA-COTTA PRESSED BRICKS, ETC., ETC., ETC.
COALVILLE, LEICESTERSHIRE.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES:
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices: 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.

The Gulcher Electric Light & Power Co., Ld.

GULCHER DYNAMO.
Electric Lighting by either Arc or Incandescent Lamps to Public Buildings, Factories, &c.
BATTERSEA FOUNDRY, LONDON, S.W.

STAINED GLASS WINDOWS,
LEAD GLAZING, &c.
W. JAMES & CO.,
Willes Road & Prince of Wales Road, Kentish Town, N.W.
White Relievo Etchings on Plate Glass, in the Continental Style.

NASH & HULL,
LETTER
MANUFACTURERS
WRITERS AND ENGRAVERS
Opal, Glass, Wood, and Brass Letters.
BRASS DOOR AND WINDOW PLATE MAKERS AND ENGRAVERS.
ILLUSTRATED PRICE LISTS ON APPLICATION.
202 HIGH HOLBORN, W.C.,
AND
148 BROMPTON ROAD, S.W., LONDON.

IRON GIRDERS, BRIDGES,
JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.
S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C.
Established upwards of a Century.

hands, and every day of my life I do bless the difficulties that really threw me so much in his company. He was to me not only a father but an "ideal" man. All his emotions, all his principles I drank in, and now it is my privilege to be able to work out the dream of his life. All the work he has done for years will have a shrine, and so, too, the work of his two brothers—the carver and the weaver—in my great house. The blessings of temperance he has given me also. Can you imagine such a life without an apprenticeship? I cannot. It is the curse of the age that young people wish to jump into maturity at a bound, and that the desire is not to do but to "get done," to deal in the article, not to make it. Respectability has cursed this age in this country—a craftsman is not supposed to be a gentleman.

UNIVERSITY BUILDINGS, CAMBRIDGE.

THE Botanic Garden Syndicate of Cambridge University report that the hothouses are in such a state of decay as to be in immediate danger of destruction whenever there is a high wind. Sir J. D. Hooker, of Kew, has recently recognised the Botanic Gardens as "one of the best in Europe," and it would be, say the Syndicate, an almost irreparable disaster if the houses were to fall and destroy the labour of many years. The Syndicate, after considerable hesitation, have decided to give up the system of piecemeal repair which has been followed for the last thirty years, and, acting under the advice of Mr. Jard, clerk of the works at Kew, propose to rebuild the houses. To set up a new range on the existing foundations would cost about 4,000*l.*; but the present arrangement is not on a level with modern requirements, and the Syndicate contemplate an entirely new range. The cost is not likely to fall short of 6,000*l.*, but the Syndicate have probably adopted the wisest course in resolving to face the whole difficulty, and they therefore propose that they be authorised to obtain plans and estimates on the above basis.

The Syndicate for the protection of University buildings from fire have made the rather startling discovery that, except the Fitzwilliam Museum and the Cavendish Laboratory, no University building is protected by a lightning conductor. It might perhaps be argued that, as they are not of great height, and have done without such contrivances for many generations, they might be left to protect themselves a little longer; but the Syndicate seem to think otherwise, and have decided to recommend that lightning conductors, at the estimated cost of 540*l.*, be set up on all the important buildings. This, however, being a large sum to spend at once on the object, they propose to do the work gradually, and to begin with the University Library, which will cost about 150*l.*

THE CHANNEL TUNNEL.

THE shareholders of the Submarine Continental Railway Company held their ordinary general meeting on the 16th inst., at the offices of the South-Eastern terminus, London Bridge.

Sir Edward Watkin, Bart., M.P., presided, and, in moving the adoption of the report, said that the Board had carried out the proposals of the shareholders under which they agreed to absorb the property, effects, rights, and privileges of the Channel Tunnel Company on the terms which the proprietors had approved. He could not help saying that the progress of the Channel Company was a record of engineering mistakes. First of all it was proposed to construct the tunnel between Calais and St. Margaret's, but that having proved to be an egregious engineering mistake, they shifted their ground on this side to a place called Fair Hole. The Directors, however, instructed their engineer to make a boring at the place where it was proposed to bring the tunnel on this side of the Channel, and they found that they were draining the land springs on the Dover side of the Channel. They had, therefore, come back to this position. They had proved beyond the shadow of a doubt that the only way to make a tunnel between the coast of France and the coast of England was by finding the grey chalk, as they had done, and following it to the other side of the Channel. He was happy to tell them that the stratum through which they were going was grey chalk, and their tunnel of 2,200 odd yards was practically dry. There was another fact of equal importance, and that was that the chalk walls and roofs of the tunnel showed no signs of decay. On the contrary, the surface of the grey chalk grew harder as time went on. When it was an unproved condition of things that the tunnel could be bored between France and England a large number of persons were for it, but the moment they proved that it could be done easily and cheaply some persons began to see great international dangers. They received a letter yesterday from the Board of Trade asking to inspect the

ASCHERBERG PIANOS,

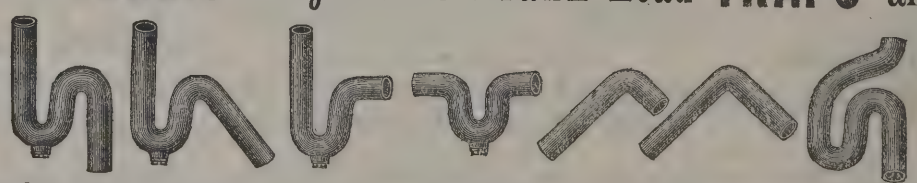
Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works:—15 BRITANNIA STREET, KING'S CROSS, W.C.

tunnel. The Board stated that they thought it essential that Lord Stanley of Preston should go and see the Channel works himself. They believed that because Mr. Chamberlain, the late President of the Board of Trade, did not see the tunnel with his own eyes, he had arrested its progress. After quoting from a letter of Lord Derby addressed to Lord Beaconsfield, in which the former stated that the Government ought to support the tunnel, Sir Edward concluded by stating that the time would come when prejudice would blow away like the fogs of morning, and when those who had promoted civilisation and peace would get their own reward, not only in the pecuniary way, but in the belief that in constructing the tunnel they had done their duty.

Mr. G. Cavendish-Bentinck, M.P., seconded the motion, which was carried.

The meeting was subsequently declared special, when a resolution was agreed to approving the Bill empowering the Company to continue experimental works for a tunnel beneath the Straits of Dover, and for other purposes.

SMOKE ABATEMENT.

AT a meeting of the National Smoke Abatement Institution, held on the 13th inst., Mr. Ernest Hart in the chair, Professor Frankland, F.R.S., gave an interesting description of the smokeless fires which had been burnt in his house during the last five years, none of the chimneys having been swept during that time. The grates are the ordinary open ones that were in the house when he took it, no alteration having been made in them beyond a slight addition involving a cost of about two shillings. The fires are lighted with wood in the ordinary way without difficulty, and the servants appreciate them for their cleanliness. Professor Frankland, at the request of the Council, promised to give a lecture on the subject shortly.

It was reported that the Council had been in correspondence with the Home Secretary on the subject of the insufficiency of the fines inflicted in cases of smoke nuisance, and that subsequently at a meeting of the metropolitan magistrates, presided over by Sir James Ingham, it had been resolved to increase the fines in all cases.

A report on the work of the Institution was read, which described a considerable number of new smoke-prevention appliances which had been brought to the notice of the Council, especially some new smokeless stoves, which showed by the reports of the testing engineer, Mr. D. K. Clark, M.Inst.C.E., greatly-increased duty for the amount of fuel consumed.

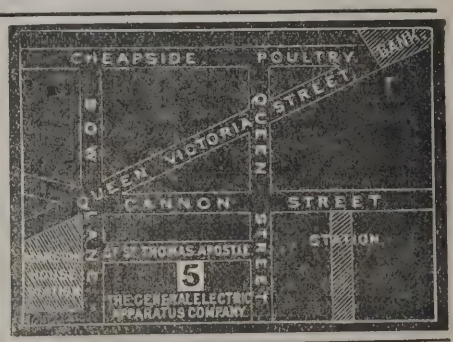
It was resolved that the Home Secretary be requested to receive a deputation to lay before him the inefficiency of the existing Smoke Abatement Acts, which are now inadequate to deal with the existing metropolitan area, and the mal-administration of those Acts in the provinces; it was also resolved that the First Commissioner of Works be requested to receive a deputation on the subject with reference particularly to the deterioration of public buildings by smoky atmosphere, and the smokeless heating of public buildings; and also information upon the subject of modern heating methods, and the means of preventing smoke from furnaces and domestic fires which are available since the Institution took the subject in hand. Also that application be made to the Royal Society, the British Association, and the Society of Arts for grants towards the fund for further scientific testing of the merits of the two great classes of grates in use at the present time, viz., the so-called slow-combustion and quick-combustion grates.

BIRMINGHAM ENGINEERING STUDENTS.

THE Birmingham students of the Institution of Civil Engineers having recently formed themselves into an association, the inaugural dinner took place at the Colonnade Hotel on the 16th inst. Mr. E. Pritchard, M.Inst.C.E., president of the association, occupied the chair, and there was a large attendance of members and friends. The objects of the association are:—To offer to non-resident students some of the advantages enjoyed by London students; to promote and encourage the acquisition of knowledge by the members in all matters connected with the profession of a civil engineer, and to establish friendly intercourse among them; to arrange visits to works of interest in the neighbourhood of Birmingham; to hold meetings at which papers are proposed to be read and discussed; and in every way in their power to promote the welfare of the student class. It was announced that an attractive list of papers had been drawn up, the first meeting being fixed for January 27, when Mr. R. Peirce, Stud.Inst.C.E., will open the session with a paper on the Kidderminster sewerage and water supply. The hon. sec. of the association is Mr. Robert Green, Stud.Inst.C.E.

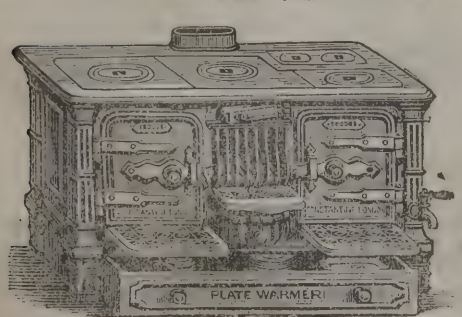
OAK PANELLINGS.
A SPECIALITY.
MR. J. ICHENHAUSER, of 68 NEW BOND STREET,
Is prepared to give Designs and Estimates for OAK PANELLINGS and CEILINGS, for Sacred and Domestic Buildings. Largest holder in Europe of Queen Anne, Jacobean, Louis XIV., Louis XV., Louis XVI., English, Italian, German, and Flemish Renaissance Styles. Also Antique Carved Oak and Marqueterie Furniture. Architects and intending Builders would do well to send for Mr. Ichenhauser's Illustrated Magazine, *The Collector and Art Furnisher*, Free.

Telegraphic Address: "ELECTRICITY," LONDON. *Telephone No. 1887.*
THE GENERAL ELECTRIC APPARATUS CO.
ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE
Works: BOW and SOUTH HACKNEY. (*Back of the Mansion House Station*), E.C.
ELECTRIC BELLS.
Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.
The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.
Electric Light Instruments, Fittings and Glassware.



VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.

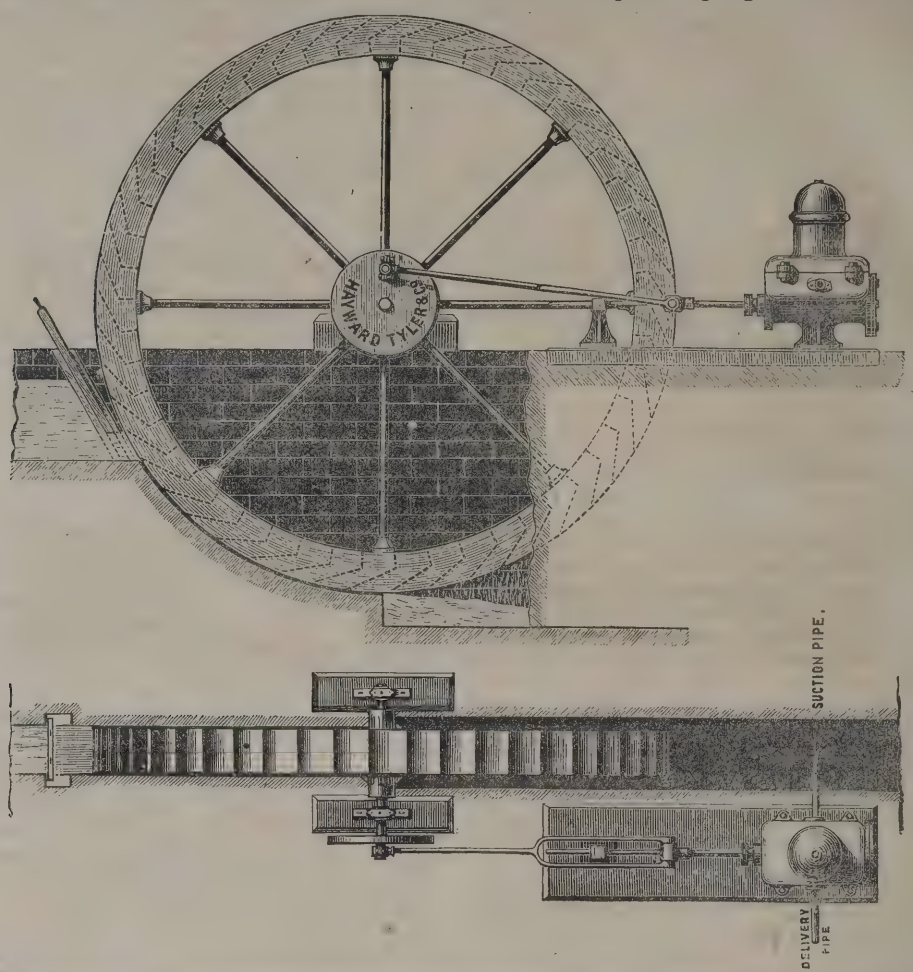
A HOUSEHOLD TREASURE.
75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S
PATENT "TREASURE"
COOKING RANGE,



With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.
DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*
Illustrated Price Books, with Testimonials, Post Free.
A. R. CONSTANTINE, 61 FLEET STREET, E.C.
N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

COUNTRY WATER SUPPLY.

AMONG the various arrangements that are used for the water-supply of country houses, villages, or small towns, one of the most economical in situations where moderate water-power can be obtained is that of a water-wheel driving pumps which draw their supply either from the same stream as works the wheel or from a separate spring or well. The details of such an



THE ÆOLUS WATERSPRAY

SYSTEM OF

HEATING, COOLING, & VENTILATING

IS THE

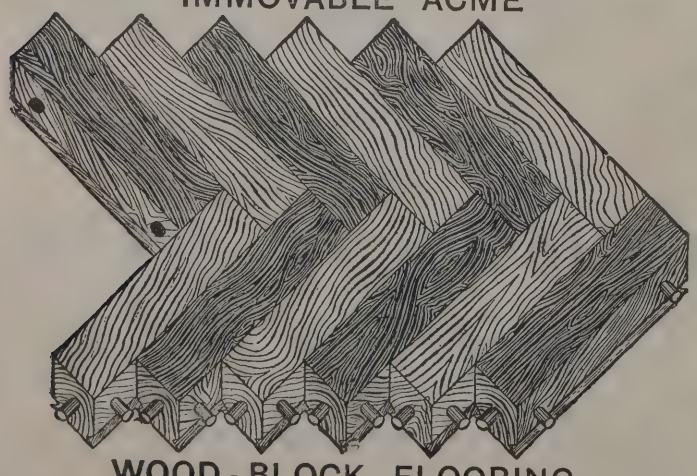
CHEAPEST AND BEST.

For Particulars apply to

MANAGER, 235 HIGH HOLBORN, LONDON, W.C.

Applications for Agencies invited.

"IMMOVABLE ACME"



WOOD-BLOCK FLOORING.

INTERNATIONAL EXHIBITION, LIVERPOOL.

GOLD MEDAL,

The ONLY and HIGHEST Award for

WOOD-BLOCK FLOORING

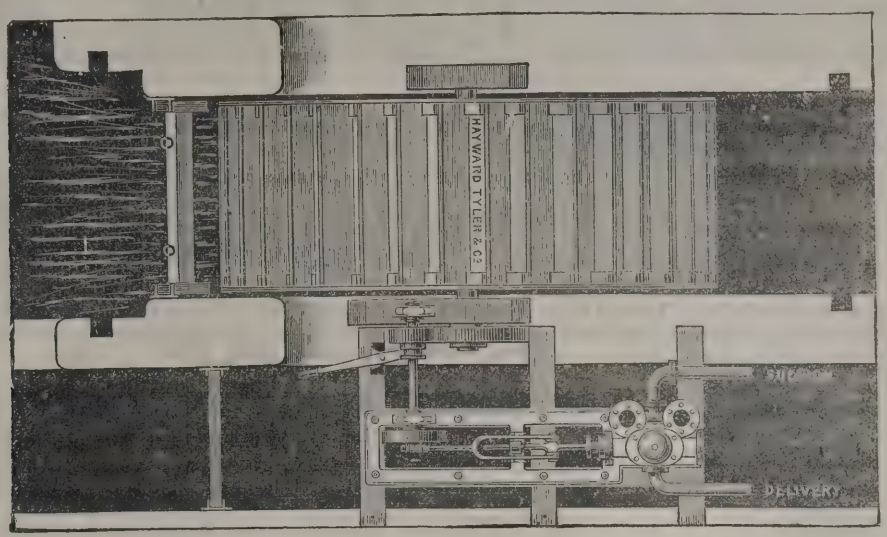
(W. DUFFY'S PATENT),

"Immovable Acme."

M. C. DUFFY & SON,

Chief Office: 66 Storks Road, London S.E.

arrangement of machinery vary widely according to the power available, the quantity to be raised, and the height to which it has to be forced, and the like. We are enabled to illustrate two simple and very effective installations of this description, which have been designed and erected by Messrs. Hayward, Tyler & Co., hydraulic engineers, of Whitecross Street, London. The first illustration is of the pumping machinery used for the supply of a country house in Hertfordshire, where the water-power available is small. It will be seen to consist of an undershot water-wheel of large diameter in proportion to its water-power available is much greater than in the former case, and the quantity required to be pumped is much larger. The wheel is breast-shot, and the pump is driven by means of a powerful spur wheel on the main shaft of the wheel, geared to a pinion in the shaft, which gives motion to the pump. Clutch-gearing is provided so that the pump can be disconnected when needful. The pump is of the class used by Messrs. Hayward, Tyler & Co. in their long-stroke steam-pumps, and their "Diamond Field" mining pumps, and is suited for very heavy work and high lifts. The suction valves are accessible by



width, driving a double-acting horizontal pump (of the type so well known in connection with Hayward, Tyler & Co.'s "Universal Steam Pumps") by means of a connecting-rod attached to a disc on the wheel shaft outside one of the main bearings. The valves of the pump are all accessible by removing the air vessel without interfering with the suction and delivery pipes. Our second illustration shows a larger apparatus of the same type, constructed for Lord Spencer for the supply of the village of Chapel Brampton. In this case the means of doors, and the delivery valves by the removal of the air vessel. Both these arrangements have been fixed for a sufficient time to prove that the workmanship is thoroughly strong and durable, and that the design in each case is thoroughly adapted to the work that has to be performed. In cases where the water has to be raised from deeper wells, of course the arrangement is different. The pumps then are vertical, placed in the well and driven by suitable gearing from the water-wheel.

Builders' Benevolent Institution.

THE THIRTY-NINTH

ANNUAL BALL

WILL BE HELD AT

WILLIS'S ROOMS,

King Street, St. James's,

ON

THURSDAY, JANUARY 20, 1887.

COMMITTEE OF MANAGEMENT.

MR. BASIL E. PETO, *President.*

MR. GEORGE PLUCKNETT, *Treasurer.*

Mr. J. T. Bolding.
„ Charles Bussell.
„ Howard Colls.
„ F. L. Dove.
„ F. W. Keeble.
Mr. W. J. Mitchell.
„ Robert Perkins.
„ J. W. Scrivener.
„ Thomas Stirling.

STEWARDS.

Mr. E. C. Ackerman.
„ A. Barfield.
„ H. H. Bartlett (Messrs. Perry & Co.).
„ J. W. Bird.
„ G. Burt, Jun.
„ W. Brass, Jun.
„ J. Caygill.
„ W. C. Chappell.
„ A. J. Chappell.
„ P. Cheek (Messrs. J. Cliff & Sons).
„ E. Clark.
„ E. Conder.
Messrs. W. Cubitt & Co.
Mr. R. V. Davies.
„ J. W. Docwra.
„ F. J. Dove.
Messrs. H. Doulton & Co.
Mr. T. F. Franklin.
„ F. Foxley.
Messrs. G. A. & A. Fuller.
„ Hayward Brothers & Eckstein.
Messrs. Holland & Hannen.
Mr. J. W. Hobbs.
Messrs. Janes & Son.
Mr. George Jennings.
Messrs. Lansdown & Co.
Mr. G. J. Lough.
Messrs. Lawford & Sons.
Mr. G. R. Lemon.
Messrs. Lee, Son & Co.
Mr. J. W. Liddiatt.
„ Ernest Manley.
„ Thomas Nye.
Messrs. Lucas Bros.
„ R. H. & J. Pearson.
Mr. W. T. Purkiss.
„ T. F. Rider.
„ A. Ritchie.
„ W. F. Randall.
„ T. G. Smith.
„ Sam Lee Smith.
„ E. T. Taylor.
„ S. Trickett.
„ R. Wallbutton.
Messrs. Willing & Co.

Tickets can only be obtained from Members of the Committee or the Stewards, up to Monday, January 17.

Double Ticket, 21*s.*

Lady's Ticket, 8*s.* Gentleman's Ticket, 14*s.*

Including Refreshment and Supper.

MAJOR R. A. BRUTTON, *Secretary.*

THE

BLACKMAN AIR PROPELLER VENTILATING CO., LTD.,

WILL SHORTLY REMOVE

To New and Self-Contained Premises they are Building,

No. 63 FORE STREET,

Close by their Present Offices and Show-Rooms.

Telegraphic Address—VENTILATOR, LONDON.

Postal Address—63 FORE STREET, E.C.

CHARLES CARR,

BELLFOUNDER,

SMETHWICK, BIRMINGHAM



ALL BELLS OF BEST QUALITY.

SEND FOR ILLUSTRATED SHEET.

VOLUME XXXV. OF THE ARCHITECT. handsomely bound in cloth, gilt lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.



C. H. MABEY,

SCULPTOR,

MODELLER, CARVER, &c.

Invites the attention of Architects and others to an extensive Stock of NEW DESIGNS for Internal and External Plaster, Fibrous Plaster, or Cement Decoration, for Buildings in all Styles.

FIGURE AND ARCHITECTURAL MODELLING AND CARVING.

CARVING IN MARBLE, STONE WOOD, BRICK, OR CEMENT.

CEILING FLOWERS, CORNICE ENRICHMENTS, CAPITALS, TRUSSES, ENRICHED PANELS, CHIMNEYPIECES, &c., &c.

REREDOSES, PULPITS, FONTS, TOMBS, MONUMENTS.

1, 1a & 2 PRINCES MEWS, STOREY'S GATE

WESTMINSTER, S.W.

THE GREAT QUESTION OF LOOSE BLOCKS ENTIRELY SOLVED.

AWARDED CERTIFICATE OF MERIT AT THE EXHIBITION OF THE SANITARY INSTITUTE OF GREAT BRITAIN AT LEICESTER.

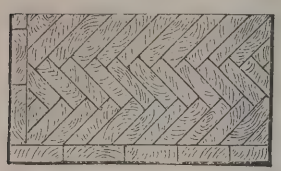
SANITARY INSTITUTE OF GREAT BRITAIN. 1885.

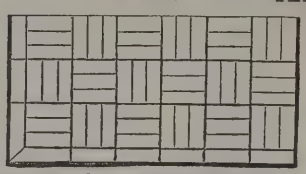
THE ONLY AWARD EVER GRANTED TO WOOD BLOCK FLOORING.

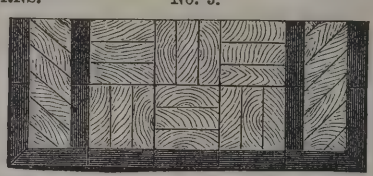
NIGHTINGALE & CO'S EVER FIRM WOOD BLOCK FLOORING

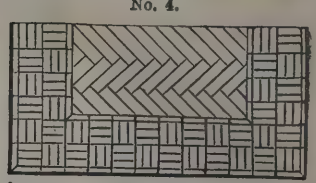
NOW BEING LAID THROUGHOUT THE KINGDOM.

PATTERNS.

No. 1. 

No. 2. 

No. 3. 

No. 4. 

Blocks prepared and treated through various stages under their personal supervision by Machinery specially devised, and fastened to hard floated surface of Concrete Bed with their Antiseptic Compound, which also prevents dry-rot or dampness. Full particulars on application.

NIGHTINGALE & CO., WOOD PAVEMENT WORKS, GREAT GRIMSBY.



STRODE & CO.,

GAS, ELECTRIC LIGHT, AND HOT-WATER ENGINEERS, ART METAL WORKERS,

SUSPENSION and TABLE LAMPS for Oil or Gas, and CHANDELIERS in Wrought Iron of Beautiful Designs.

MANUFACTORY—48 OSNABURGH STREET, N.W.
SHOW ROOMS—67 ST. PAUL'S CHURCHYARD, E.C. } LONDON.

PATENTEES AND MANUFACTURERS OF THE ONLY

VENTILATING SUN-BURNER,

With Self-Acting Valve for Preventing Down-Draught.

Telephone Numbers:—
OSNABURGH STREET, 3,807. ST. PAUL'S CHURCHYARD, 441.

Special quotations for fitting up Mr. Parsons' Common Sense Patent Timber Drying Apparatus.

ESTABLISHED 1844.

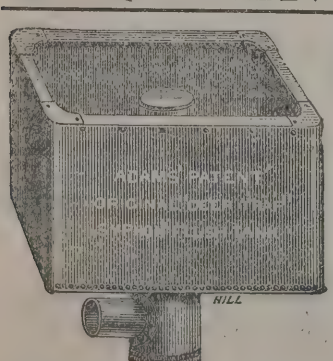
BRADSHAW'S LIMMER ASPHALTE

Messrs. BRADSHAW & CO., being Sole Agents in the United Kingdom for, and possessing proprietary rights in, the Freehold Mines of the German Asphalte Company (of which Mr. C. W. Bradshaw is also a Director), situated at Limmer, near Hanover, and Vorwohle, Brunswick, possess special facilities for reliable and prompt delivery of their celebrated "LIMMER ASPHALTE" at low rates, either for sale in its natural state or ready for laying by their own workmen in any part of the United Kingdom. EACH BLOCK supplied from these Mines, besides bearing the impress of the Company, is stamped with the words "BRADSHAW & CO." The attention of Architects, Engineers, &c., is particularly called to the fact that the "LIMMER ASPHALTE" is especially suitable for use in the construction of Reservoirs, Roofs, &c., where water-tightness is extremely essential. For such purposes **Over 2,000,000 (Two Millions) of Square Feet of "Limmer Asphalte"** have been executed by Messrs. BRADSHAW & CO.; while for Paving purposes **Over 50 Miles of "Limmer Asphalte" Footways** have been laid by them in the LONDON DISTRICT ALONE. Messrs. BRADSHAW & CO. will be happy to forward Prices, Samples, and Testimonials, and give all information on application to:—

BRISTOL	St. Philip's Marsh.	READING	Caversham Road.
EXETER	Basin Head.	DUBLIN	14 St. Andrew's Street.
SOUTHSEA	Beaufort Road.	MANCHESTER	20 Cross Street.

OR TO THEIR CHIEF OFFICE—

52 QUEEN VICTORIA STREET, LONDON, E.C.

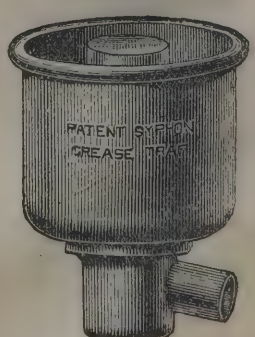


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent FLUSH TANKS for Drain Flushing.
„ FLUSH SYPHONS for Sewer Flushing.
„ FLUSH LATRINES for Barracks, Schools, &c.
„ FLUSH URINALS „ „ „
„ TROUGH CLOSETS „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London.
Friday, December 24, 1886.

A Business Supplement

The Contract Reporter.

to The Architect.

LONDON, DECEMBER 31, 1886.

EDITORIAL NOTICES.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested as much as possible to make their communications brief. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

THE ARCHITECT AND CONTRACT REPORTER.

ADVERTISEMENT SCALE.

	£	s.	d.
For Two Lines and under (eight words to the line)	0	2	6
For every Additional Line	0	0	6
For Quarter Page	2	10	0
For Half Page	4	10	0
For a Page	8	8	0
For 1 inch deep by 2½ wide	0	7	6

Front page Advertisements, Two Shillings per line.

Paragraph Advertisements, Two Shillings per line.

On pages preceding and following matter, special rates.

Public Companies' Advertisements, 12*l.* 12*s.* per page; 1*s.* per line.

Special arrangement may be made for a series of insertions on application to the Publishers, GILBERT WOOD & Co., 175 *Strand, London, W.C.*

COMPETITIONS OPEN.

EDINBURGH.—Dec. 31.—Designs are invited for the Erection of Municipal Buildings. Premiums of 250*l.*, 150*l.*, and 100*l.* Mr. W. M. Skinner, W.S., Town Clerk, City Chambers, Edinburgh.

GUILDFORD.—Feb. 14.—Plans are invited for Laying Out as Public Walks and Pleasure Grounds the Guildford Castle and Bowling Green Estates. Mr. F. Smallpeice, Town Clerk, Guildford.

KILBURN.—Jan. 31.—Designs are invited by the Willesden Local Board for the Erection of Public Offices, Dyne Road, Kilburn. Cost, 6,000*l.* Premiums of 50*l.* and 25*l.* Mr. O. Claude Robson, Surveyor, Hampton House, High Road, Kilburn.

MAIDSTONE.—March 1.—Plans are invited for Proposed Asylum Buildings. Mr. C. A. Case, Clerk to the Justices of the Borough, 60 High Street, Maidstone.

PEMBROKE.—Jan. 6.—Plans are required for the Erection of about 100 Dwellings for the Working Classes in various Parts of Town. Mr. J. C. Manly, Town Hall, Pembroke.

CONTRACTS OPEN.

ABERTILLERY.—Jan. 8.—For Building Board School to accommodate 248 Boys. Mr. W. D. Blessley, Architect, Guildhall Chambers, Cardiff.

ALNWICK.—Jan. 4.—For Supplying, Laying, &c., Cast-iron Water Pipes (2,000 yards). Mr. Geoffrey Wilson, Town Surveyor, Local Board Offices, Green Bat, Alnwick.

ANSTRUTHER-EASTER.—Jan. 12.—For Execution of Water and Drainage Works (Intercepting Drain, Service Reservoir, Filter Beds, Water House, Laying Main and other Pipes, &c.). Mr. John Buchanan, C.E., 24 George Street, Edinburgh.

ATTERCLIFFE.—Dec. 31.—For Supplying and Erecting Cast and Wrought Iron for Lattice Girder Bridge across the River Don, and Excavating, Concrete, and Mason Work. Mr. R. Davidson, C.E., Borough Surveyor, Bower Spring, Sheffield.

AYLESBURY.—Jan. 3.—For Building Warehouses in Buckingham Street, for Messrs. Gulliver & Co., Wine Merchants. Mr. W. F. Taylor, Architect, Aylesbury.

BARKING CREEK.—Jan. 7.—For Channels, Pier and Jetty, Engine and Boiler Houses, Workshops, Store-shed, Superintendent's House, and Workmen's Cottages, at Northern Main Drainage Outfall. Mr. J. E. Wakefield, Spring Gardens, S.W.

BOW.—Dec. 31.—For Enlargement of Sorting Office. The Secretary, H.M. Office of Works, 12 Whitehall Place S.W

BRADFORD.—Jan. 5.—For Building Twelve Through Houses, Sutton Mill. Messrs. W. & J. B. Bailey, Architects, North Street, Keighley.

BRISTOL.—Jan. 11.—For Opening Out No. 1 Tunnel and Constructing Depôt for Marshalling Trains. The Engineer, Paddington Station.

CUMBERWORTH.—Jan. 13.—For Building Rectory, Stables, Boundary Wall, Out Offices, &c. Messrs. J. Kirk & Sons, Architects, Huddersfield.

DOCKING UNION.—Jan. 10.—For Making Efficient the Drainage of the Union House. Mr. J. C. Walker, Vine Cottage, Hunstanton, St. Edmunds.

EASTBOURNE.—Jan. 5.—For Building Provision Market and Arcade. Mr. George Fuller, Architect, 15 Cornfield Road, Eastbourne.

EGREMONT.—Jan. 13.—For Additions and Alterations to Board Schools, Moor Row. Mr. John Eilback, Egremont.

ELGIN.—Jan. 5.—For Building Double Cottage, West End. Messrs. A. & W. Reid, Architects, Elgin.

GLASGOW.—Jan. 11.—For Supplying and Erecting Steel Girders (100 tons), Flooring, &c., Caledonian Railway. Mr. Strain, C.E., 154 West George Street, Glasgow.

GLOUCESTER.—Jan. 18.—For Best and Economical Lighting of Workshop. The General Manager, Gloucester Waggon Company.

HALIFAX.—Jan. 7.—For Building Cocoa House. Messrs. Horsfall & Williams, Architects, Post Office Buildings, Halifax.

HASTINGS.—Jan. 3.—For Building Boundary Wall, with Iron Fence, Gates, &c., at Cricket and Recreation Ground. The Borough Surveyor, Town Hall, Hastings.

HEREFORD.—Jan. 10.—For Providing Additional Water Storage for the General Infirmary, Fire Mains, Valves, Hose Pipe, Delivery Pipes, &c. Mr. J. Parker, City Engineer, Hereford.

INDIA OFFICE.—Jan. 4.—For Plate Girders (10, 20, 60, and 150 feet span). The Director-General of Stores, India Office, S.W.

ISLE OF MAN.—Jan. 15.—For Making Addition to Principal's House at King William's College. The Secretary, King William's College, Isle of Man.

KENSINGTON.—Jan. 6.—For Additions and Alterations to Laundry at Workhouse, Marloes Road. Mr. H. H. Bridgman Architect, 42 Poultry, E.C.

KIBWORTH.—Jan. 5.—For Alterations and Additions Grammar School. Messrs. R. J. & J. Goodacre, Architects 5 Friar Lane, Leicester.

LAMBETH.—Jan. 12.—For Reconstruction of Prince's Road Workhouse. Mr. T. W. Aldwinckle, Architect, 2 East India Avenue, Leadenhall Street, E.C.

LEDAIG.—For Building House. Mr. D. Thomson, Architect, 116 St. Vincent Street, Glasgow.

LEICESTER.—Dec. 31.—For Wrought-iron Hurdle Fencing (1,000 yards). The Borough Surveyor.

LEWES.—Jan. 17.—For Girders, Columns, and other Ironwork. Mr. F. D. Banister, C.E., London Bridge Terminus.

NEWHAVEN.—Jan. 17.—For Building and Maintaining Engine Shed (with Corrugated Iron Roof). Mr. F. T. Banister, Chief Engineer, London Bridge Terminus, S.E.

NORTH WITHAM.—Jan. 29.—For Repair and Refitting of Parish Church. Mr. R. J. Withers, Architect, 11 Adam Street, Adelphi, W.C.

NOTTINGHAM.—Jan. 3.—For Building St. Augustine's Church, Kirkewhite Street. Mr. R. C. Sutton, Architect, Bromley House, Nottingham.

PENARTH.—Jan. 3.—For Building Baptist Schoolroom and Offices. Mr. J. P. Jones, Architect, 27 Park Street, Cardiff.

PONTYCYMMER.—Jan. 4.—For Building Board School. Messrs. Seddon & Carter, Architects, 74 St. Mary Street, Cardiff.

PORTSMOUTH.—Jan. 4.—For Pulling Down and Rebuilding The Fighting Cocks. Mr. A. H. Bone, Architect, 66 Hanover Street, Portsea.

QUEENSBURY.—Jan. 8.—For Forming Playgrounds and for Alteration to School, Ambler Thorn. Mr. Herbert Hodgson, Architect, Queensbury.

ROATH.—Jan. 4.—For Corrugated Iron Roofing for Sheep Pens at Abattoirs. The Borough Engineer, Cardiff.

SHEFFIELD.—Jan. 11.—For Alterations and Additions to the Workhouse, Fir Vale, Pitsmoor. Mr. T. G. Edwards, Architect, Alliance Chambers, George Street, Sheffield.

SOUTHSEA.—Jan. 10.—For Rebuilding No. 5 Russell Street. Mr. A. H. Bone, Architect, 66 Hanover Street, Portsea.

SPALDING.—Jan. 31.—For Outfall Sluice, Lutton Leam Drain, Forming Banks, Drain Channel, &c. Mr. J. Kingston, Engineer, Fosdyke, Boston.

STAMFORD.—Jan. 15.—For Additions to the Parting Pot. Messrs. Richardson & Son, Architects, 15 Barn Hill, Stamford.

ST. HELENS.—Jan. 11.—For Laying Pipes with Valves, Hydrants, &c. Mr. D. M. F. Gaskin, C.E., Town Hall, St. Helens.

ST. LEONARDS-ON-SEA.—Jan. 3.—For Constructing Seawall (814 feet long), with Return Wall and Slipway, at the West Marina. The Borough Surveyor, Town Hall, Hastings.

SWANSEA.—Jan. 11.—For Steel Superstructure for Central Span, Landore Viaduct. The Engineer, Paddington Station.

TENBY.—Jan. 8.—For Portions of Proposed Buildings for the Marine Baths Company. Mr. H. A. W. Reeves, Architect, 14 Devonshire Square, Bishopsgate, E.

TOTTENHAM.—Jan. 11.—For Alterations to Local Board Offices, Coombes Croft House. Mr. De Pape, C.E., Engineer to the Board, Tottenham.

TRURO.—Jan. 20.—For Building Assembly Hall, Classrooms, Committee-rooms, Vestries, &c., adjoining Wesleyan Chapel. Mr. Silvanus Trevail, Architect, 80 Lemon Street, Truro.

WARWICK.—Jan. 3.—For Construction of Engine and Boiler House, &c., at the Waterworks, Haseley. Mr. E. Pritchard, C.E., 57 Waterloo Street, Birmingham.

TENDERS.

BLACKBURN.

For Building House and Shop for Mr. William James Seed, Darwen Street, Blackburn, according to Plans prepared by Mr. J. WARDLE BULCOCK, A.R.I.B.A., Architect, 9 New Market Street, Blackburn.

William Edmundson, Blackburn	£640 0 0
W. J. Crowshaw, Blackburn	604 10 0
George Keeley, Blackburn	585 0 0
THOMAS CHARNLEY, Blackburn (*accepted*)	543 0 0

BLARNEY.

For Alterations and Additions to the Business Premises of Mr. G. Smith, Blarney.

S. Thomas, Cork	£713 13 0
B. MCMULLEN, Cork (*accepted*)	526 0 0

R. ADAMS,

17 BLACKMAN STREET & 7 GREAT DOVER STREET, LONDON, S.E.,

INVENTOR and PATENTEE of the

SAFETY WINDOW WITH REVERSIBLE SASHES

FOR INEXPENSIVE AND PERPETUAL CLEANLINESS,

Which has gained at the INTERNATIONAL HEALTH and SANITARY EXHIBITIONS

Two Gold, Four Silver, and Four Bronze Medals, and Sixteen Diplomas of Merit.

IMPORTANT NOTICE.

The Patentee has been advised by several of his friends to form a Company for the Manufacture of the above-mentioned Sashes in larger numbers, for the supply of the Trade and for the Home, Colonial, and Foreign Markets. Hitherto he has only supplied the Fittings, except under very special circumstances. He now proposes to manufacture the Sashes complete with Fittings.

Provisional Protection has just been granted for another Patent, whereby the Sashes will be greatly reduced in price, and, consequently, brought within the requirements of every Architect and Builder.

If any of the readers of this journal wish to receive further particulars or to take Shares in the proposed Company, they are requested to make early application to the Patentee, as it is expected that the larger number of the Shares will be privately subscribed.

Applications for Shares will be taken in the order in which they are received.

BLACKBURN.

For Building Twenty Houses at Daisyfield, Blackburn, for the Daisyfield Co-operative Society, according to Plans prepared by Mr. J. WARDLE BULCOCK, A.R.I.B.A., Architect, 9 New Market Street, Blackburn.

Thomas Craven, Blackburn	£4,223 0 0
Robert Ibbotson, Blackburn	4,190 10 0
J. Higson & Sons, Blackburn	4,168 0 0
Walmsley Bros., Blackburn	4,096 0 0
J. J. Blakey, Church	4,075 0 0
J. H. Edmundson, Blackburn	4,012 0 0
W. Corry & Son, Blackburn	3,970 0 0
W. & J. Arkwright, Blackburn	3,899 0 0
James Byron, jun., Blackburn	3,867 0 0
JAMES PARKER, Daisyfield (*accepted*)	3,758 0 0
Thomas Charnley, Blackburn	3,755 18 6

EDENBRIDGE.

For Drainage Works, Edenbridge.

W. Neave & Son, Paddington	£3,960 0 0
L. Bottoms, Battersea	3,930 0 0
E. Smith, Edenbridge	3,925 0 0
H. F. Brow, London	3,868 0 0
Paramour & Son, Margate	3,700 0 0
G. E. Wallis	3,434 0 0
J. J. Wise, Deal	3,413 0 0
H. Knight, Mitcham	3,325 0 0
B. Cooke & Co.	3,205 0 0
Woodham & Fry, Greenwich	3,183 0 0
J. H. L. Dene, Walmer	3,150 0 0
R. Cowdrey, Newent	3,146 0 0
Treherne & Co., Battersea	3,075 0 0
J. Dickson, St. Albans	3,064 8 1
W. H. Dearle, Chichester	3,025 0 0
Punnett & Son, Tonbridge	3,015 9 11
E. P. W. Iles, Wimbledon	2,994 0 0
J. Young, Buckhurst Hill	2,990 0 0
J. Edmonson, Lower Edmonton	2,953 5 6
Jones & Wood, Birmingham	2,878 0 0
J. J. B. Marshall, Brighton	3,873 7 6
W. Cunliffe, Dorking	2,969 15 0
J. Hayward, Eastbourne	2,863 12 3
Foster & Dicksee, Rugby	2,660 0 0
H. HILL, High Wycombe (*accepted*)	2,476 14 0

DUNOON.

For Construction of an Intake, Byewash Channel, &c., also for Construction of Filters and relative Works, for the Water Committee of the Burgh Commissioners, Dunoon. Mr. J. COLLIE, Burgh Surveyor.

W. Dobbie, Kilsyth	£3,382 6 0
Stevenson & Osborne, Ayr	3,040 10 2
J. Drysdale, Glasgow	2,999 14 0
R. B. Stewart, Dalry	2,893 11 2
W. Kerr & Co., Ayr Waterworks	2,889 10 5
W. Harvie, Lesmahagor	2,770 11 6
D. Cunningham, Kilbalchan	2,626 17 5
D. McFee, Glasgow	2,594 18 8
Black & Eadie, Johnstone	2,582 7 7
W. G. Flett, Paisley	2,436 3 11
W. Smith, Carlisle	2,382 5 2
J. Urquhart, Glasgow	2,241 1 4
A. GALL, Alloa (*accepted*)	2,237 12 4

EALING.

For Building Warehouse, Western Road, Ealing, for Mr. S. Dyer. Mr. GEO. ASHBY LEAN, Architect and Surveyor, Helena Chambers, Ealing, W. Quantities by the Architect.

Stables.

B. Myring	£850 0 0
J. & C. Bowyer	830 0 0
F. & S. Bowyer	750 0 0
W. H. Waters	742 0 0
E. Toms	741 0 0
Penny & Co.	740 0 0
G. H. & S. Bywaters	725 0 0
H. & A. J. Jones	709 5 0
T. H. Adamson & Son	699 0 0
T. Nye	619 0 0

Main Building.

B. Myring	£5,996 0 0
J. & C. Bowyer	5,639 0 0
G. H. & S. Bywaters	5,538 0 0
E. Toms	5,374 0 0
W. H. Waters	5,251 0 0
Penny & Co.	5,250 0 0
H. & A. J. Jones	5,214 12 0
F. & S. Bowyer	5,125 0 0
T. H. Adamson & Son	4,991 0 0
T. Nye	4,554 0 0

ASCHERBERG PIANOS,

Acknowledged by all MUSICAL AUTHORITIES and by all those who have had them in use for years to be

THE BEST

FOR TONE, TOUCH, GENERAL FINISH, AND GOOD VALUE.

Wholesale and Retail Depot :—London, 211 Regent Street, W.

The Celebrated "DUBOIS" Hydraulic Drawn Lead TRAPS and BENDS.



The above Shapes and Sizes always in Stock, and we are prepared to furnish SPECIAL SHAPES to order at short notice. These justly celebrated TRAPS are made from Pure Pig Lead by Hydraulic Machinery after the manner of Lead Pipe, and have peculiar advantages appreciated by every Plumber. They are greatly superior to either Cast or Hand-made Traps, as they have no SEAM, are of UNIFORM THICKNESS, PERFECTLY SMOOTH INSIDE AND OUTSIDE, and can be FLANGED, PLUGGED, and STRETCHED, without fear of SPLITTING. No possibility of Sandholes.

FOR PERFECTION OF MANUFACTURE THESE GOODS ARE PRE-EMINENT.

For Sale generally by the principal Lead Merchants and Wholesale Dealers in Plumbing and Sanitary Appliances throughout Great Britain and Ireland.

DUBOIS MANUFACTURING CO., LONDON AND NEW YORK.

London Office and Works :—15 BRITANNIA STREET, KING'S CROSS, W.C.

BINGLEY.

For Stables and other Buildings, Formation of Roads, &c., Heathfield, Bingley. Messrs. MILNES & FRANCE, Architects, Bradford.

W. IYES & Co., Shipley (*accepted*).

GREENOCK.

For Building the Christian Institute, West Stewart Street, Greenock.

Accepted Tenders.

J. & R. Kirk, mason	£638 15 6
Charles F. Stewart, joiner	423 0 0
James M'Cue, plasterer	87 2 8
Crawford & Kerr, plumber	57 18 10
Adam Leisk, jun., slater	27 7 5
John M'Jannet, gasfitter	14 18 5
Total	£1,249 2 10

HEREFORD.

For Building Granary, Stables, Cart Sheds, &c., at Back of Steam Flour Mill, Bath Street, Hereford. Mr. T. CLARKSON WAKELING, M.S.A., Architect, 72 High Street, Merthyr Tydfil. Quantities by the Architect.

H. Welsh, Hereford	£1,200 0 0
J. Williams, Merthyr Tydfil	1,120 0 0
Meredith, Birmingham	1,119 0 0
W. Pritchard, Hereford	1,114 0 0
J. Jones & Son, Wolverhampton	1,050 0 0
W. BOWER & Co., Hereford (*accepted*)	992 0 0

ILKLEY.

For Building Residence, Ilkley. Mr. E. J. DODSHUN, Architect, 1 East Parade, Leeds.

Accepted Tenders.

W. Maston, Otley, mason.
E. Stephenson, Ilkley, joiner.
G. Lazenby, Leeds.
O. Lister, Ilkley, plasterer.
J. Atkinson & Son, Leeds, slater.

LITTLE HARWOOD.

For Building Six-parloured Houses and Eight Cottages at Little Harwood, according to Plans prepared by Mr. J. WARDLE BULCOCK, A.R.I.B.A., Architect, 9 New Market Street, Blackburn.

Thomas Charnley, Blackburn	£2,750 0 0
John Livesey, Blackburn	2,740 0 0
J. H. Edmundson, Blackburn	2,730 0 0
W. & T. Arkwright, Blackburn	2,700 0 0
Thomas Fawcett, Blackburn	2,696 0 0
Thomas Harrison, Blackburn	2,668 10 0

For Building House and Shop, at Little Harwood, for Mr. Henry J. Robinson (Coroner), Little Harwood Hall, according to Plans prepared by Mr. J. WARDLE BULCOCK, A.R.I.B.A., Architect, 9 New Market Street, Blackburn.

Thomas Talbot, Blackburn	£579 0 0
Thomas Baldwin, Blackburn	568 0 0
William Tomlinson, Blackburn	561 0 0
THOMAS CHARNLEY, Blackburn (*accepted*)	559 0 0

LONDON.

For Execution of Tench Street, Wapping (Artisans') Scheme, for the Metropolitan Board of Works.

Trehearn & Co.	£3,350 0 0
Hindle & Morrish	2,999 0 0
Turner & Co.	2,947 0 0
Woodham & Fry.	2,900 0 0
Bentley	2,744 0 0
J. MOWLEM & Co. (*accepted*)	2,265 0 0

For Execution of Brook Street, Limehouse (Artisans') Scheme, for the Metropolitan Board of Works.

Hindle & Morrish	£1,890 0 0
Turner & Co.	1,778 0 0
J. MOWLEM & Co. (*accepted*)	1,519 0 0

For Widening Green Street, Bethnal Green.

Nowell & Robson	£4,212 0 0
J. Mowlem & Co.	4,145 0 0
GRIFFITHS (*accepted*)	4,090 0 0
Hindle & Morrish	3,984 0 0

For Construction of Brick and Pipe Sewers, Laying Granite Carriageways and York Stone Footways, High Street, Hampstead.

NOWELL & ROBSON (*accepted*)	£6,773 0 0

THE CORSHAM BATH STONE CO. (LIMITED) CORSHAM.

BATH STONE. | Summer Dried. Corsham, Combe, Box Ground, Westwood, Farleigh. | Prices on application

LONDON DEPOT:—S.W. RY., RIVERSIDE, NINE ELMS.

PHOTOGRAPHS OF ARCHITECTURE

In all parts of the world,

INCLUDING a NEW SERIES of DETAILS

From the Old Masters, and all the finest Modern Paintings, including the Paris Salon.

Our magnificent Collection is always on view at our London Galleries,

24 OLD BOND STREET, W.,

Or Selections and Lists can be had by post from

WINCH BROTHERS, Colchester.

List Free.

PAWSON & BRAILSFORD,

DRAWING-OFFICE STATIONERY MANUFACTURERS,

Map and Plan Mounters and Publishers, Lithographers, Printers, Account-Book Manufacturers, Photo-Lithographers, Colour Printers, Electrotypers, Engravers on Wood, Copper, Brass, &c.

General Stationery Stores & Milner's Safe Depot,

1 HIGH ST., SHEFFIELD.

SPECIALITIES IN

TRACING PAPERS and LINENS in every variety, at the lowest prices; WELL-SEASONED DRAWING PAPERS, mounted and unmounted; best English Mathematical Drawing and Surveying Instruments; Colours, &c., at the usual professional discount.

Legal and Commercial Stationery.

W. F. STANLEY,

Mathematical Instrument Manufacturer

To H.M.'s Government, Council of India, Science and Art Department, Admiralty, &c.

Mathematical, Drawing, and Surveying Instruments of every description, of the highest quality and finish, at the most moderate prices. Price List post free. Engine Divider to the Trade. Address, 4 and 5 Great Turnstile, Holborn, London, W.C. Also New Store, at 6A Victoria Street, Westminster.

GOLD MEDAL, Inventions Exhibition, 1885.

THE NEW CHANDELIER.

PATENT SECRET BALANCE.

See "The Architect" of October 22, 1886, page 9. Particulars free on application.

H. T. TALLACK, 28 Hatton Garden, London, E.C.

QUESTION. WHOSE VENTILATORS are the best for Churches, Chapels, Schools, Billiard Rooms, Staircases, Kitchens, Stables, Factories, Hospitals, &c.?

ANSWER. HILL & HEY'S, The Patent Excelsior and Watson Syphon Ventilator Works, HALIFAX. Proved by the most extensive and varied application.

Established 1852.

WRIGHT & CO.'S PATENT FIREPROOF FIXING BLOCKS FOR WALLS AND FLOORS.

Awards 1886. "Certificate of Merit" from the Sanitary Institute of Great Britain at York. "Highly Commended" at the Firemen's Exhibition, Westminster Aquarium.

Improved fixing, sounder work, no extra cost. Extensively used for High Class Works by leading Architects, Engineers, Contractors, H.M. War Department, &c. Our new illustrated pamphlet, post free, containing full particulars, with numerous recent references, including opinions from Arthur W. Blomfield, Esq., M.A., F.R.I.B.A., J. Douglass Matthews, Esq., F.R.I.B.A., Colonel W. J. Stuart, Commanding R.E. Department, Chatham; Basil Champneys, Esq., B.A., R. J. Withers, Esq., and many other leading architects; also recommendations from practical clerks of works, well-known contractors, &c., who have always used our patent fixings with the greatest success.

WRIGHT & CO. 3 Westminster Chambers, Victoria Street, London, S.W.

Telegraphic Address: Fixing, London.
Works:—Gosport, Hants, and at Carnforth, Lancs.

BEST BLUE PENNANT STONE,

For all kinds of Architectural and Building purposes, viz.:—Ashlaring, Pillars, Columns, Archways, Steps, Sills, Landers, and Hearths; Paving for Church Floors, &c., &c.

Also for Monumental Work, viz.:—Tombs, Bases, Monuments, Headstones, Bordering, Crosses, Sawn Slabs and Block.

Local Board Work, viz.:—Kerbs (Flat or on Edge) Crossings, Paving, Channelling, Pitching, &c.

Wycombe Stone for Building, Pitching, Kerbing, &c.

We have lately supplied H.M. Board of Works with a large quantity for Casing the Curfew and, Chancellor of Garter Tower, Windsor Castle.

Samples of either Stone and full particulars on application.

THOMAS FREE & SONS,

Naphill, High Wycombe.

IRON GIRDERS, BRIDGES,

JOISTS, FLITCH-PLATES, ROOFS, BOILERS, COLUMNS, CASTINGS, &c.

S. WOODALL, 3 QUEEN VICTORIA ST., LONDON, E.C. Established upwards of a Century.

GRUNDY'S PATENT WARM-AIR VENTILATING FIRE GRATE.

The novelty, superiority, and advantage of this patent consist in the heating surface being greater than any other Fire-grate introduced to the public. It is very simple in construction, and is made in the form of a Stove, the back of which is semicircular in shape, with gills behind and smoke-nozzle on top, all cast in one piece. The same can be attached to any design of a Register or Stove front. It is very suitable for schools, class-rooms, waiting-rooms, hospitals, offices, dormitories, and dwelling-houses, from the cottage to the mansion. Design and specification post free on application.

TESTIMONIALS.

"9 Victoria Chambers, Westminster, S.W.: June 10, 1884.

"SIR,—I have much pleasure in testifying to the efficiency of your patent warm-air fire grate. It has been very successful, and given every satisfaction where I have used it. Yours, &c.,

"To Mr. Grundy. JAMES WEIR, F.R.I.B.A."

"6 John Street, Bedford Row, W.C.:
"December 16, 1885.

"DEAR SIR,—I have now had an opportunity of testing your patent grate, and am glad to be able to say that I am most agreeably disappointed, because, as you are aware, I was rather sceptical about its powers when you showed it to me; but now I can say it answers admirably, and heats abundantly my porch-conservatory.—I am, yours truly,

"R. S. LANDER, F.R.I.B.A.

"To Mr. John Grundy."

From James Garry, Esq., Architect, West Hartlepool, July 1884.

"DEAR SIR,—I have very great pleasure in stating that the first stove, or patent warm-air ventilating fire grate, adopted by me in school at Seaton, and a second in a Cocoa Palace, have given such satisfaction that I now order eleven to be inserted in New Upper Grade Schools in course of erection at West Hartlepool. They are the most economical, efficient, and easily managed stove at present before the public.—Mr. John Grundy."

From Hon. and Rev. G. G. C. Talbot, M.A., Withington, Cheltenham.

"DEAR SIR,—You will be gratified to hear that the school is completely warmed by your new grate. It is the most economical and efficient that I have ever seen.—Mr. John Grundy."

Society of Architects, Architectural and Building Trades Exhibition, 1885:—"5 Great James Street, Bedford Row, May 1.—The warm-air ventilating grate shown by Mr. John Grundy at Stand 75 Floral Hall, is an admirable contrivance for utilising the heat conducted through the back and sides of the stove, for warming schools and buildings by a supply of freshly warmed external air."

Apply to JOHN GRUNDY, 30 Duncan Terrace, City Road, London.—Works: TYLDESLEY, near Manchester.

Agent for Scotland, SEPTIMUS HARPUR SMITH, 1 Upper Gilmor Place, Edinburgh.

LONDON—*continued.*

For Two-horse Van for Flushing Sewers, for the Bermondsey Vestry.

Bayley & Co.	£60 0 0
T. & W. Rendell	60 0 0
Grover Bros.	55 0 0
GROVER & TAYLOR (*accepted*)	47 0 0
Barker (*informal*)	45 0 0

RAVENSTHORPE.

For Dye-house, Netherfield Mills, Ravensthorpe. Mr. R. CASTLE, Architect, Westgate, Cleckheaton.

Accepted Tenders.

J. Overend, Ravensthorpe, mason, &c.
W. Summersgill, Ravensthorpe, plumber.
J. M. Thornton, Heckmondwike, slater.

ROCHESTER.

For Repairing Footway, Castle Hill, Rochester.

J. P. Griffin	£113 15 0

RUSHDEN.

For Forming Street, Lawton's Estate, Rushden. Mr. EDWARD SHARMAN, Architect, Wellingborough. Quantities by the Architect.

Clayson Bros., Cogenhoe	£477 0 0
A. Franklin, Rushden	348 10 0
J. Underwood, Wellingborough	285 0 0
T. Wilmott, Rushden	277 0 0

SOUTHSEA.

For Additions to Prize Foods Factory and Steam Bakery, Bishopstoke, for Messrs. Dear & Co., Limited. Mr. CHARLES W. BEVIS, M.S.A., Architect, Southsea.

Hutchings, Winchester	£2,595 0 0
Burbidge, Portsmouth	2,529 0 0
Light Bros., Portsmouth	2,485 0 0
Franklin, Southampton	2,461 0 0
Wickham, Southampton	2,419 0 0
Kimber & Cotton, Southampton	2,292 0 0
H. J. SANDERS, Southampton (*accepted*)	2,290 0 0
Blake, Eastleigh	2,252 10 0

SUNNINGDALE.

For Enlargement of Parish Church, Sunningdale. Mr. SCOTT, Architect.

Norris, Sunningdale (*lowest*)	£6,293 0 0

WARSASH.

For Building Mission-room at Warsash.

J. Crockerell, Landport	£521 10 0
E. Beaton, Tralton	468 7 6
W. Franklin, Portswood	454 0 0
J. W. Royland, Southampton	414 0 0
W. White, Bishop's Waltham	379 10 0
C. Conway, Wickham	379 5 3
Rowland Bros., Horsham	395 0 0
P. Peters, Horsham	373 11 0
W. RAPLEY, Forton (*accepted*)	339 13 9

WORTHING.

For Paving and other Works in Madeira Road, Worthing. Mr. W. HORNE, Surveyor, Town Hall, Worthing.

W. Mills, Worthing	£172 6 8
J. Churcher, Worthing	166 12 10
W. CHURCHER, Worthing (*accepted*)	133 14 8

TRADE NOTES.

OUR Special Correspondent informs us that the slate trade price-lists for the new year are now fixed. The Carnarvon quarry-owners, at their meeting last week, decided to retain the present lists, reducing discounts as the season advances. There is an advance in some of the large sizes at Portmadoc, and all the quarries appear to have good orders for the coming year, and to be hopeful about trade; but there are still heavy stocks at the Penrhyn quarries.

THE Catholic Apostolic Church, Bridgnorth, has been further enriched by the addition of a reredos of Caen stone and alabaster. It is of the Decorated period of architecture, and consists of crocketted gables; in the centre is a carved and groined canopy, under which the tabernacle is fixed. The work has been executed by Messrs. Jones & Willis, of Birmingham and London.

THE parish church of Wishaw, near Birmingham, has just been renovated, the old seats removed and reseated in pitch pine, from the design of Mr. A. B. Phipson, architect, of Colmore Row, Birmingham.

A THREE-LIGHT stained-glass window has just been fixed at Hanney Church, near Wantage, Berks, in memory of the

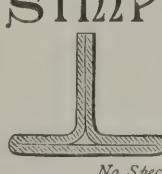
SPRAGUE & CO.
Lithographers, Engravers, and Printers,
22 Martin's Lane, Cannon St., London, E.C.
BILLS OF QUANTITIES, SPECIFICATIONS, REPORTS Copied or Lithographed with rapidity and care.
SPRAGUE'S "INK-PHOTO" PROCESS FOR REPRODUCING COLORED DRAWINGS OR PHOTOGRAPHS.
PLANS of ESTATES, with or without Views, tastefully lithographed and printed in colours.
PHOTO-LITHOGRAPHY.
CERTIFICATE BOOKS for Instalments, 3s., or with receipt, 5s. Bill Paper, 17s. 6d. & 25s. per ream.
SPRAGUE'S TABLES, upon application.

PARTRIDGE & COOPER,
192 Fleet St., London,
WHOLESALE AND RETAIL
MANUFACTURING STATIONERS,
Tracing Linen, Tracing Paper,
Drawing Paper, Sectional Paper
Mounted Papers,
Continuous Papers, Pencils, Pens, &c.
&c., at reduced prices.
SAMPLES AND PRICES FREE.

BILLS OF QUANTITIES & PLANS.
T. PETTITT & CO.
LITHOGRAPH BILLS of QUANTITIES WITH THE GREATEST EXPEDITION.
Accurately copied from the draft in clear hand. Orders from the country returned by evening mail on the same day. Terms on application. Also Plans of Building Estates and General Plan Work at very reduced Prices.
T. PETTITT & CO., Lithographers,
23 FRITH STREET, SOHO, LONDON, W.
ESTABLISHED 50 YEARS.

BEST BATH STONE.
CORSHAM DOWN } SUMMER DRIED.
FARLEIGH DOWN }
BOX GROUND. COMBE DOWN. WESTWOOD GROUND.
RANDELL, SAUNDERS & CO., LIMITED,
CORSHAM, WILTS.

STONE BROTHERS, BATH,
BATH STONE MERCHANTS,
Supply direct from their own Quarries,
CORSHAM DOWN, FARLEIGH DOWN,
BOX GROUND, COMBE DOWN,
STOKE GROUND, AND CORNGRIT.
Over 200,000 cubic feet of SUMMER-DRIED Stone in Stock.

SIMPLEX LEAD GLAZING

For ROOFS, ********
****** SKYLIGHTS &
HORTICULTURAL WORK.
No Special Contract Required.
NO ZINC, IRON, OR PUTTY USED.
ANY QUANTITY SUPPLIED.
GROVER & Co. (Limited), Engineers, &c.
Britannia Works, Wharf Rd., City Rd., London, N.
WRITE FOR
ILLUSTRATIONS, TESTIMONIALS & FULL
***** PARTICULARS (SENT POST FREE). *****

PERMANENT EXHIBITION
OF
ARCHITECTURAL APPLIANCES,
10 Baker St., Portman Square, W.
WM. & F. BROWN & CO'S. Patent Wood Mosaic, a first-class floor for the interior of mansions, warm, noiseless, durable, and artistic.
Applications for Space can now be made to the Manager,
S. S. PHILLIPS.



I. SUMSION, *Quarry Owner,*
MONK'S PARK MP. TRADE MARK.
Quarries every description of Bath Stone, and is Sole Proprietor of the celebrated
MONK'S PARK QUARRY.
ADDRESS:—
NEWARK STREET, BATH.

E. SCOTT & CO.,
(ESTABLISHED 1861)
Sole Manufacturers of the Improved Patent
MICA LETTERS.
OPAL, GLASS,
AND WOOD LETTER MAKERS.
GLASS and SIGN WRITERS,
EMBOSSERS, GILDERS, ETC.
Contractors for and Manufacturers of
GLASS TABLETS and other Advertising Mediums.
☞ MICA, Wholesale and Retail, supplied in any size and shape.
166 CITY ROAD, LONDON.

ART FURNITURE.
KENDAL, MILNE & CO.,
110 Deansgate, Manchester,
MANUFACTURERS OF
ARTISTIC FURNITURE IN ALL STYLES.
Estimates Given at Wholesale Prices for Furniture made to Architects' Designs.

late wife of the vicar, the Rev. James Macdougall. The style of the window is late sixteenth-century Italian, and it is a great ornament and addition to the church. In each light a figure is represented, viz., *Faith* on the left hand, *Charity* in the centre, and *Hope* in the right-hand light, and emblematic floral ornament in the canopy and at the foot of each figure. The window has been executed from designs by Mr. George M. Macdowell, under the direction of Mr. R. Owen Allsop, architect, of 37 Norfolk Street, Strand, London.

THE following contracts have been accepted for the Aberdeen Corporation Gasworks:—Cast and malleable iron, Messrs. Blaikie Bros., St. Clement Street; malleable iron and steel and ironmongery, Messrs. Glegg & Thomson, George Street; brass work, Messrs. John Blaikie & Son, Littlejohn Street; timber, Messrs. J. Rust & Son, York Street; painting and glazing, Messrs. J. & S. Fyfe, Dee Street; retorts, Messrs. J. Young & Son, Glasgow; silica bricks, Bonny Bridge Silica Co.

THE Leamington Town Council have accepted an offer from Mr. Arthur Chamberlain, of Birmingham, to light the town with incandescent electric light, at a cost of from 20 to 30 per cent. more than gas. It is proposed to lay in a temporary installation, to illuminate the Parade and the principal buildings with public electricity during the celebration of the Queen's jubilee.

AT a meeting of the Elland Town Hall Committee, Mr. C. F. L. Horsfall, of Halifax, the architect, produced detailed plans of the intended structure, which were adopted. Mr. Horsfall is now preparing the specifications and bills of quantities for the works.

THE excavations at the Corinth Canal are stated to be progressing at a rate of about 18,000 feet a day, the number of workmen being at present 1,900.

MR. WALTER HALL, surveyor, land agent, and auctioneer, of 38 Chancery Lane, announces that he has taken into partnership Mr. M. W. Furneaux, who has for the past three years assisted him in his business, and who was formerly with Messrs. Dowsett & Woods. The title of the firm will be "Walter Hall," and business will be carried on at the above offices as heretofore.

THE Attorney-General (Sir Richard Webster, Q.C., M.P.) entertained the employés of Messrs. Kirk & Randall, and others connected with the building of his mansion, "Winterfold," at dinner at the Onslow Arms, Cranleigh, on Thursday last. The vice-chair was occupied by the architect, Mr. E. I'Anson, supported by Mr. Unwin, the clerk of works, and Mr. May, the foreman of works. After the cloth was removed, and the usual loyal toasts had been given, Sir Richard proposed in complimentary terms the health of the contractors, after which the host's health was proposed by Mr. May, and received with great enthusiasm.

AT the end of the year opportunity is taken to set one's house in order, and we again are glad to be able to recommend as aids to business the excellent diaries which Messrs. Hudson & Kearns have prepared specially for the use of architects and builders. They have little in common with so many flimsy brochures that are called diaries, and which are held together with difficulty before half the year has expired. Messrs. Hudson & Kearns' diaries are not only printed on good paper and well arranged, but the binding is strong enough to withstand a year's wear and tear, and to allow of preservation afterwards for reference. The blotting-pad produced by the firm combines so many conveniences that the name is insufficient to suggest its character, and it surpasses others of its class in utility and endurance.

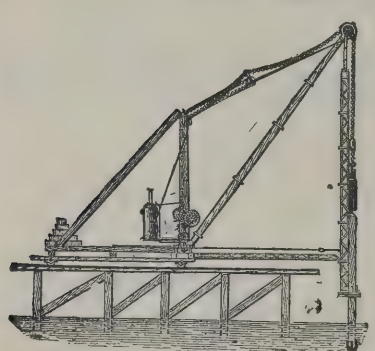
HYDRAULIC MACHINERY.*

IN the old-fashioned and obsolete school-books on natural philosophy many interesting stories used to be related about the aversion of drops of water to being squeezed, and wonder was excited when it was said that if the pressure exceeded a fixed limit the water would escape even if it were enclosed in a golden globe. Then followed an account of the "hydrostatical paradox," through which any quantity of water, even the smallest, was made to balance and support the largest quantity. The description of the hydraulic bellows led to the hydraulic press invented by Bramah, which was the climax of water-power.

The extent of the force that was available through the resistance of water to pressure, and its want of elasticity, was not fully recognised until Sir William Armstrong took it into his head to find a relaxation from his lawyer's work in hydraulic

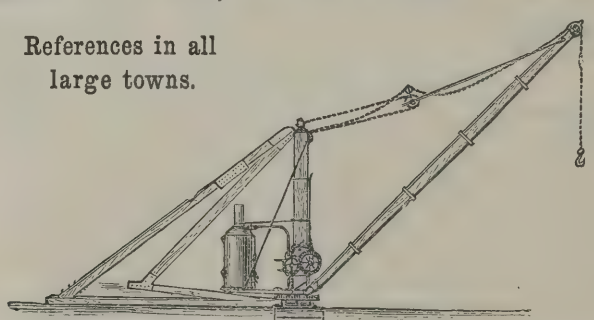
* *Hydraulic Power and Hydraulic Machinery, for the Use of Practical Engineers and Students.* By Henry Robinson, C.E., Professor of Surveying and Civil Engineering, King's College, London. Charles Griffin & Co.

BUTTERS BROTHERS, ENGINEERS, GLASGOW.
PERCY CRANE WORKS. OFFICES, 93 HOPE STREET.

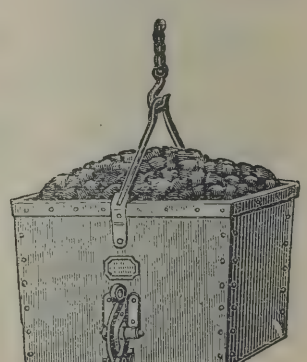


Crane used for Piling.

References in all large towns.



SCOTCH BUILDERS' CRANES.
Large Stocks. Send for List.



Patent "Steel" Tipping Boxes with Bottom falling out, Self-closing Spring Catch.

To hold ½ yard	.	£8	10 0
,, ¾ ,,	.	9	10 0
,, 1 ,,	.	10	10 0

FOR SALE, HIRE, OR HIRE-PURCHASE.

NOW ON SALE. THE LAST FEW PORTFOLIOS.

Price Eight Guineas on Japanese Paper, and Ten Guineas on Parchment.

EIGHT ORIGINAL ETCHINGS

From Water-Colour Drawings,

By THE BARONESS NATHANIEL DE ROTHSCHILD.

ETCHED by MM. T. CHAUVEL (GOLD MEDALLIST AT THE SALON), LEON GAUCHEREL, & DANIEL MORDANT.

"A magnificent set of two Picturesque Views in Holland, two Neapolitan, one Sicilian, one Venetian, and two French Views, which appear in the finest style, and display the exquisite touch of a born artist."

GILBERT WOOD & CO., 175 STRAND, LONDON, W.C.

experiments. Water-power was taken to mean such force as was applied in turning mill-wheels, 12 cubic feet of water falling a foot per second being taken as equal to a horse-power. Forty years ago, what were called "water-pressure engines," and which were largely used in Bavaria, were little known in England. Fairbairn and Darlington tried to apply them in mining, but it was found difficult to give an equable motion to the piston of the engine—the stroke became accelerated under the pressure of the water flowing into the cylinder, and the engine was only fitted for rough work, such as drainage. It was also found that the engine was rather complicated and liable to get out of repair. Anyone who is able to recall one of those old engines, which were suggestive of undergoing a strain, with a shock to finish every stroke, and thinks of it in comparison with such noiseless engines as are to be seen working every day in, let us say, Cardiff Docks, will acknowledge that the present period is in one respect at least far ahead of its predecessor. The coal-whipping machinery in the Welsh town is, in its way, as remarkable as the restored Castle. But that is only one of the ways in which water can be utilised as a motive power. It is now applied as aid in engineering construction, in pile-driving, excavating, drilling, &c. Hydraulic lifts have proved that stairs are no longer indispensable in buildings, and the gunnery of the future will, to a great extent, be dependent on the application of water-power in facilitating movements. In many ways it is a better servant than steam, and it has, moreover, the great advantage of being silent (it is water alone which can be termed a dumb-waiter), and, happily, it can never become a nuisance or create an evil like smoke. We need not be surprised when we find that from the time of Archimedes water has been made the subject of philosophical recreations.

Professor Robinson, in his new book on "Hydraulic Power and Hydraulic Machinery," begins with explaining the conclusions which have been formulated about the flow of water in pipes and conduits of various forms, a series of coefficients having been established for nearly every kind of orifice. There is, however, a want of uniformity in the notation which might have been avoided. Why, for example, should D in Eytelwein's formula express discharge in cubic feet, and in another place be displaced by Q—the diameter of the pipe being d in one place and D elsewhere? In Eytelwein, as commonly used, W stands for discharge, and is worth general acceptance as long as the result is taken in cubic feet, otherwise G for gallons is preferable. It is time there was a common adoption of lettering.

Davey's formula for the coefficient of friction in pipes is given. For wrought-iron or smoothly-coated cast-iron pipe the coefficient is—

$$C = \cdot 005\left(1 + \frac{1}{12d}\right);$$

and for a pipe that is old and slightly incrusted it is—

$$C = \cdot 01\left(1 + \frac{1}{12d}\right)$$

—that is, one is double the other. As bearing on this point, the remarkable observation of Mr. Bateman might have been given. He told a Parliamentary Committee that pipes when asphalted delivered, with a fall of $3\frac{1}{2}$ feet per mile, nearly a third more—*i.e.* 26 : 20—than was calculated for uncoated pipes with a fall of 5 feet.* Whether the difference was not in part owing to the inapplicability of the ordinary formulæ to pipes of large diameter is a question that has to be decided. Indeed, it cannot be said that our knowledge of the conditions of the flow of water in pipes is complete. It is shown, for example, in the book before us, on the authority of Professor O. Reynolds, that it is incorrect to suppose that water flows through a tube in a series of parallel lines as long as there is no impediment offered to the course. He was able to ascertain that, under certain conditions, a streak of coloured water will become diffused or break up into a number of curled forms resembling the letter S, phenomena which suggest new conditions of velocity.

The chief purpose of the book is, however, to explain hydraulic machinery. Everyone knows that a revolution was accomplished when Sir William Armstrong devised the accumulator, of which the use is described in the following words by Professor Robinson :—

> By means of an accumulator an artificial head can be maintained at any part of a hydraulic main. The abstraction of the high-pressure water to actuate hydraulic appliances is practically intermittent. The supply of high-pressure water from the pumping engine is continuous. It follows, therefore, that as the transmission of pressure through a water main is practically instantaneous, the intervals (however small) between the time of the production of the power and its utilisation in the appliance enable the pressure to be maintained and the excess to be stored in the accumulator. The variation in the consumption of the power, by reason of the fluctuation in the working of the machines, is at once adjusted by the accumulator, which both serves to store up the

* See *Architect*, April 18, 1885.

E. LOFTS, Patentee & Manufacturer,

Hills Road, CAMBRIDGE. London Show-rooms 165 Queen Victoria St, E.C.,

OPEN FIREPLACES

FOR

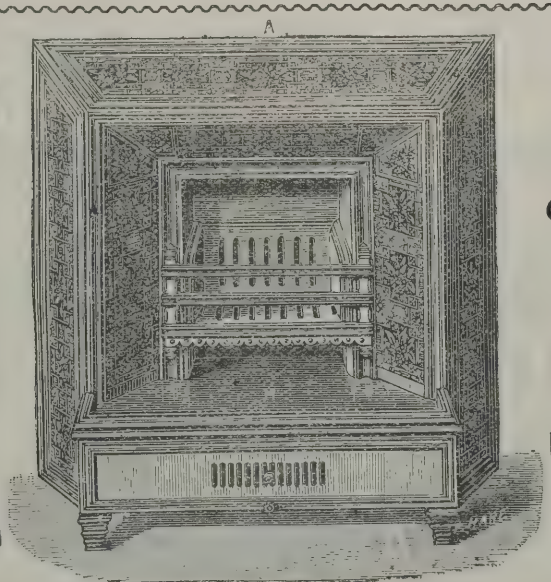
DRAWING-ROOMS,

DINING-ROOMS,

BED-ROOMS,

&c.

COOKING-RANGES.



HALL STOVES

FOR

CHURCHES, CHAPELS,

BOARD SCHOOLS,

SHOW-ROOMS,

RAILWAY STATIONS,

HALLS OF MANSIONS,

HOTELS,

&c., &c.

LOFTS' PATENT STOVES

Will burn any kind of Coal or Rubbish, consume their own Smoke, and require only one-fifth the Fuel of any other Stove.

After four years of tedious experiments I have been able to produce what has long been required, viz., Domestic Stoves which consume only one-fifth the quantity of Coal (*One Ton instead of Five*) required by any ordinary stove, at the same time giving as great an amount of heat and more thorough ventilation. I have great confidence in recommending these to the public. Since perfecting them I have tried them for six months in the worst of smoky chimneys, and they have not failed in any one case; have shown them at work to a large number of scientific, medical, and practical men, and they have given but one opinion, which is that, as regards heat, health, and comfort they are perfection, and they have not seen or heard of anything to equal them. The fire-grate is perfectly open, like the register or slow-combustion stoves now in use; they are neat, strong, and easy to understand; will burn any kind of coal or rubbish; consume their own smoke; are lighted just in the same way as an ordinary stove, and draw up as quickly and as easily.

Full particulars on application.

To be seen in action at London Show-rooms, 165 Queen Victoria St., E.C., or at Cambridge.

excess of power delivered to the mains from the engines, and also to maintain the pressure in the mains. By this means power is transmitted without practical loss in hydraulic mains. It has been found that water at 700 lbs. pressure can be transmitted a mile with a friction loss of only about 2 per cent., where the mains are properly proportioned and where the head is maintained.

The original accumulator is still at work at Elswick. Many varieties have been introduced since by other inventors, which are described in Professor Robinson's book. The principle of the old Bramah press has been applied on a large scale in various structures. The machine for raising the tubes of the Conway Bridge is one example. Mr. Edwin Clark also designed several hydraulic lift graving docks. Some are equal to lifting a load of 14,000 tons. Barges carrying from 30 to 100 tons are transferred from the River Weaver to the Trent and Mersey Canal at Anderton, the difference in level being 50 feet. Eight barges up and eight down can be transferred in an hour. Similar work is done on a canal at Les Fontinettes, near St. Omer, at La Louvière, near Mons. The failure of one of the cylinders at Anderton caused anxiety about the safety of lifting machinery, and investigations were made by English foreign engineers, which have caused the Belgian Government to stipulate conditions about the dimensions of presses used for works of similar magnitude. The facilities offered by hydraulic presses as lifting forces led Sir John Fowler to work out a plan for conveying passengers from London to Paris without change of carriages. It was proposed to remove the engine at Dover, and to run the rest of the train on board a very large steamer by the aid of hydraulic lifts, which could be raised or lowered to suit the tides. At Calais or Boulogne the trains would run on to a lift from which it would pass to the railway. The lifts would be equal to 200 tons, and the time spent in raising or lowering would be about a minute. The lifts in connection with the Mersey Railway have strokes of 76 feet 7 inches and 87 feet 9 inches. The load is taken at 15,000 lbs., and each can carry 100 passengers.

Professor Robinson says that hydraulic power is finding a large field for useful employment in the direction of working house-lifts. He does not seem to care much for the adoption of counterbalancing cylinders. "There should," he says, "be no practical danger from the chain or rope (which should be connected to the sides of the cage, and not the centre), if care be taken that all the materials and connections are well tested, and are under similar conditions of strain." The "Otto Standard Hydraulic Elevator" of the American Elevator Company is selected for special notice. It has appliances to insure safety, which would come into play in any contingency.

The applications of water-power are so numerous that it would be vain to attempt their description in a single article. It is found that in treating large masses of iron a hydraulic squeezer has advantages over a steam hammer, since there is no shock, and therefore no danger of severing the fibres which are found in wrought iron. Hydraulic rivetters have been in use since 1851, and are a means of insuring good work, especially in shipbuilding. At Crewe they are found to surpass the steam rivetting machines. Professor Kennedy found that with $\frac{3}{8}$-inch plates "slipping" began in hand-rivetted joints when they were subjected to no more than 27 per cent. of the breaking strain, while machine-rivetted joints withstood the strain up to 59 per cent. Hydraulic machines can also be made available for shearing and punching, and whenever great power is required in a workshop. The assistance which can be given by them is suggested by the speech of Mr. Baker, one of the engineers of the Forth Bridge :—

More than 42,000 tons of steel plates and bars have to be bent, planed, drilled, and rivetted together before or after erection, and hydraulic appliances are used throughout. The plates are handled in the shops by numerous little hydraulic cranes of special design, without any complication of multiplying sheaves, the whole arm being raised with the load by a 4-inch direct-acting ram of 6-feet stroke. A total length of no less than 60 miles of steel plates, ranging in thickness from $1\frac{1}{4}$ inch to $\frac{3}{8}$ inch, have to be bent to radii of from 6 feet to 9 inches, which is done in heavy cast-iron dies squeezed together by four rams of 24 inches diameter and the same stroke. With the ordinary working pressure of 1,000 lbs. per square inch, the power of the press is thus about 1,750 tons. Some 3,000 pieces, shaped like the lid of a box, 15 inches by 12 inches wide, with a 3-inch deep rim all round, were required to be made of $\frac{1}{2}$-inch steel plate, and this was easily effected in two heats by a couple of strokes of a 14-inch ram.

The great girders of the Forth Bridge are put together at a low level, and raised to their position—that is, as high as the top of St. Paul's—by hydraulic power. It is also applied in connection with swing-bridges, dock-gates, and to cranes of all descriptions. But it may be anticipated that the applications of the power will be more various hereafter. In 1802, Bramah wrote to Robert Mallet—the father of the writer on engineering—saying he proposed to apply hydraulic power at a great distance from the centre. "I will engage," he said, "to erect

MAKERS TO HER MAJESTY,
By Special Appointment, A.D. May 13, 1876.
"STRONG ROOMS, DOORS, LOCKS, & SAFES."
TO THE BANK OF ENGLAND AND ITS BRANCHES.
DESIGNED FOR PALACES, BANKS, MANSIONS, HOTELS.
SEE HOBBS & Co^os
SERIES OF SUITES OF
LOCKS SAFES
STRONG ROOMS & PARTYWALL DOORS
HOBBS HART & Co. 76&77 Cheapside LONDON
SPECIAL SUITES FOR HOSPITALS, ASYLUMS, MUSEUMS, PRISONS.
SELECTED LIST OF HOTELS FITTED WITH HOBBS & CO.'S LOCKS:—
The METROPOLE, GRAND, FIRST AVENUE, ROYAL FOREST
BENTLEY PRIORY, ROYAL, LANGHAM,
GROSVENOR, WESTMINSTER PALACE, ALEXANDRA, HATCHETT'S,
BUCKINGHAM, INNS OF COURT, INTERNATIONAL, &c.

a steam-engine in any part of Dublin, and from it convey motion and power to all the cranes on the quays and elsewhere, by which goods of any weight may be raised at one-third of the usual cost. This I do by the simple communication of a pipe, just the same as I should do to supply each premises with water." The idea which is thus foreshadowed has been recently realised. About twenty years ago Professor Robinson proposed the establishment of a hydraulic power co-operative undertaking, which received the approval of Sir William Fairbairn. In Hull the system is at work, and in several of the London Docks. The Hull Company charge 52*l.* per annum for one crane in a warehouse, 94*l.* for two, 132*l.* for three, and 166*l.* for four cranes.

There is a temptation, when treating of hydraulics, to allow oneself to think in the first place of the formalising of equations. Many writers have found the pleasure irresistible. Professor Robinson considers the practical rather than the mathematical aspects of his subject, and by the co-operation of engineers, who have made a speciality of hydraulic appliances, he has produced a book which is a *résumé* of all that has been done in one of the most interesting branches of engineering, and of which, like electricity, the future appears to be unlimited in extent.

ROBERT BOYLE & SON, LIMITED.

THE first general annual meeting of this Company is fixed to be held on January 11, at Cannon Street Hotel, when it is proposed to declare a dividend at the rate of 12 per cent. per annum on the ordinary shares of the Company, a substantial proportion of the profits earned being carried to the credit of a general reserve account. We understand that the prospects of the Company are very bright, the business done during that portion of this the second year of the Company which has already gone, being considerably in excess of the business done during the same period of the first year. The ventilating contracts which are now in hand, and in prospective, are also very numerous and important. The Company have completed arrangements for the manufacture and sale of their various ventilating and sanitary appliances in Germany, France, Belgium, Holland, Spain, and Denmark, the business already done in connection therewith being very satisfactory, and it is anticipated that a considerable increase of "business" to the Company in the future will result from these sources.

THE AMERICAN EXHIBITION.

THE main building now being constructed on the grounds of the American Exhibition of the Arts, Inventions, Manufactures, Resources, and Products of the United States, at Earl's Court, Kensington, is entirely unique, and will in itself be a most interesting exhibit. The entire framework of the structure is composed of steel rails, such as are used in constructing railways. Two of these bolted back to back, with the T side out, make a very strong and really ornamental column. The only casting required is an angle iron and eyebar, into which the ends of the rails are slipped. This frame will then be covered with plates of glass and sheets of corrugated iron. The advantages are many. For rapidity of construction it is unequalled, as an acre a week can be easily put up, and it has also the advantage of economy, no skilled labour being required to put it up or take it down, and when finished with the material is as good and marketable as when first purchased. This invention, in fact, solves the problem of large temporary structures which can be quickly and cheaply built.

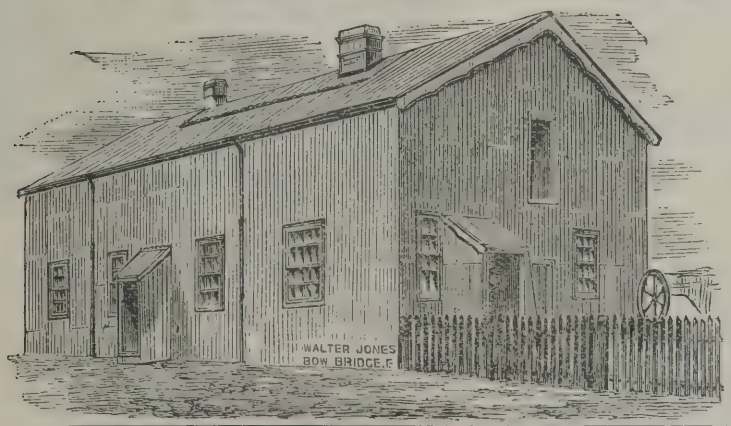
TESTIMONIAL TO A MANAGER.

MR. ALEXANDER RITCHIE, who for the past twenty-seven years has been associated with the Milton Ironworks, Glasgow, has been entertained at a dinner by the staff of the firm of Messrs. Steven Brothers & Co., of Upper Thames Street—the London house of the Milton Foundry, of which firm Mr. Ritchie has for the past seventeen years been the manager—and a company of private friends. The dinner was held at the Holborn Restaurant.

The primary cause of the gathering was to present Mr. Ritchie with an illuminated address from the staff, with a gilt inkstand and candelabra from the warehousemen of the firm, and a silver epergne from his private friends, and to congratulate him on his return to business after six months of enforced absence consequent on a serious carriage accident in April last, he having sustained a compound fracture of the leg and a painful illness following.

At the dinner referred to great sympathy was expressed by all present, and a very pleasant evening was spent, brightened as it was by a contribution of vocal and instrumental music

WALTER JONES, MAGNET WHARF, BOW BRIDGE,



MANUFACTURER OF

GALVANIZED IRON HOUSES,

OFFICES, | CHURCHES,
WAREHOUSES, | STABLES,
&c., &c.

IRON OR WOOD FRAMES.

Apply for Designs and Prices.

COLES, STEWART & CO.,
STOCK AND SHARE BROKERS.

Messrs. COLES, STEWART & CO. undertake every description of Stock Exchange business, and have special and early information on all leading Stocks; they are also continually advised by telegram from the chief Mining centres, both at home and abroad. For Investment Messrs. C., S. & Co. make only one charge of $\frac{1}{16}$ per cent. commission on all descriptions of Stocks, and open Speculative accounts with from 1 per cent. cover and upwards, without any further risk or liability to their clients whatever.

THUS, £5 commands £500 Stock; £10, £1,000 Stock; £50, £5,000 Stock;
And so on to any amount.

In the transaction of speculative business Messrs. C., S. & Co. make no charge for commission or brokerage whatever unless their client makes a profit, when they take 5 per cent. of the profit made as their remuneration.

All transactions advised by wire as soon as completed. Monthly Circulars and Mining Reports post-free on application.

COLES, STEWART & CO., St. Stephen's Chambers, LONDON, E.C.

from the members of the staff, the proceedings throughout being of a very hearty character.

The following address was presented on the occasion :—

We, the staff employed by Messrs. Steven, Brothers & Co., London, desire to offer you our congratulations on the occasion of your return to business after so long an absence, necessitated by the serious accident which unfortunately befell you. We unanimously acknowledge the Divine Providence which has restored you to health, and enabled you to resume the responsible position you have so long occupied, and which you are so eminently qualified to maintain. We trust that you may long be spared to promote, with the same untiring energy and perseverance, the interests of the firm you have been so instrumental in raising to its present high position. Asking your acceptance of this expression of our sympathy and esteem, we are, dear sir, yours respectfully,

(Signed on behalf of the Staff) WILLIAM JOHNSTON.

December 18, 1886.

The epergne bore the following inscription :—

Presented to
ALEXANDER RITCHIE, ESQ.,
by the Undersigned,
On his recovery from a long and painful illness occasioned by an accident in April 1886, as an expression of their sympathy, and also of their pleasure at his restoration to health.
December 18, 1886.

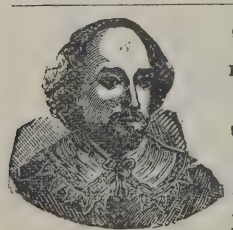
BUILDING IN ABERDEEN.

THE building trade has been stationary rather than depressed, says the *Aberdeen Free Press*. The number of dwelling-houses erected during the year is quite up to the average, but there has been a decrease in the number of large public and private buildings. The works under the Extension and Improvements Bill have been the mainstay of the trade. They have not only afforded employment for a large number of workmen, but the demolition of so many dwelling-houses has given an impetus to building houses of the same class in other localities, and the vacant ground in the neighbourhood of the town is being rapidly taken up for that purpose. It is little more than a year ago since Summerfield Terrace was laid out, now it is all feued, and before the ensuing term there will, in that street alone, be accommodation for upwards of 150 tenants. In the same neighbourhood building operations have commenced in the new extension of Urquhart Road, sufficient at least to justify the action of the Incorporated Trades in completing that thoroughfare to the Links, instead of having the *cul de sac* originally contemplated. During the year a number of dwelling-houses have been erected in Torry, as well as in the north end of the town, and a good many villa and suburban residences have been added to the west end. Notable among these is a very interesting piece of architecture on the site lately occupied by Rubislaw House. In the south-west district building has been carried on vigorously, although it is probable that the speculative builders who have done so much in that neighbourhood will now be attracted to the very eligible feuing ground being laid out at Union Grove. Operations have at length been begun in the erection of the Public Baths, and during the year the Congregational Church in Skene Street West and the new church at the north end of Crimon Place have been completed. The new police stables on the Reclaimed Land have been completed, and amongst other large buildings in progress are the Public School at Rosemount, the Orphanage at Bayview, and extensive business premises near the south end of George Street. There is also the new convict prison at Peterhead, the contract for which was secured by an Aberdeen firm, which affords employment for a large number of skilled workmen. Of new buildings in prospect, there are two new churches in the vicinity of Union Grove, and the extension of the Royal Infirmary, which it is proposed to carry out in commemoration of the Queen's jubilee. As already indicated, no change has taken place in the cost of building. The low rates necessary to obtain contract work will not admit of further reduction. Perhaps no better illustration of the reduced cost of building within recent years could be cited than in the price of ordinary lath and plaster-work, the current rate being from 9*d.* to 10*d.* per square yard, whereas ten years ago 1*s.* 3*d.* per yard was readily obtained. During the same period there has been a considerable reduction in the price of lead and slates, and the cheaper kinds of foreign timber have also fallen in price. Looking to the year from the workmen's point of view, there is little to be said. For a short time during the summer months there was a scarcity of good building masons, but that has passed away. The standard rate of wages has been maintained, and the relationship between employers and workmen has continued to be of a cordial character.

YOCKNEY & CO., Quarry Owners.
Prices quoted on application for Delivery at any Port or Railway Station, for all varieties of
BATH STONE, { Selected specially to suit Architects' Specifications and Builders' use.
Address—YOCKNEY & CO., Corsham Down Quarry, Wilts.

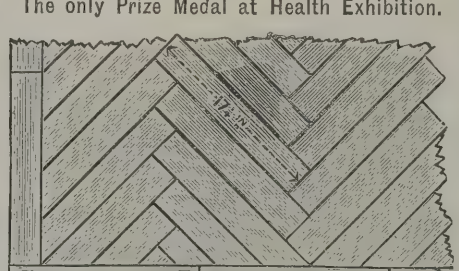
ASPHALTE.
POLONCEAU & SEYSSEL,
(Estab. 1838.) PILKINGTON & CO.
15 FISH STREET HILL.

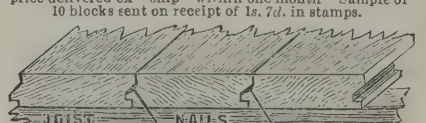
MARBLE WORK
OF EVERY DESCRIPTION.
Estimates on application to
EMLEY & SONS,
STEAM SAWING, MOULDING, TURNING, AND POLISHING WORKS,
NEWCASTLE-UPON-TYNE.


QUANTITIES, ETC.
Correctly Written and Lithographed by return of post certain. Plans, &c., best style.
J. L. ALLDAY,
Photolithographer and Collotype Printer,
Shakespeare Printing Works,
BIRMINGHAM.

ALL KINDS OF
MARBLE WORK TO ORDER.
LOWEST PRICES, GOOD WORK.
ESTIMATES FREE. ALSO SHOW-ROOMS FOR
CHIMNEY-PIECES
STOVES, TILES, ETC.
WILKINS and SONS,
88–92 PENTONVILLE ROAD, N.

Telegraphic Address—Blinds, London.
THE WINDOW BLIND CO.,
WAREHOUSEMEN AND
MAKERS OF WINDOW BLINDS
To the Trade and Shippers only.
PATTERN BOOKS OF MATERIALS (SPECIAL), PRICE LISTS, ILLUSTRATIONS, ETC., ON APPLICATION.
4 LAWRENCE LANE, LONDON, E.C.

LONDON BOARD SCHOOL
FLOORING BLOCKS.
The only Prize Medal at Health Exhibition.


Out of 17½ in. by 3 in. by 3 in. best Yellow Deal, planed all round. At 11*s.* 6*d.* per 100, delivered to van at our wharf. Much lower price delivered ex "ship" within one month Sample of 10 blocks sent on receipt of 1*s.* 7*d.* in stamps.


Dry Figured Wainscot Flooring, with above special joint to conceal nails, at following very low prices :—1¼×4¼ Dry Wainscot Oak, 54*s.* 9*d.* per square ; 1×4¼ ditto, 45*s.* ; 1¼×4 Pitch Pine, 26*s.* 6*d.* ; 1×4 ditto, 22*s.* 9*d.* IMPORTERS—
VIGERS BROS., Timber Merchants,
Head Office :—214 Pavilion Road, Chelsea, S.W.
Wharf and Sawmills :—537 King's Road, Chelsea, S.W.
Branch Yard :—65 Poland Street, Oxford Street, W.
Telephone 3,188.
Large stock of Dry Mahogany, Wainscot, Birch, Doors, Mouldings, Deals, &c.

ACCIDENT ASSURANCE TRANSACTED BY THE ATLAS FIRE AND LIFE OFFICE. Established 1808. West End Office, 32 COCKSPUR STREET.
Head Office, 92 CHEAPSIDE. Secretary, SAML. J. PIPKIN.


JOHN N. PEARCE
DESIGNS AND EXECUTES
FIRST-CLASS WORK IN THE CORRECT STYLE,
ECCLESIASTICAL AND DOMESTIC.
STAINED-GLASS WINDOWS.
Heraldic Achievements.
MURAL DECORATIONS
In Distemper, Oil, or Wax Fresco.
Monumental Brasses.
PLAIN AND GEOMETRICAL LEAD GLAZING.
STUDIOS:—
23, 24 Gertrude Street, Chelsea, S.W.
Designs and estimates on application.

CAST-IRON AND WROUGHT-IRON COLUMNS IN FIRES.

AMONG the "Abstracts of the Institution of Civil Engineers" is one by Herr Bauschinger on the behaviour of columns in fire, and under rapid cooling by water.

In 1884 new regulations were issued by the Berlin police authorities with regard to the use of cast-iron columns in new buildings, or alterations of old ones. According to these, "cast-iron columns which are not protected from the direct action of fire, may no longer be employed under the main walls of buildings of which the lower floors are used for business and storage purposes, and the upper floors as dwellings. In place of them will be allowed :—(*a*) Wrought-iron columns ; (*b*) cast-iron columns, which are surrounded by an irremovable casing of wrought iron, insulated by an air-space from the column ; (*c*) columns of stone set in cement."

The severe character of these regulations induced the author, at the instigation of Mr. Kusterman (the owner of a large foundry in Munich), to undertake a series of experiments in order to ascertain the behaviour of columns of various materials, but especially cast and wrought iron, under the action of fire and rapid cooling by water. The regulations in question were the outcome of observations made after a large fire at a manufactory in Berlin, on the condition of the cast-iron columns used in its construction.

The author's experiments were made on columns of cast iron, wrought iron, and building materials of various kinds. The column to be tested was subjected in the Werder testing machine to the compressive load it would have to sustain in actual use, and in this condition heated to the desired temperature, and then suddenly cooled by jets of water.

For the purpose of heating, the column tested was partially surrounded by a perforated wrought-iron trough, in which wood was burned. Owing to the nature of the arrangements, cooling could only be effected from the upper side, the position of the column being horizontal ; but this corresponds with what actually occurs at a fire in the majority of cases. An arrangement for measuring the deflections of the column during the experiments, in two directions at right angles to each other, was made by means of wires attached to the former, and acting on index fingers placed at convenient distance.

The temperature of the material tested was measured by means of alloys having various melting points, the highest being 600 degs. Centigrade.

Six cast-iron, three wrought-iron columns, and fifteen of various building materials were tested. The results showed that cast-iron columns best withstood the action of the fire and water, continuing to support their load even when red-hot and already cracked in places, whereas wrought-iron columns collapsed entirely under similar conditions.

The building materials tested were granite, marble, tufa, dolomitic limestone, concrete, paving stone, granitic marble, various kinds of sandstone, and ordinary bricks. Of all these materials the concrete proved to be the best, and after this ordinary brickwork. The concrete column tested remained uninjured after exposure to the treatment for one hour and three-quarters. None of the natural building stones resisted the fire ; granite was relatively the best, then tufa.

A NEW THAMES EMBANKMENT.

ARRANGEMENTS for the construction of a new embankment along the south side of the Thames, from the new dock of Putney Bridge to the parish boundary at Barnes, have now been completed by the Wandsworth District Board of Works, under the direction of their local surveyor, Mr. J. C. Radford, C.E. The embankment will be 45 feet wide, and consist of a 12-foot footway and a carriage-way of 33 feet. The foundation will be of concrete. The footway is to be fenced from the water by massive iron railings of a handsome design. The total cost is estimated to be close upon 5,000*l*. Towards this sum the Thames Conservators have promised 800*l*. The remainder of the required amount will be equally borne by the Metropolitan Board and the Wandsworth District Board. The work will probably be begun next month.

LIGHTING GLASGOW CATHEDRAL.

SOME time ago it was decided to supersede the paraffin lamps in lighting Glasgow Cathedral, and workmen have been engaged in the venerable building for the last three weeks constructing the necessary fittings for gas-lights. The work is so far advanced that early in the new year a special service will be held for the first time in gas-light. The fittings have been disposed throughout the building in such a way that the end in view will doubtless be attained. There are in all 400 burners. In the choir, where the congregation worship, there are four rows of

FIRE BRICKS.
E. BOWEN, Fire Brick Manufacturer, Stourbridge.
Manufacturer of Best Stourbridge Fire Bricks, and Cement Fire Clay, Gas Retorts, Muffles, &c. Fire Bricks and Blocks for the Highest Heats, for Iron Blast Furnaces, Forge, Rolling, Puddling and Steel Furnaces, Pottery, Bottle, and Flint Glass Furnaces, Roasting and Refining Furnaces, Chemical Works, Coke Ovens, &c., Boiler Seating Blocks, Flue Covers, Locomotive Bricks, Tuyères, Steel Runners, Grate Backs.
Special Sizes and Shapes made to Engineers' Drawings.
Prices Quoted to any Port or Railway Station.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

GLAZED BRICKS.
OATES & GREEN, Halifax.
GLAZED BRICKS (White and Coloured), Special Salt Glazed Bricks, Sanitary Tubes, Glazed Earthenware Sinks, Cattle, Sheep, and Pig Troughs, Horse Mangers, Patent Automatic Trough Closet, Patent Flush Tank, Channelling for Stables and Yards, Salt Glazed Bricks for Stables, Sewers, &c. Ventilating Bricks, Patent Ventilating Gullies and Traps, Garden Edging, Patent Chimney Pots and cure for Down Draughts, Patent Drain-Cleaning Rods.
Six Prize Medals. Copies of Testimonials sent if required.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

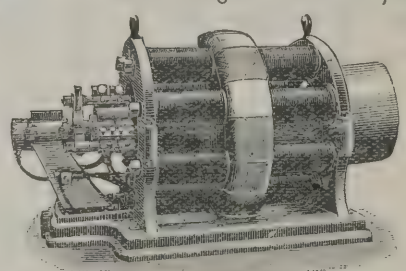
BLUE BRICKS.
THE KETLEY BRICK COMPANY,
MANUFACTURERS OF STAFFORDSHIRE BLUE BRICKS.
Kingswinford, near Dudley, Staffordshire.
LONDON AGENTS :—
R. CULL & SON, PALMERSTON BUILDINGS, E.C.
Stores :—Railway Arches, Corner of London Street, and Brady Street, near Bethnal Green Station.

DRAIN PIPES.
Lime, Cement, Bricks, Slates, Laths, Hair, Sand, Plaster, Stable Paving Bricks, Wall Copings, Channel Bricks, Blue and Red Ridges, Red Plain Tiles and Pan Tiles, Closet Pans and Traps, Drain Pipes, Bends, Junctions, &c., all sizes, Chimney Pots, Red and White, Fire Bricks, Lumps, Tiles, Fire Clay. Prices on Application.
R. CULL & SON'S STORES,
RAILWAY ARCHES,
Corner of LONDON ST., & BRADY ST.,
Near BETHNAL GREEN STATION.
CHIEF OFFICE :—72 PALMERSTON BUILDINGS, OLD BROAD STREET E.C.

G. BARKER and CO. Established 1863.—The BANK, No. 35 Mark Lane, London.
Current accounts. Special advantages.
Deposits received at the following rates :—
3½ per cent. on demand.
4 per cent. seven days' notice.
4½ per cent. fourteen days' notice.
5 per cent. thirty days' notice.
6 per cent. three months' notice.
Interest payable quarterly. Extra bonus for 12 complete months. Pamphlet and further particulars on application.

EDWARD SMITH & CO
MAKERS OF EVERY DESCRIPTION OF PLAIN AND ORNAMENTAL FLOOR AND WALL TILES : MOSAICS :
EMBOSSED AND INCISED TILES, ETC., RED & WHITE TERRA-COTTA PRESSED BRICKS, ETC., ETC., ETC.
COALVILLE. LEICESTERSHIRE.

MESSRS. E. JACKSON & CO.,
AUCTIONEERS,
SURVEYORS and VALUERS,
LAND, ESTATE, and HOUSE AGENTS.
CHIEF OFFICES :
55 and 56 CHANCERY LANE,
LONDON, W.C.
Branch Offices : 762 HOLLOWAY ROAD, London, N.
Estates Managed and Rents Collected.
Sales of Estates and House Property by Public Auction or Private Treaty.
Valuations of Landed Estates, Building Land, and House Property.
Compensation Claims Assessed.
Valuations for Probate.
Mortgages effected on Freehold and Leasehold Property.
Advances made at 5 per cent. on Reversions, or Purchased outright if desired.
Owners are invited to forward particulars of Estates, Freehold or Leasehold Properties, that they may have to be Let or Sold, which will be Registered free.

The Gulcher Electric Light & Power Co., Ld.

GULCHER DYNAMO.
Electric Lighting by either Arc or Incandescent Lamps to Public Buildings, Factories, &c.
BATTERSEA FOUNDRY, LONDON, S.W.

STAINED GLASS WINDOWS,
LEAD GLAZING, &c.
W. JAMES & CO.,
Willes Road & Prince of Wales Road, Kentish Town, N.W.
White Relievo Etchings on Plate Glass, in the Continental Style.

ELECTRIC BELLS, Indicators, Fire and Burglar Alarms Supplied and Fitted. Estimates free. Send for list and trade terms to F. S. WILLIAMS, Manufacturing Electrician and Electric Light Engineer Chauncy Street, Edmonton.

Seventeen Gold, Silver, and Bronze Medals.
WM. WOOLLAMS & CO.,
Original Makers
OF
ARTISTIC WALL-PAPERS,
Guaranteed
FREE FROM ARSENIC.
A large collection of fine Old Damasks & Chintzes.
Special facilities for Printing Extra Widths and Lengths.
Estimates for Private Patterns free.
Kindly note "Trade Mark," a Bale of Wool branded W and two Lambs suspended.
SOLE ADDRESS :—110 HIGH STREET (near MANCHESTER SQUARE), LONDON, W.

standards—twenty in all. Each standard has a cluster of from eight to twelve burners. In the lady chapel there are two standards, each having five clusters of thirty-two burners in all. The organ-loft, pulpit, entrance-doors, and other parts of the building are likewise well provided for in the arrangements, as is also the chapel-house, though in this last case it will be some little time yet before the work is completed. The whole of the work has been carried out under the superintendence of Mr. Fullerton, of the Corporation Gas Office.

*PROPORTION OF JOINTS AND CONNECTIONS IN FRAMED STRUCTURES.**

BY S. G. ARTINGSTALL, C.E.

THE details of construction in many cases are neglected and do not receive the care and attention which their importance demands. Many structures otherwise strong are extremely weak in detail, owing to faulty construction or careless design of the joints. The joints are generally the weakest parts of iron constructions. They should be proportioned so as to resist every direct and indirect stress which may come upon them under all probable circumstances, without subjecting the material to a greater strain than is legitimately allowed. The strength of a structure depends largely upon the proper proportion and distribution of material in the joints, and no amount of metal in the body of a member can compensate for a deficiency of strength in these parts.

Rivetted joints and connections are subject to injury by tearing the rivets through the plates when the bearing surface on the plate is too small, and by shearing the rivet when there is too low a rivet section. The first condition is very often neglected or entirely overlooked in many designs, although generally it will determine the size and number of rivets to be used, and often lead to an increase in the thickness of the plate. The pressure usually allowed upon rivet bearing is 15,000 pounds per square inch, and the bearing area is the thickness of the plate by the diameter of the rivet.

Shearing is produced by sets of opposing forces acting in the same or parallel planes, and for iron is usually taken as equal to its resistance to tension. In a well-proportioned tension-joint the collective shearing area of the rivet is nearly as effective as the area of the plate after deducting the rivet holes. But in rivetted work perfect accuracy is seldom obtained, and in consequence there is not perfect uniformity of strain among the rivets. In many cases the holes do not coincide, and the iron is distorted and injured by the improper use of drift-pins, instead of being reamed out and larger size rivets used. If the rivet is too short the workman will not scruple to use it. They are more easily put in when the rivets are heated only at the point; they do not require quite as much hammering as when heated throughout, but then they do not fill the holes, and may even be loose. Do not fancy they will be cut out on this account; the workman can make them appear tight when they are cold. Rivets heated in this manner will not remain tight if the structure is subject to much working. These little items, which go to make good work, can alone be detected by a competent working inspector on the ground. By these imperfections some of the rivets are scarcely strained at all, while others are overstrained. Even with the greatest care loose rivets are not uncommon, and perfect workmanship cannot be relied upon. On account of these defects the shearing value of rivets is usually taken at 7,500 lbs. per square inch when the value of the plate is 10,000 lbs.

The distribution of rivets in connections or splice plates, particularly in tension, require careful attention. They should be arranged symmetrically with reference to the axis of each bar, and the members weakened as little as possible by rivet-holes. A single hole accounts for the weakening, and the useful working action is equal to the section of the bar less the diameter of one rivet-hole. The strain in the bar is diminished by the amount transferred by the first rivet to the splice plate, and, although the section of the bar or plate is reduced by each succeeding row of rivets, the rivet strain is not increased. This condition holds good when the number of rivets in two adjacent rows does not increase by more than the number of rivets in the first row.

When the section of the member to be joined is not uniform, as in the case of an angle rivetted on one edge, the arrangement is modified so as to keep the centre of the line of rivets as nearly as possible equidistant from the centre of gravity of the section, otherwise the rivets will be strained unequally. The first rivet in this case is placed near the lower edge of the plate instead of near the centre, as in the first example.

The question as to whether the holes in connections must be punched or drilled ought to be determined by the design in

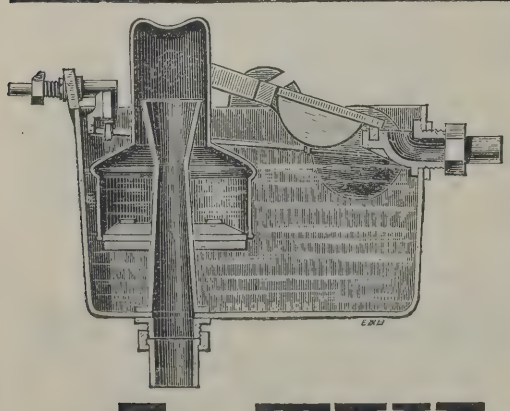
* A paper read at the Architects' Convention in Chicago.

ELECTRIC LIGHTING!

The Thomson-Houston System of Arc Lighting,
The Edison-Swan System of Incandescent Lighting,
} GOLD MEDAL Awarded—
International Inventions Exhibition, 1885.
Edinburgh Exhibition, 1886.

ESTIMATES FREE ON APPLICATION TO
LAING, WHARTON & DOWN,
8 & 9 HOLBORN VIADUCT, and 110 & 111 SAFFRON HILL, LONDON, ENGLAND.

VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12s. 6d.
OFFICE: 175 STRAND, LONDON, W.C.



BEAN'S PATENT DIRECT-ACTING VALVELESS WASTE-PREVENTING CISTERNS.

These Waste-Preventers are simple in construction and rapid and powerful in action. The working parts have been improved and are well balanced. The arrangements for charging the siphon are such that a slight pull by hand is all that is necessary to cause the immediate and automatic discharge of the contents of the Cistern.

THE CHIEF ADVANTAGES are—(1) the direct-acting method of charging the siphon, by which the full flush is obtained at once; (2) simplicity of construction; (3) no valve in the bottom of the cistern to cause leakage; (4) no tight-fitting parts to corrode or get out of order; (5) no waste incurred by fastening the "pull"; (6) insures a rapid and regulated flush without holding down the pull.

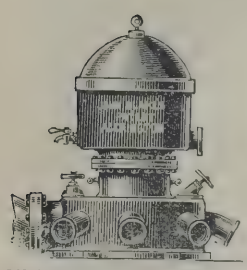
SOLE MAKERS— PRICES AND PARTICULARS ON APPLICATION.

J. TYLOR & SONS,
SANITARY AND HYDRAULIC ENGINEERS AND BRASSFOUNDERS,
2 NEWGATE STREET, LONDON, E.C.

JOHN BLAKE'S

PATENT SELF-ACTING

HYDRAULIC RAMS.



This Ram will force up 200,000 Gallons per day to Medium Heights.

TESTIMONIALS.—VILLAGE WATER SUPPLY.

From J. B. McCALLUM, Esq., C.E., Borough and Water Engineer, Blackburn, November 1, 1886.
Guide (Borough of Blackburn) Water Supply.

DEAR SIR,—Following is the short report I promised to send as to the work performed by the Hydraulic Rams—supplied by you to the Blackburn Corporation—after they had been in operation sufficient time to take proper observations.

The district of Guide—population about 500—in the Borough of Blackburn, is situated above the highest reservoir of the Blackburn Waterworks, and had no regular water supply until last July, when the Water Committee caused two of your Patent Hydraulic Rams to be put down and worked by water from a reservoir having a varying but maximum head of 34 feet 3 inches on the rams—the waste (clean) water gravitating to a lower adjacent reservoir.

You contracted to supply rams which would force 8,000 gallons per day each through 1,295 yards of delivery pipe to a service tank 170 feet above the rams, and I am bound to state that the result has considerably exceeded my expectations, as the rams are capable of pumping and have pumped much more water than you promised. The percentage of efficiency exceeds all I expected, and is, in my opinion, much more than is usually obtained from hydraulic rams.

From a test I made on September 29, I found that two rams with ¼-inch and ⅜-inch strokes respectively, supplied with 194,030 gallons per day together pumped 26,090 gallons per day to a height of 170 feet, giving 71·43 per cent. of efficiency, and one ram working at ⅜-inch stroke and with only 16 feet of working fall supplied with 154,587 gallons per day, pumped 10,587 gallons per day to the same height, showing 72·75 per cent. of efficiency.

At a subsequent test on October 11, one ram at ⅜-inch stroke and having 31 feet 9 inches of working fall supplied with 121,083 gallons per day, pumped 17,583 gallons per day to an elevation of 171½ feet, the efficiency in this case being 79·57 per cent.

In arriving at these results the greatest care was taken to positively measure the water, besides having a meter check on feed and delivery pipes.

The work carried out by you at Blackburn is substantial and satisfactory in every way, and if any engineer wishes to make his own observations he is at liberty to come here and do so.

From WM. DICKINSON, Esq., Agent to the Most Honourable the Marquis of Abergavenny, K.G., Eridge Estate Office, Hargate Lodge, Tunbridge Wells, July 3, 1885.

SIR,—I am instructed by the Marquis of Abergavenny to say that the Patent Hydraulic Ram, with over two miles of pipes, forcing water to a height of 230 feet, which you erected at Eridge Castle about nine months ago, has given his lordship entire satisfaction, and he has every confidence in its continuing to do so.—I am, Sir, yours faithfully,
WILLIAM DICKINSON.

From Mr. J. A. RUTHERFORD, Agent to C. F. H. Bolckow, Estate Office, Marton Hall, Middlesborough, September 26, 1883.

DEAR SIR,—I am glad to say that the Rams you put down on the Hambleton Estate for Mr. C. F. H. Bolckow are working very well. You undertook, with 16 gallons per minute, to send up 1,500 gallons a day, and with enough water to work the Rams at full power, 2,000 gallons a day. With a supply of 11⅜ gallons per minute they are lifting 2,200 gallons, and, when working full power, 3,105 gallons per day are sent up to a height of nearly 400 feet. They made a clear start, and have gone well since.

The Delivery Pipe, in the above case, is 9,000 feet in length.

From Mr. HENRY ROBINSON, Engineer to the Stockport District Waterworks Company, Sept. 8, 1883.

DEAR SIR,—I can now report well of the two Hydraulic Rams we have fixed to your instructions for the supply of Disley Village. 40,000 gallons per day was the quantity you promised they would force to a height of 68 feet, but on testing them I am convinced that 50,000 gallons is not the limit of their power, whilst the quantity of waste water used in driving them is not equal to half the capacity of the 6-inch pipe by which they are fed, and I am inclined to the belief that a more simple and efficient pump cannot be found.

From HORATIO R. B. PEILE, Esq., Commissioner to Sir Michael Shaw-Stewart, Bart., Mansion House, Greenock, Aug. 13, 1883.

I am glad to say the Ram you fixed at Castle Farm in November last for Sir Michael Robert Shaw-Stewart, Bart., continues a great success. The smallness of the driving water—2½ gallons per minute—is not more wonderful than the large proportion of water it sends up, viz., 720 gallons per day, through about 400 yards of delivery pipe, to an elevation of 75 feet.

From Capt. TOWNSHEND, Wincham, Feb. 10, 1877.

In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November 1875 is working exceedingly well, and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe 900 yards long at the rate of 80,000 gallons per day, although you only promised 50,000.

From J. SPENDER CLAY, Esq., Ford Manor, Lingfield, Surrey, Aug. 9, 1880.

In reply to your letter of inquiry, I am glad to be able to say that the two Hydraulic Rams which you fixed here are working satisfactorily, and that out of 13 gallons 3 quarts per minute, the maximum yield of the spring, they deliver to the top of my house, distant a full mile from the spring, 4 gallons 1 quart per minute, or 6,120 gallons per 24 hours, being 120 gallons above the quantity you guaranteed.

From Mr. JOHN ARCHBOLD, Engineer to Messrs. Barber, Walker & Co., Eastwood, Notts, Oct. 21, 1882.

I am glad to inform you that the Hydraulic Ram you fixed for Thomas Barber, Esq., whilst working with a fall of 30 feet, and forcing to a height of 90 feet, through 200 yards of delivery pipe, is working exceedingly well, throwing up 9 pints out of every 35 pints passing through it, thus giving 77 per cent of useful effect.

From Mr. T. BARHAM FOSTER, C.E., 23 John Dalton Street, Manchester, October 12, 1883.

DEAR SIR,—I have tested the Ram you contracted to fix on the Hints Estate, Staffordshire, for James Chadwick, Esq., to force 10,000 gallons per day of spring water through 800 yards of delivery pipe to an elevation of 208 ft., whilst worked by river water falling 5 ft. 9 in., and am pleased to find that when at full power the ram sends up 13,500 gallons per day to the height and distance named, and though the Ram is now adjusted to work at only three-fourths its power, the work done represents over 57 per cent. of useful effect.

From FRED. J. TURNER, Esq., Agent to His Grace the Duke of Portland, K.G., Mansfield Woodhouse, August 30, 1883.

DEAR SIR,—I have much pleasure in stating that the Hydraulic Rams which you erected last year for His Grace the Duke of Portland, at Lyndhurst, near Mansfield, and at Skeldon, Ayrshire, are working very well, and they are most satisfactory in every way.

JOHN BLAKE, ENGINEER, ACCRINGTON, Lancashire, England.

each case. If the holes are located near the edge of a plate or the quality of the iron is poor, it is liable to be seriously injured by the operation of punching, but it can be drilled without injury when a number of plates are to be rivetted together or a difficult connection to be made; it is better to use drilled holes unless unusual care is exercised at the punching-machine. Drilled holes should be slightly countersunk to remove the burrs which will cut into and injure the rivets.

For connections and splices, both in tension and compression, it is advisable, whenever practicable, to use double-splice plates. When a single-splice plate is used in tension, a couple will tend to bend it and spring the rivet heads, and single plates in pieces, under compression, are liable to crippling at the joints.

As the splice plates must receive and transmit the full strain of the member joined, its useful section must be equal to it; generally double plates require to be bent half the thickness, and require but half the number of rivets as they are in double shear. The length of the splice plates also diminishes with the number of rivets, so that double plates are economical. The strain from the members is more uniformly distributed amongst the rivets the less the number in the direction of the strain, since the stress of an abutting piece is transferred to the splice plate by the rivets, and the rivets on each side of the joint have to bear the same shearing strain upon the plate. The loss from rivet-holes in the splice plate is equal to the number of rivets in the row adjacent to the joint. The section of the splice plate is reduced by the diameter of three rivet-holes, while the effective section of the bar is reduced by the diameter of one hole only; hence the necessity of making the gross section of the splice plates somewhat greater than the sectional area of the member. Stoney recommends that single plates be made $1\frac{1}{8}$th times the thickness of the bar, and double splices. each $\frac{5}{8}$ths the thickness of the bar.

For compression members the disposition of rivets in connection may vary somewhat from the rules given for tension joints, it being assumed that the strain is transmitted direct, and that no loss is occasioned by rivet-hole. When the workmanship is perfect, if the abutting joints are placed or dressed so as to afford a perfect contact throughout, a simple plate with sufficient rivets to keep the members in position would be sufficient; but perfect workmanship cannot always be relied upon, and a close contact throughout the whole width of a plate is rare; the process of rivetting tends to draw the plate slightly apart, and a small interval is theoretically as bad as a large one; so that it is often better to assume that the strain must be transmitted through the rivets and splice plates, using the same rules for bearing and shearing as in tension; but greater latitude may be allowed in the distribution of the rivets, and neglect the loss occasioned by rivet-holes.

Pin Connections.

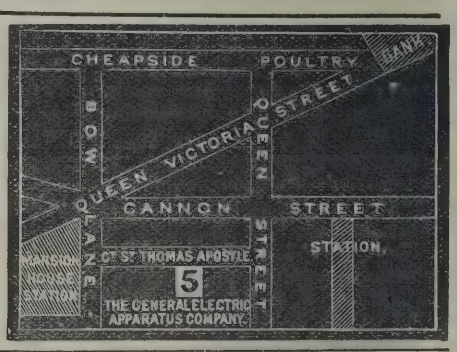
The efficiency of the rivetted joints of tension members will vary according to the design, but it can rarely exceed 80 per cent. of the strength of the solid plate, and hence it happens that the section of these members is increased, in consequence of the loss from rivet-holes, by not less than 20 per cent., to the theoretical weight of a tension member; that is, its section calculated on the imaginary hypothesis that it is made of solid iron, without joints or perforations. The size and length of the splices or covers is considerable, and their weight an important addition—in many cases over 12 per cent. added to the theoretic section. With pin connections these members can be proportioned very closely to the section theory demands; in many cases fewer parts may be used, for a certain amount of material put in one member will do more work than if distributed over two or more.

The use of rivetted joints and connections tends to diffusion of strains with many parts and connections, while with pin connections it is the reverse of this, the strains being concentrated in fewer and heavier members, with wider panels and fewer connections, and better facilities of obtaining the effective use of the entire section of the material. With pins, which transfer the strains through the centre of their diameter, the centre of pressure can be made to pass through the centre of gravity of the sections.

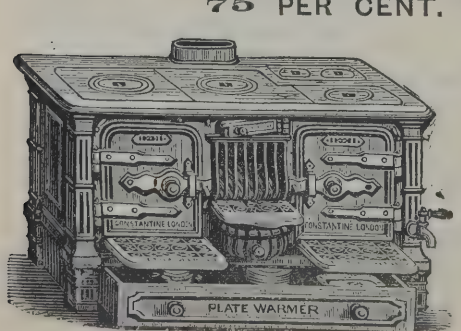
Pin connections require more careful and accurate workmanship. The pins must be turned accurately to the proper diameter, and the pin holes in all members, both as to size and distance apart, must be mathematically correct. This requires special tools and appliances and careful workmanship, which, if not readily obtainable, will cost more than the saving in material over rivetted work.

Pins must be estimated for shearing, bending, and heavy pressures. The bearing pressure allowed is the same as for rivets, viz., 15,000 pounds per square inch. The bending pressure will require careful arrangement and design, so as to reduce the moment of forces to the lowest possible limit. It requires that the different members be so placed that no two adjacent members act in the same direction. The pin must not

OAK PANELLINGS.
A SPECIALITY.
MR. J. ICHENHAUSER, of 68 NEW BOND STREET,
Is prepared to give Designs and Estimates for OAK PANELLINGS and CEILINGS, for Sacred and Domestic Buildings. Largest holder in Europe of Queen Anne, Jacobean, Louis XIV., Louis XV., Louis XVI., English, Italian, German, and Flemish Renaissance Styles. Also Antique Carved Oak and Marqueterie Furniture. Architects and intending Builders would do well to send for Mr. Ichenhauser's Illustrated Magazine, *The Collector and Art Furnisher*, Free.

Telegraphic Address: "ELECTRICITY," *LONDON.* *Telephone No. 1887.*
THE GENERAL ELECTRIC APPARATUS CO.
ONLY CITY ADDRESS: 5, GREAT ST. THOMAS APOSTLE
Works: BOW and SOUTH HACKNEY. (*Back of the Mansion House Station*), E.C.
ELECTRIC BELLS.
Bells, Indicators, Wires, Batteries (Leclanché, Bunsen, Bichromate, &c.), Pushes, Fire & Burglar Alarms.
The Largest MANUFACTURERS, FITTERS & EXPORTERS in the Kingdom. Write for Catalogue.
Electric Light Instruments, Fittings and Glassware.


VOLUME XXXV. OF THE ARCHITECT.
Handsomely bound in Cloth, Gilt Lettered. Price 12*s.* 6*d.*—Office: 175 Strand, London, W.C.

A HOUSEHOLD TREASURE.
75 PER CENT. LESS FUEL BURNT BY USING CONSTANTINE'S
PATENT "TREASURE"
COOKING RANGE,


With the Patent Rising Fire Grating for reducing or enlarging the Fire. The FIRST PRIZE was awarded to the Patentee, after nearly one thousand tests of a variety of Ranges, by the Smoke Abatement Exhibition, Ladies' Committee, South Kensington, as well as the Grand Prize by the Exhibition, First Silver Medal. Vide *Times*, July 18 and 19, 1882. Also received Highest Awards at the Medical and Sanitary, the Fisheries, the Health, and the Inventions Exhibitions.
DISTINCTIVE MERITS:—*Perfection in Cookery—Economy in Fuel—Smoky Chimneys effectually Cured—Unsurpassed for Durability—May be placed anywhere.*
Illustrated Price Books, with Testimonials, Post Free.
A. R. CONSTANTINE, 61 FLEET STREET, E.C.
N.B.—Judges have conferred Greatest Honours, Highest Awards Gold and Silver Medals at all Competitive Exhibitions. ESTABLISHED A QUARTER OF A CENTURY.

be too small, or there will result a heavy shearing action in the pin or a crushing of the metal in the hole, causing elongation for want of sufficient bearing surface. Increasing the thickness of the head of a bar is not advisable, as this will increase the distance between bearings, with a consequent increase of the bending moments on the pin. The practical results arrived at from many experiments show that, with a proper arrangement of the joint, the greatest efficiency is obtained when the diameter of the pin is equal to four-fifths the width of the bar, and the thickness of the bar one-fourth its width. As the strain in the head of a link is less direct than in the body of a bar, and there is a liability to imperfections in manufacture and welding, it is essential that the bar should yield in the body rather than the head. To accomplish this it is necessary to make the section of the metal in the eye opposite the centre of the pin hole, and perpendicular to the line of strain, not less than 1¼ to 1½ the section of the body of the bar.

It may seem superfluous to urge upon you the necessity of making all the parts of a joint or connection as suitable as possible; avoid all complicated or twisted pieces, particularly the bending or forging of shape iron, which is not only expensive, but cannot be done without injury to the material. When the joint has to be rivetted it is essential that it be designed so that the workman can get in his rivets while hot, and can deliver such effective blows of the hammer so as to upset or swell the whole length of the rivet, that it may fill every interstice and inequality of the hole. A rivet which has been heated only at the point and made tight in forming the rivet head is of very little service, which is fully shown when a rivet has to be removed for any purpose. If it has been done in an imperfect or careless manner it can be readily driven out when the head is cut; but when it has been heated fully as much at the head as the point, and driven by a skilful workman, so that the effect of the hammering is transmitted to the more distant and interior particles, it will in many cases be necessary to drill it out, so completely has it become a part of the iron into which it is forced.

For pin connections, the conditions of manufacture and the quality of material and workmanship are always of the strictest kind.

The arrangements and proportion of the different parts in the connections sometimes require a great amount of skill, and it is hardly saying too much to state that the value of a structure can be measured by the fitness and symmetry of its connections.

BUILDING TRADE IN GLASGOW.

ACCORDING to the review in the *Glasgow Herald*, no complaint issues from the building trades as to the amount of work offering during the year in Glasgow. There have been and still are many heavy undertakings on hand, and the workmen for the most part have been well employed. A great deal of house-building has been prosecuted in some of the suburban districts. Locally the prospect for 1887 is not, from a tradesman's point of view, all that could be wished, but outside the city there is a large amount of work projected, so that no fear is felt for the results of the coming year. If the municipal project for the building up the Saltmarket is proceeded with, a very good item will be added to the work in prospect. In the following table are given the figures relating to linings passed by the Dean of Guild Court in the year, with comparisons for 1885:—

Nature of Operations.	1885.		1886.	
	Linings.	Valuations.	Linings.	Valuations.
Dwelling-houses and shops	47	£154,710	45	£186,500
Alterations on shops and dwelling-houses	63	42,940	42	16,375
Warehouses, workshops, offices, stables, byres, and alterations on such.	64	57,810	84	84,360
Churches, halls, schools, and other buildings for public purposes, with alterations on such	17	94,400	21	104,700
	191	£349,860	192	£392,435
	1885.		1886.	
Houses of 1 apartment	81		118	
,, 2 ,,	551		610	
,, 3 ,,	321		345	
,, 4 ,,	34		110	
,, 5 ,,	10		27	
,, 6 ,,	3		21	
	1000		1231	

MAHOGANY & HARD WOODS.

ROBERT GARRARD & CO., 206 BETHNAL GREEN ROAD, LONDON, E.

Contractors to Railway and Rolling Stock Companies.

Large Stocks of thoroughly-seasoned Mahogany Teak, Wainscot Oak, and Walnut for Counter Tops, Handrails, Stair Treads, &c. Mahogany, Cedar, and Teak Panel Dry Pine, Whitewood, Ash, Birch, &c., in all thicknesses and widths. Prepared Flooring and Matching in Pitch Pine, Teak, Oak, &c.

LOGS, Mahogany, Teak, Walnut, Sawn and Hewn Pitch Pine, and other Log Timber, supplied in large or small quantities from Stocks kept at the Docks.

Telegraphic Address—"ACAJOU, LONDON."

GOLD AND SILVER MEDALS, PARIS EXHIBITIONS, 1878 & 1879.

THE GOLD MEDAL PATENT EXCELSIOR HOT WATER BOILER

And every other description of

WELDED AND RIVETTED BOILERS FOR HOT WATER, HEATING, &c.,

MANUFACTURED BY

EDWIN LUMBY, SON, & WOOD,

WEST GROVE WELDED BOILER & SAFE WORKS, HALIFAX.

COMPLETE ILLUSTRATED LISTS ON APPLICATION.

IMPORTANT.—To Specialists, Manufacturers, and Others.

Effective Advertising at a Minimum Cost. Now in preparation for Publication in January. Demy 4to, Illustrated.

THE ARCHITECT AND CONTRACTOR'S COMPENDIUM,

Specialist's Directory, and Diary for 1887.

EDITED BY JOHN E. SEARS, A.R.I.B.A., F.A.S.

An illustrated and priced catalogue and directory of specialities, manufactures, and requirements in every branch of the Building Trade, and in office and workshop, carefully classified and indexed, combined with a 104-paged Office Diary, Legal and General Information, Copies of Building Acts and By-Laws, Tables, and Memoranda. Illustrations may be inserted produced by the Litho- or Ink-Photo process. In addition to the usual circulation of a first-class Annual, **the Publishers guarantee to send a copy gratuitously to every Architect and Builder whose name appears in the London Directory.** Advertisements will thus for twelve months be in a convenient and attractive form before the eyes of the people Advertisers specially desire to reach, and this **at a cost less than half that of sending out one circular.**

The minimum **guaranteed circulation** of the **Compendium** is 3,000 copies, but the actual circulation will probably reach a much higher figure.

Special attention is directed to the fact that, at great expense, the Publishers have arranged to illustrate this work by a new and magnificent process. The **Compendium** will thus be far ahead as an artistic production of any class Annual published, adding greatly to its value as an advertising medium.

An exceptional opportunity is thus afforded Country and Colonial Firms to introduce their manufactures to the London market. The Compendium will be produced in first-class style, and will doubtless become a standard work of the trade.

Unsolicited professional opinion from H. H. COLLINS, Esq., F.R.I.B.A., District Surveyor for the Eastern Division of the City of London:—"I brought the matter before my co-directors, and they have instructed the Secretary to make arrangements for a sheet for an advertisement. I think it a very good idea: not only ought it to pay you, but it ought likewise to be of great use to every member of the profession, as also to Builders."

Prospectus, with full table of contents, &c., free on application; but Advertisements and Blocks should be forwarded at once to the **Advertisement Manager, 16 New Bridge Street, London, E.C.**

London: JAMES SEARS & SONS, Printers and Publishers, Crane Court, Fleet Street.

"THE PEDESTAL VASE,"
JENNINGS' IMPROVED W.C. APPARATUS



(Combination Urinal and Slop Sink).

Registered No. 16,300.

A PORCELAIN VASE set on a tiled or mosaic floor, within walls or a dado of glazed tiles. The usual wood framing, forming a storehouse for the retention and accumulation of *damp*, *dirt*, and *disease germs*, with the joints, crevices, and imperfections in work which the closet enclosure so often conceals, is entirely abolished. The seat is hinged, permitting free access for use as a *slop sink* or *urinal*, and for cleansing, so that the entire apparatus and space can be freely washed down. For this latter purpose the floor should be slightly sunk, and laid to fall to a grating, with waste carried through the external wall, and terminating in a copper flap valve to prevent draught.

☞ The suggestions as regards wall linings and floor, may, of course, be modified as best adapted to the building in which the closets are used; and in the consideration of such details, alternative schemes will readily present themselves.

At the recent **HEALTH EXHIBITION** (South Kensington, 1884) amongst a series of official tests, under the supervision of Baldwin Latham Esq., C.E., and the Jury No. 9, Class XXIII., and successfully withstood by this closet, the following may be cited in evidence of its efficient action. Being fixed in position shown in illustration, with **"JENNINGS' PATENT SINGLE FLUSH WASTE-PREVENTING SYPHON CISTERN"** 5 feet over, with 1½ inch down pipe, ten apples (averaging 1¼ inch diameter) and a flat sponge about 4½ inch diameter were thrown into the basin. The water, as well as the whole of the exposed or dry surface, was first blackened with plumber's "smudge," and the sides covered by four pieces of thin sanitary paper, which adhered closely to the soiled surface. The handle of the cistern was then pulled, and the two-gallon flush liberated. After seven seconds (the time occupied by the discharge), a receiver placed under the trap outlet was removed, containing in the blackened water **the ten apples, the sponge, and the four pieces of paper,** no traces of the soil remaining visible upon any part of the apparatus.

GOLD MEDAL AWARDED.

THESE CLOSETS are already in use in Hospitals, Banks, Hotels, Offices, Private Residences, &c., with most satisfactory results, and, fixed in the manner described, in appearance and action leave nothing to be desired. By the novel arrangement of the supply to Basin, as shown in the sectional sketch annexed, the whole surface is well flushed and cleansed, whilst the bottom of Basin and Trap are thoroughly scoured by a concentrated rush of water which insures the **instantaneous removal** of the contents, thus overcoming the inherent defects in the many imitations recently produced of **"JENNINGS' MONKEY-CLOSET"** (the **original form of wash-out watercloset**), which was invented and patented by G. J. in 1852.

GEORGE JENNINGS,
SANITARY ENGINEER, STANGATE, LONDON.

A VISIT TO THE SHOWROOMS IS RESPECTFULLY REQUESTED. S.E.

GENT & CO., LEICESTER.

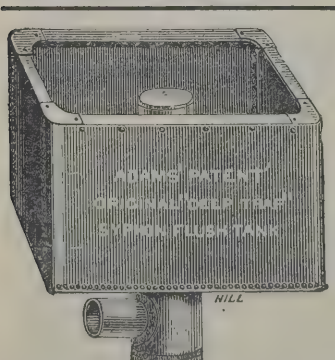


ELECTRIC & PNEUMATIC BELLS.
NEW PNEUMATIC PENDULUMS.

FIRE AND BURGLAR ALARMS. LIGHTNING CONDUCTORS.

MECHANICAL TELEPHONES. Everything for a line complete for £3.

PAMPHLET, "How to fix and repair Electric and Pneumatic Bells," FOUR STAMPS. LISTS FREE.

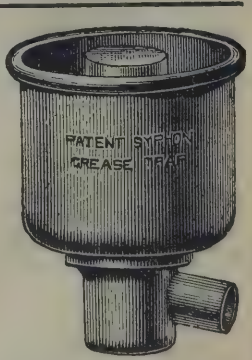


ADAMS & CO., Monk Bridge, YORK.

London Office:—7 WESTMINSTER CHAMBERS, S.W.

Patent **FLUSH TANKS** for Drain Flushing.
„ **FLUSH SYPHONS** for Sewer Flushing.
„ **FLUSH LATRINES** for Barracks, Schools, &c.
„ **FLUSH URINALS** „ „ „
„ **TROUGH CLOSETS** „ „ „

New Pattern W.C. Pan and Flushing Arm.



GREASE TRAPS, ETC., AND ALL SANITARY APPLIANCES AND CASTINGS.

Printed by SPOTTISWOODE & CO., at No. 5 New-street Square, E.C., and Published by the Proprietors, GILBERT WOOD & CO., at the Office, No. 175 Strand, W.C., London
Friday, December 31, 1886.

UNIVERSITY OF ILLINOIS-URBANA
3 0112 077168810